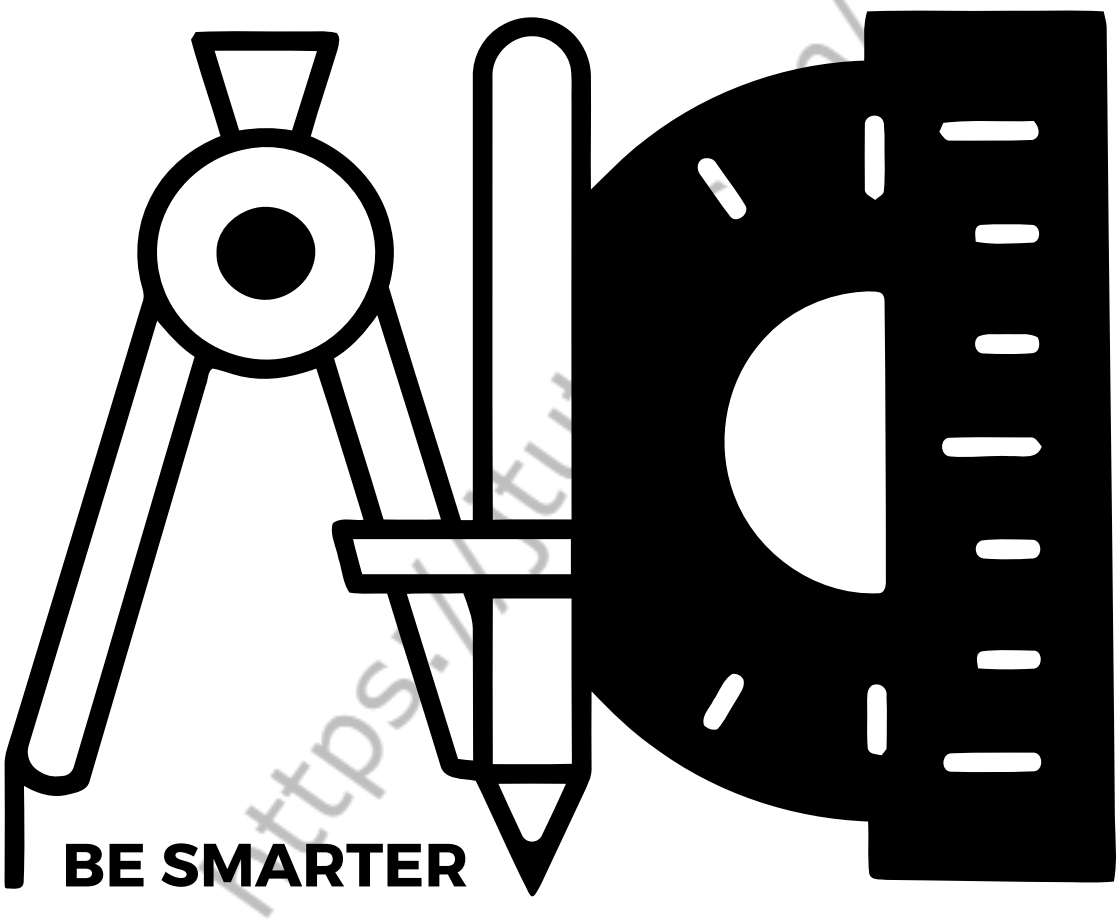
J-TUTES



YEAR 5 WORKBOOK

TERM 3 SYLLABUS

CHAPTER 1 - TEST DISCUSSION

CHAPTER 2 - PERCENTAGES - I

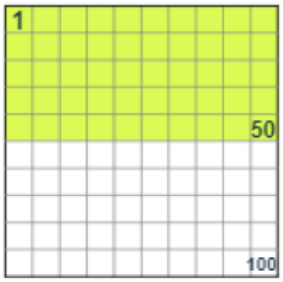
CHAPTER 2 - PERCENTAGES - I

PERCENTAGES (%)

When we say "Percent" we are really saying "per 100"

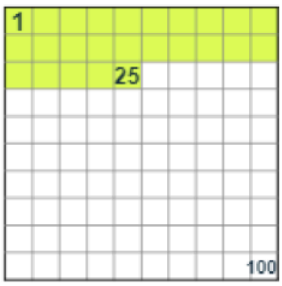
One percent (**1%**) means 1 per 100.

1% of this line is shaded green: it is very small isn't it?



50% means 50 per 100
(50% of this box is green)

25% means 25 per 100
(25% of this box is green)



Because "Percent" means "per 100" think:

"this should be divided by 100"

So **75%** really means $\frac{75}{100}$

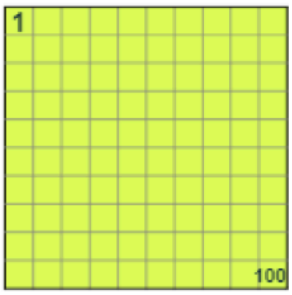
And **100%** is $\frac{100}{100}$, or exactly **1** (100% of any number is just the number, unchanged)

And **200%** is $\frac{200}{100}$, or exactly **2** (200% of any number is twice the number)

CHAPTER 2 - PERCENTAGES - I

PERCENTAGES (%)

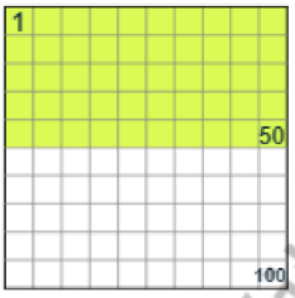
Examples:



100% means all.

Example:

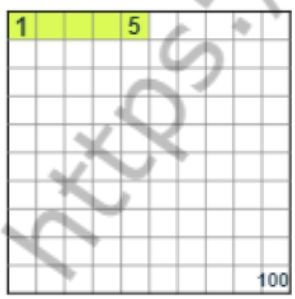
100% of **80** is $\frac{100}{100} \times 80 = 80$



50% means half.

Example:

50% of **80** is $\frac{50}{100} \times 80 = 40$



5% means $^{5}/_{100ths}$.

Example:

5% of **80** is $\frac{5}{100} \times 80 = 4$

CHAPTER 2 - PERCENTAGES - I

CONVERT PERCENTAGES TO FRACTIONS

To convert a Percent to a Fraction, follow these steps:

- **Step 1:** Divide the given percent by 100.
- **Step 2: If** the percent is **not** a whole number, then multiply both top and bottom by 10 for every number after the decimal point. (For example, if there is one number after the decimal, then use 10, if there are two then use 100, etc.)
- **Step 3:** Simplify (or reduce) the fraction

Example: Convert 11% to a fraction

Step 1: Write down:

$$\frac{11}{100}$$

Step 2: The percent is a whole number, go straight to step 3.

Step 3: The fraction cannot be simplified further.

Answer = $\frac{11}{100}$

Example: Convert 75% to a fraction

Step 1: Write down:

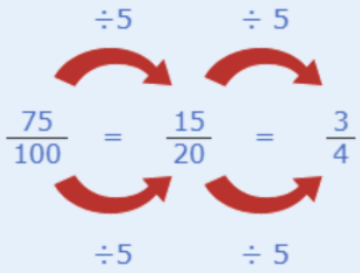
$$\frac{75}{100}$$

Step 2: The percent is a whole number, go straight to step 3.

Step 3: Simplify the fraction (this took me two steps, you may be able to do it one!):

CHAPTER 2 - PERCENTAGES - I

CONVERT PERCENTAGES TO FRACTIONS



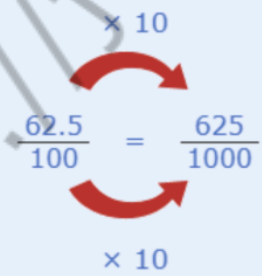
Answer = $\frac{3}{4}$

Example: Convert 62.5% to a fraction

Step 1: Write down:

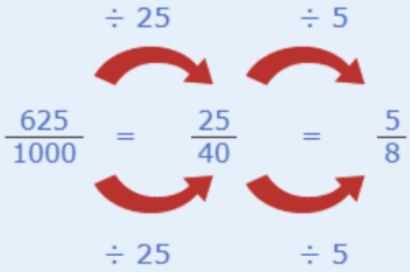
$$\frac{62.5}{100}$$

Step 2: Multiply both top and bottom by 10 (because there is 1 digit after the decimal place)



(See how this neatly makes the top a whole number?)

Step 3: Simplify the fraction (this took me two steps, you may be able to do it one!) :



Answer = $\frac{5}{8}$

CHAPTER 2 - PERCENTAGES - I

CONVERT PERCENTAGES TO FRACTIONS

Example: Convert 150% to a fraction

Step 1: Write down:

$$\frac{150}{100}$$

Step 2: The percent is a whole number, go straight to step 3.

Step 3: Simplify the fraction (I did it one step):

$$\frac{150}{100} \overset{\div 50}{=} \frac{3}{2}$$

Answer = $\frac{3}{2}$

CHAPTER 2 - PERCENTAGES - I

CONVERT PERCENTAGES TO FRACTIONS

Example: Calculate 25% of 80

$$25\% = \frac{25}{100}$$

$$\text{And } \frac{25}{100} \times 80 = \mathbf{20}$$

So 25% of 80 is **20**

Example: 15% of 200 apples are bad. How many apples are bad?

$$15\% = \frac{15}{100}$$

$$\text{And } \frac{15}{100} \times 200 = 15 \times \frac{200}{100}$$

$$= 15 \times 2$$

$$= \mathbf{30 \text{ apples}}$$

30 apples are bad

Example: if only 10 of the 200 apples are bad, what percent is that?

As a fraction, $\frac{10}{200} = 0.05$

As a percentage it is: $\frac{10}{200} \times 100 = 5\%$

5% of those apples are bad

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

50% of 140	5% of 880
10% of 360	2% of 9500
20% of 50	11% of 200
30% of 90	21% of 400

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

25% of 40	12% of 300
25% of 28	9% of 700
75% of 200	120% of 80
80% of 250	150% of 400

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

5% of 80	110% of 60
4% of 1220	400% of 25
125% of 12	146% of 50
225% of 32	3000% of 20

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

1. Harry scored 70% on his Percentages test. If the test is out of 50 marks, how many marks did Harry score?

2. Grace wants to purchase a new top and has $40 to spend. She really likes a red top that was originally priced at $75 and has a 40% discount ticket on it. At another shop, she also likes a striped hoody, which costs $55. There is 20% off all items in the store on this day. Can Grace afford either of the tops?

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

3. In a student survey, 80% of students said they received too much homework. If 300 students were surveyed, how many students felt they get too much homework?

4. 25% of teenagers say their favourite fruit is watermelon. In a survey of 48 teenagers, how many students would you expect to write watermelon as their favourite fruit?

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

5. At Gladesbrook College, 10% of students walk to school, 35% of students catch public transport and the remainder of students are driven to school. If there are 1200 students at the school, find how many students:

a. walk to school
b. catch public transport
c. are driven to school

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

6. Anthea has just received a 4% salary increase. Her wage before the increase was $2000 per week.

a. How much extra money does Anthea receive due to her salary rise?
b. What is Anthea's new salary per week?
c. How much extra money does Anthea receive per year?

CHAPTER 2 - PERCENTAGES - I

FIND THE FOLLOWING PERCENTAGE EQUIVALENTS

7. Gavin mows 60% of the lawn in 48 minutes. How long will it take him to mow the entire lawn if he mows at a constant rate?

8. Which is larger: 60% of 80 or 80% of 60?

CHAPTER 2 - PERCENTAGES - I

FIND:

20% of (50% of 200)	5% pf (5% of 8000)
10% of (30% of 3000)	80% of (20% of 400)

CHAPTER 3 - PERCENTAGE - II

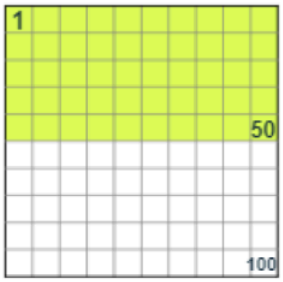
CHAPTER 3 - PERCENTAGES - II

PERCENTAGES (%)

When we say "Percent" we are really saying "per 100"

One percent (**1%**) means 1 per 100.

1% of this line is shaded green: it is very small isn't it?



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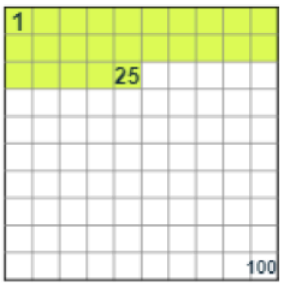

Because "Percent" means "per 100" think:

"this should be divided by 100"

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And **100%** is $\frac{100}{100}$, or exactly **1** (100% of any number is just the number, unchanged)

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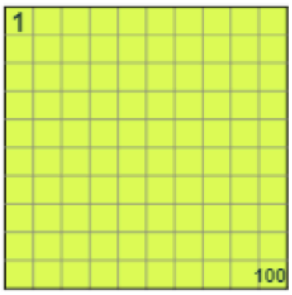
CHAPTER 3 - PERCENTAGES - I1

PERCENTAGES (%)

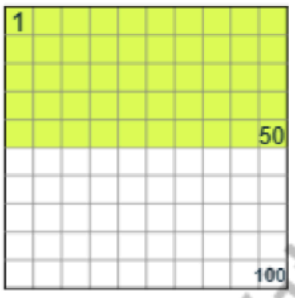
Examples:



100% means all.

Example:

100% of **80** is $\frac{100}{100} \times 80 = 80$



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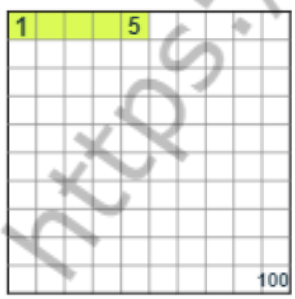


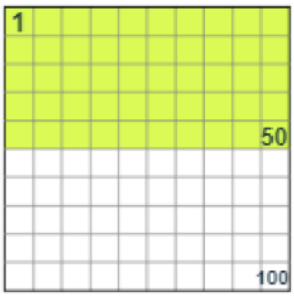
5% means $^{5}/_{100ths}$.

Example:

5% of **80** is $\frac{5}{100} \times 80 = 4$

CHAPTER 3 - PERCENTAGES - I1

CONVERT PERCENTAGES TO DECIMALS



Percent means "per 100", so **50%** means 50 per 100, or simply $^{50}/_{100}$

When we divide 50 by 100 we get **0.5** (a decimal number).

So, to convert from percent to decimal: divide by 100, and remove the "%" sign.

The Easy Way

The easy way to divide by 100 is to **move the decimal point 2 places to the left**, so:

From Percent		To Decimal
75%	0.7.5. 2 Places	0.75
move the decimal point 2 places to the left, and remove the "%" sign		

CHAPTER 3 - PERCENTAGES - I1

CONVERT PERCENTAGES TO DECIMALS

Example: Convert 8.5% to decimal

Move the decimal point two places to the left: 8.5 → 0.85 → 0.085

(Note how we inserted an extra "0" as needed)

Answer **8.5% = 0.085**

Example: Convert 250% to decimal

Move the decimal point two places to the left: 250. → 25. → 2.5

Answer **250% = 2.5**

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

1) 171%

2) 887%

3) 42%

4) 58%

5) 95%

6) 2%

7) 523%

8) 187%

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

9) 80%

10) 304%

11) 66%

12) 3%

13) 33%

14) 959%

15) 18%

16) 6%

17) 41%

18) 911%

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

19) 4%

20) 1%

21) 515%

22) 393%

23) 355%

24) 8%

25) 851%

26) 65%

27) 21%

28) 945%

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

29) 685%

30) 535%

31) 50%

32) 60%

33) 67%

34) 22%

35) 40%

36) 17%

37) 27%

38) 37%

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

39) 10%

40) 11%

41) 606%

42) 51%

43) 7%

44) 19%

45) 48%

46) 451%

47) 28%

48) 81%

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

49) 72%

50) 5%

51) 71%

52) 255%

53) 76%

54) 15%

55) 87%

56) 62%

57) 90%

58) 188%

CHAPTER 3 - PERCENTAGES - I1

Write each as a decimal. Round to the hundredths place.

59) 817%

60) 205%

CHAPTER 3 - PERCENTAGES - I1

CONVERT DECIMALS TO PERCENTAGES

"Percent" means "per 100" so:

Multiply the Decimal Number by 100

The Easy Way

The easy way to multiply by 100 is to **move the decimal point 2 places to the right**. so:

From Decimal		To Percent	
0.125	0.12.5 2 Places	12.5%	move the decimal point **2 places to the right** (and add the "%" sign!)

Example: Convert 0.35 to percent

Move the decimal point two places to the right: 0.35 → 3.5 → 35%

Answer **0.35 = 35%**

Example: Convert 0.985 to percent

Move the decimal point two places to the right: 0.985 → 9.85 → 98.5%

Answer **0.985 = 98.5%**

CHAPTER 3 - PERCENTAGES - I1

CONVERT DECIMALS TO PERCENTAGES

You may also need to add zeros on the right to move the decimal point:

Example: Convert 1.2 to percent

Move the decimal point two places to the right: 1.2 → 12. → 120.%

Answer **1.2 = 120%**

CHAPTER 3 - PERCENTAGES - I1

Write each as a percent. Round to the nearest percent.

1) 0.93

2) 0.06

3) 0.9

4) 5.62

5) 0.04

6) 0.5

7) 1.22

8) 8.85

9) 0.2

10) 0.03

CHAPTER 3 - PERCENTAGES - I1

Write each as a percent. Round to the nearest percent.

11) 0.07

12) 0.59

13) 0.09

14) 8.33

15) 0.28

16) 0.01

17) 0.91

18) 6.45

19) 0.1

20) 5.34

CHAPTER 3 - PERCENTAGES - I1

Write each as a percent. Round to the nearest percent.

21) 9.59

22) 0.55

23) 0.66

24) 4.13

25) 0.51

26) 2.93

27) 0.24

28) 0.3

29) 0.05

30) 2.68

CHAPTER 3 - PERCENTAGES - I1

Write each as a percent. Round to the nearest tenth of a percent.

31) 0.205

32) 0.12

33) 2.86

34) 9.26

35) 0.041

36) 0.002

37) 2.46

38) 0.007

39) 3.6

40) 0.4

CHAPTER 3 - PERCENTAGES - I1

Write each as a percent. Round to the nearest tenth of a percent.

41) 0.38

42) 0.01

43) 0.91

44) 0.69

45) 0.706

46) 0.004

47) 0.64

48) 0.005

49) 0.009

50) 4.84

CHAPTER 3 - PERCENTAGES - I1

Write each as a percent. Round to the nearest tenth of a percent.

51) 5.291

52) 0.55

53) 0.1

54) 0.07

55) 5.29

56) 0.53

57) 0.41

58) 0.001

59) 0.5

60) 9.648

CHAPTER 3 - PERCENTAGES - I1

CONVERT PERCENTAGES TO FRACTIONS

To convert a Percent to a Fraction, follow these steps:

- **Step 1:** Divide the given percent by 100.
- **Step 2: If** the percent is **not** a whole number, then multiply both top and bottom by 10 for every number after the decimal point. (For example, if there is one number after the decimal, then use 10, if there are two then use 100, etc.)
- **Step 3:** Simplify (or reduce) the fraction

Example: Convert 11% to a fraction

Step 1: Write down:

$$\frac{11}{100}$$

Step 2: The percent is a whole number, go straight to step 3.

Step 3: The fraction cannot be simplified further.

Answer = $\frac{11}{100}$

Example: Convert 75% to a fraction

Step 1: Write down:

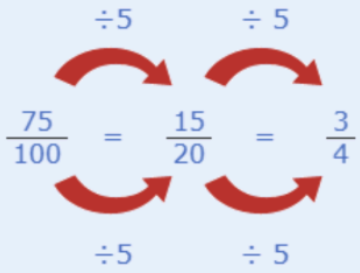
$$\frac{75}{100}$$

Step 2: The percent is a whole number, go straight to step 3.

Step 3: Simplify the fraction (this took me two steps, you may be able to do it one!):

CHAPTER 3 - PERCENTAGES - I1

CONVERT PERCENTAGES TO FRACTIONS



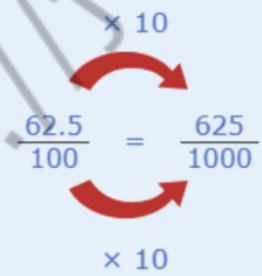
Answer = $\frac{3}{4}$

Example: Convert 62.5% to a fraction

Step 1: Write down:

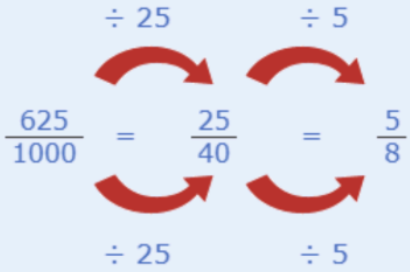
$$\frac{62.5}{100}$$

Step 2: Multiply both top and bottom by 10 (because there is 1 digit after the decimal place)



(See how this neatly makes the top a whole number?)

Step 3: Simplify the fraction (this took me two steps, you may be able to do it one!) :



Answer = $\frac{5}{8}$

CHAPTER 3 - PERCENTAGES - I1

CONVERT PERCENTAGES TO FRACTIONS

Example: Convert 150% to a fraction

Step 1: Write down:

$$\frac{150}{100}$$

Step 2: The percent is a whole number, go straight to step 3.

Step 3: Simplify the fraction (I did it one step):

$$\frac{150}{100} \overset{\div 50}{=} \frac{3}{2}$$

Answer = $\frac{3}{2}$

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

1) 43%

2) 20%

3) 96%

4) 2%

5) 53%

6) 68%

7) 87%

8) 42%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

9) 1%

10) 25%

11) 80%

12) 33%

13) 3%

14) 52%

15) 56%

16) 22%

17) 67%

18) 21%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

19) 97%

20) 60%

21) 39%

22) 50%

23) 90%

24) 9%

25) 30%

26) 4%

27) 38%

28) 76%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

29) 24%

30) 32%

31) 89%

32) 18%

33) 40%

34) 73%

35) 49%

36) 13%

37) 26%

38) 51%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

39) 54%

40) 11%

41) 29%

42) 8%

43) 48%

44) 82%

45) 78%

46) 64%

47) 19%

48) 57%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

49) 17%

50) 34%

51) 58%

52) 70%

53) 61%

54) 91%

55) 75%

56) 10%

57) 5%

58) 88%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

59) 69%

60) 63%

CHAPTER 3 - PERCENTAGES - I1

WRITE EACH AS A FRACTION.

Example: Calculate 25% of 80

$$25\% = \frac{25}{100}$$

$$\text{And } \frac{25}{100} \times 80 = \mathbf{20}$$

So 25% of 80 is **20**

Example: 15% of 200 apples are bad. How many apples are bad?

$$15\% = \frac{15}{100}$$

$$\text{And } \frac{15}{100} \times 200 = 15 \times \frac{200}{100}$$

$$= 15 \times 2$$

$$= \mathbf{30 \text{ apples}}$$

30 apples are bad

Example: if only 10 of the 200 apples are bad, what percent is that?

As a fraction, $\frac{10}{200} = 0.05$

As a percentage it is: $\frac{10}{200} \times 100 = 5\%$

5% of those apples are bad

CHAPTER 3 - PERCENTAGES - I1

EXTRA QUESTIONS –

Find the following percentage equivalents

50% of 36	20% of 45
25% of 68	32% of 50
5% of 60	2% of 150
14% of 40	70% of 250

CHAPTER 3 - PERCENTAGES - I1

EXTRA QUESTIONS –

Find the following percentage equivalents

15% of 880	45% of 88
80% of 56	92% of 40
130% of 10	200% of 40
400% of 25	155% of 140

CHAPTER 3 - PERCENTAGES - I1

EXTRA QUESTIONS –

Find the following percentage equivalents

125% of 56	320% of 10
110% of 350	120% of 150

CHAPTER 4 - ICAS

MATERIAL FOR THIS WEEK IS AT THE END OF THE BOOK.

CHAPTER 5 - BINARY NUMBERS

CHAPTER 5 - BINARY NUMBERS

BASES

The Decimal Number System is also called "Base 10", because it is based on the number 10, with these 10 symbols:

0, 1, 2, 3, 4, 5, 6, 7, 8 and 9

But notice something interesting: **there is no symbol for "ten"**. "10" is actually two symbols put together, a "1" and a "0":

> In decimal you count "0,1,2,3,4,5,6,7,8,9,..." but then you run out of symbols!
>
> So you add **1 on the left** and then **start again at 0**: 10,11,12, ...

Like this:

	0		Start at 0
•	1		Then 1
••	2		Then 2
	⋮		
•••••••••	9		Up to 9
••••••••••	10		Start back at 0 again, but add 1 on the left
•••••••••• •	11		
•••••••••• ••	12		
	⋮		
•••••••••• •••••••••	19		
•••••••••• ••••••••••	20		Start back at 0 again, but add 1 on the left
•••••••••• •••••••••• •	21		And so on!

CHAPTER 5 - BINARY NUMBERS

Binary Number System

A Binary Number is made up of only **0**s and **1**s.

110100

Example of a Binary Number

There is no 2, 3, 4, 5, 6, 7, 8 or 9 in Binary!

The word **binary** comes from "Bi-" meaning two. We see "bi-" in words such as "bicycle" (two wheels) or "binocular" (two eyes).

When you **say** a binary number, pronounce each digit (example, the binary number "101" is spoken as *"one zero one"*, or sometimes *"one-oh-one"*). This way people don't get confused with the decimal number.

A single binary digit (like "0" or "1") is called a "bit".

For example **11010** is five bits long.

The word **bit** is made up from the words "**b**inary dig**it**"

Binary numbers have many uses in mathematics and beyond.

CHAPTER 5 - BINARY NUMBERS

How do we count using binary?

It is just like counting in decimal except we reach 10 much sooner.

Binary		
0		We start at 0
1		Then 1
???		But then there is no symbol for 2 ... what do we do?

Well how do we count in Decimal?

0	Start at 0
...	Count 1,2,3,4,5,6,7,8, and then...
9	This is the **last digit** in Decimal
10	So we start back at 0 again, but add 1 on the left

The same thing is done in binary ...

	Binary		
	0		Start at 0
•	1		Then 1
••	10		Now start back at 0 again, but **add 1 on the left**
•••	11		1 more
••••	???		But NOW what ... ?

CHAPTER 5 - BINARY NUMBERS

What happens in Decimal?

99 When we run out of digits, we ...

100 ... start back at 0 again, but add 1 on the left

And that is what we do in binary ...

	0		Start at 0
•	1		Then 1
••	10		Start back at 0 again, but add 1 on the left
•••	11		
••••	100		start back at 0 again, and add one to the number on the left... ... but that number is already at 1 so it also goes back to 0 ... ... and 1 is added to the *next position* on the left
•••••	101		
••••••	110		
•••••••	111		
••••••••	1000		Start back at 0 again (for all 3 digits), add 1 on the left
•••••••••	1001		And so on!

CHAPTER 5 - BINARY NUMBERS

CONVERTING FROM BASE 10 TO BASE 2

CHAPTER 5 - BINARY NUMBERS

CONVERTING FROM BASE 2 TO BASE 10

CHAPTER 5 - BINARY NUMBERS

BASE OF 2 NUMBERS

USE THESE TO FORM A BINARY EQUIVALENT

$2^0 = 1$

$2^1 = 2$

$2^2 = 4$

$2^3 = 8$

$2^4 = 16$

$2^5 = 32$

$2^6 = 64$

$2^7 = 128$

$2^8 = 256$

$2^9 = 512$

$2^{10} = 1024$

CHAPTER 5 - BINARY NUMBERS

DECIMAL TO BINARY

Convert each decimal number to its binary equivalent.

1) 16_{10}

2) 43_{10}

3) 39_{10}

4) 27_{10}

5) 11_{10}

6) 32_{10}

7) 8_{10}

8) 14_{10}

9) 45_{10}

10) 5_{10}

CHAPTER 5 - BINARY NUMBERS

DECIMAL TO BINARY

Convert each decimal number to its binary equivalent.

1) 48_{10}

2) 26_{10}

3) 15_{10}

4) 9_{10}

5) 34_{10}

6) 41_{10}

7) 23_{10}

8) 37_{10}

9) 10_{10}

10) 29_{10}

CHAPTER 5 - BINARY NUMBERS

DECIMAL TO BINARY

Convert each decimal number to its binary equivalent.

1) 31_{10}

2) 12_{10}

3) 44_{10}

4) 30_{10}

5) 25_{10}

6) 6_{10}

7) 17_{10}

8) 49_{10}

9) 28_{10}

10) 33_{10}

CHAPTER 5 - BINARY NUMBERS

BINARY TO DECIMAL

Convert each binary number to its decimal equivalent.

1) 10110_2

2) 11110_2

3) 1111_2

4) 101011_2

5) 101001_2

6) 1001_2

7) 100110_2

8) 10001_2

9) 100_2

10) 11010_2

CHAPTER 5 - BINARY NUMBERS

BINARY TO DECIMAL

Convert each binary number to its decimal equivalent.

1) 111_2

2) 110010_2

3) 100010_2

4) 11100_2

5) 1011_2

6) 110_2

7) 101010_2

8) 100111_2

9) 11001_2

10) 101111_2

CHAPTER 5 - BINARY NUMBERS

DECIMAL AND BINARY - MCQ

1) The decimal equivalent of 10010_2 is

a) 20_{10} b) 18_{10} c) 21_{10} d) 16_{10}

2) Which of the following is the binary equivalent of 56_{10}?

a) 111000_2 b) 11101_2 c) 110011_2 d) 10001_2

3) The binary equivalent of 7_{10} is

a) 1010_2 b) 101_2 c) 1000_2 d) 111_2

4) Which of the following is the decimal equivalent of 1000000_2?

a) 67_{10} b) 59_{10} c) 64_{10} d) 55_{10}

5) The decimal equivalent of 11111_2 is

a) 31_{10} b) 28_{10} c) 30_{10} d) 29_{10}

6) Which of the following is the binary equivalent of 9_{10}?

a) 101_2 b) 1001_2 c) 110_2 d) 1010_2

7) The decimal equivalent of 10_2 is

a) 8_{10} b) 5_{10} c) 12_{10} d) 2_{10}

CHAPTER 5 - BINARY NUMBERS

DECIMAL AND BINARY - MCQ

1) The binary equivalent of 91_{10} is

a) 1101010_2 b) 11011_2 c) 101110_2 d) 1011011

2) Which of the following is the decimal equivalent of 1000_2?

a) 10_{10} b) 8_{10} c) 9_{10} d) 12_{10}

3) The decimal equivalent of 11101_2 is

a) 28_{10} b) 30_{10} c) 29_{10} d) 31_{10}

4) Which of the following is the binary equivalent of 86_{10}?

a) 1010110_2 b) 110011_2 c) 1011101_2 d) 101010_2

5) The binary equivalent of 57_{10} is

a) 111010_2 b) 10101_2 c) 111001_2 d) 11100_2

6) Which of the following is the decimal equivalent of 111110_2?

a) 62_{10} b) 59_{10} c) 68_{10} d) 57_{10}

7) The binary equivalent of 14_{10} is

a) 11010_2 b) 1110_2 c) 11110_2 d) 1101_2

CHAPTER 5 - BINARY NUMBERS

DECIMAL AND BINARY - MCQ

1) Which of the following is the decimal equivalent of 1111_2?

a) 14_{10} b) 7_{10} c) 15_{10} d) 10_{10}

2) The binary equivalent of 24_{10} is

a) 11000_2 b) 1101_2 c) 11011_2 d) 1010_2

3) Which of the following is the binary equivalent of 6_{10}?

a) 1001_2 b) 110_2 c) 1100_2 d) 111_2

4) The decimal equivalent of 100111_2 is

a) 42_{10} b) 36_{10} c) 41_{10} d) 39_{10}

5) Which of the following is the decimal equivalent of 1001001_2?

a) 68_{10} b) 73_{10} c) 75_{10} d) 64_{10}

6) The binary equivalent of 47_{10} is

a) 10110_2 b) 10011_2 c) 101111_2 d) 101011_2

7) Which of the following is the decimal equivalent of 1010010_2?

a) 82_{10} b) 90_{10} c) 84_{10} d) 92_{10}

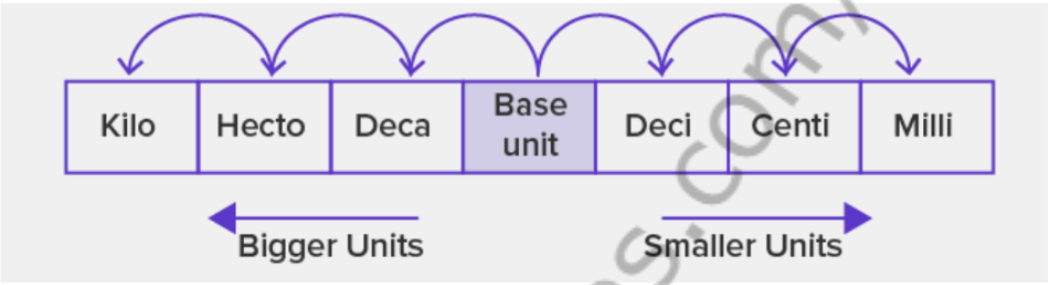
CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

WHAT IS METRIC SYSTEM?

The metric system is a system of measurement that uses the meter, liter, and gram as base units of length (distance), capacity (volume), and weight (mass) respectively.

To measure smaller or larger quantities, we use units derived from the metric units.



Kilo	Hecto	Deca	Base Unit	Deci	Centi	Milli
1000	100	10	1	1/10	1/100	1/1000

- The given figure shows the arrangement of the metric units, which are smaller or bigger than the base unit.

- The units to the right of the base unit are smaller than the base unit. As we move to the right, each unit is 10 times smaller or one- tenth of the unit to its left. So, a 'deci' means one-tenth of the base unit, 'centi' is one-tenth of 'deci' or one-hundredth of the base unit and 'milli' is one-tenth of 'centi' or one-thousandth of the base unit.

- The units to the left of the base unit are bigger than the base unit. As we move to the left, each unit is 10 times greater than the unit to its right. So, a 'deca' means ten times of the base unit, 'hecto' is ten times of 'deca' or hundred times of the base unit and 'kilo' is ten times of 'hecto' or thousand times of the base unit.

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

Now let's look at the units for length, weight (mass) and capacity(volume) in the metric system:

Length:

Millimeter (mm), Decimeter (dm), Centimeter (cm), Meter (m), and Kilometer (km) are used to measure how long or wide or tall an object is.

Examples include measuring the thickness or length of debit card, length of cloth, or distance between two cities.

Kilometer (km)	Hectometer (hm)	Decameter (dam)	Meter (m)	Decimeter (dm)	Centimeter (cm)	Millimeter (mm)
1000	100	10	1	1/10	1/100	1/1000

Weight:

Gram (g) and Kilogram(kg) are used to measure how heavy an object, using instruments.

Examples include measuring weight of fruits or, our own body weight.

Kilogram (kg)	Hectogram (hg)	Decagram (dag)	Gram (g)	Decigram (dg)	Centigram (cg)	Milligram (mg)
1000	100	10	1	1/10	1/100	1/1000

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

Capacity:

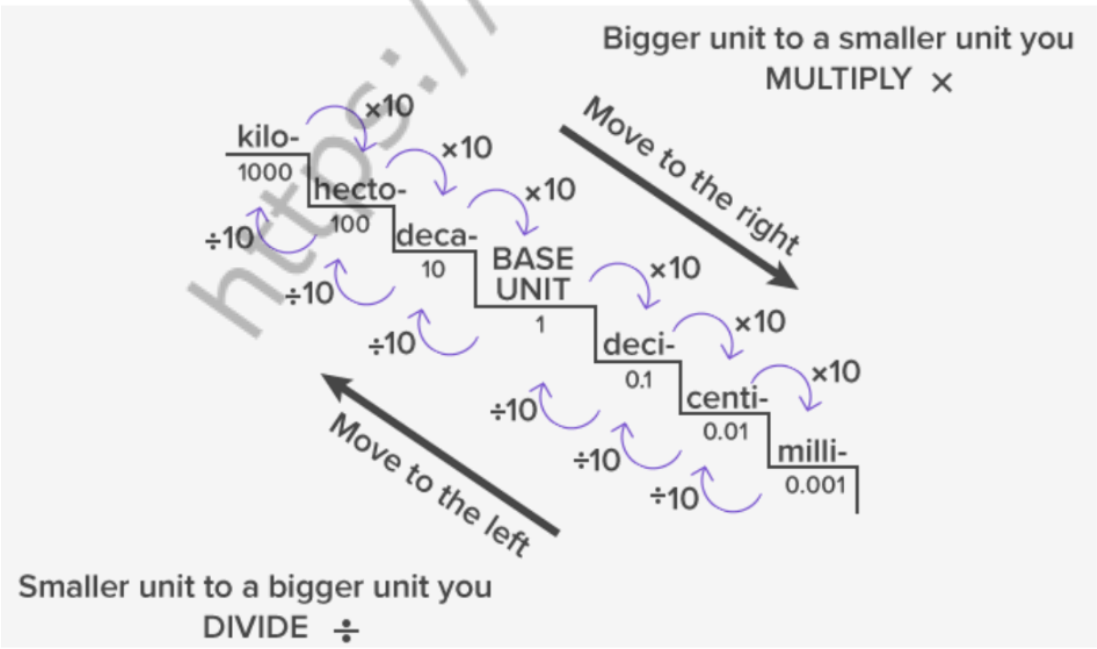
Millilitre (ml) and Litre (l) are used to measure how much quantity of liquid an object can hold.

Examples include measuring the amount of juice in a juice can, or amount of water of in a water tank.

Kiloliter (kl)	Hectoliter (hl)	Decaliter (dal)	Liter (l)	Deciliter (dl)	Centiliter (cl)	Milliliter (ml)
1000	100	10	1	1/10	1/100	1/1000

Metric conversions:

To convert a bigger unit to the smaller unit, we move left to write, we multiple by 10. Moving right to left, from smaller unit to bigger, we divide by 10.



CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

CONVERTING BETWEEN KILOMETERS AND METERS

Convert each measure from kilometers to meters.

1) 15 km = _____ m

2) 4 km = _____ m

3) 29 km = _____ m

4) 6.17 km = _____ m

5) 82.14 km = _____ m

6) 35 km = _____ m

7) 7 km = _____ m

8) 9.3 km = _____ m

Convert each measure from meters to kilometers.

1) 4,800 m = _____ km

2) 93 m = _____ km

3) 756 m = _____ km

4) 6,120 m = _____ km

5) 52 m = _____ km

6) 87,000 m = _____ km

7) 1,294 m = _____ km

8) 278 m = _____ km

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

CONVERTING BETWEEN KILOMETERS AND METERS

Convert each measure from kilometers to meters.

1) 8 km = _____ m

2) 1.37 km = _____ m

3) 56.98 km = _____ m

4) 74 km = _____ m

5) 49 km = _____ m

6) 2 km = _____ m

7) 8.2 km = _____ m

8) 6 km = _____ m

Convert each measure from meters to kilometers.

1) 81 m = _____ km

2) 38,000 m = _____ km

3) 43,000 m = _____ km

4) 9,200 m = _____ km

5) 187 m = _____ km

6) 64 m = _____ km

7) 247 m = _____ km

8) 97,000 m = _____ km

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

CONVERTING BETWEEN CENTIMETERS AND METERS

Convert each measure from centimeters to meters.

1) 2,500 cm = _____ m

2) 4,800 cm = _____ m

3) 8,630 cm = _____ m

4) 670 cm = _____ m

5) 3,800 cm = _____ m

6) 6,450 cm = _____ m

7) 960 cm = _____ m

8) 1,200 cm = _____ m

Convert each measure from meters to centimeters.

1) 5 m = _____ cm

2) 73 m = _____ cm

3) 26 m = _____ cm

4) 47.96 m = _____ cm

5) 17.26 m = _____ cm

6) 35.45 m = _____ cm

7) 84.32 m = _____ cm

8) 30 m = _____ cm

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

CONVERTING BETWEEN CENTIMETERS AND METERS

Convert each measure from centimeters to meters.

1) 7,450 cm = _____ m

2) 2,789 cm = _____ m

3) 9,000 cm = _____ m

4) 4,751 cm = _____ m

5) 5,843 cm = _____ m

6) 3,900 cm = _____ m

7) 125 cm = _____ m

8) 480 cm = _____ m

Convert each measure from meters to centimeters.

1) 24.3 m = _____ cm

2) 46 m = _____ cm

3) 32 m = _____ cm

4) 53.1 m = _____ cm

5) 74 m = _____ cm

6) 82 m = _____ cm

7) 9.47 m = _____ cm

8) 65 m = _____ cm

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

UNIT CONVERSION | MILLIMETERS AND CENTIMETERS

Convert each measure from millimeters to centimeters.

1) 359 mm = _____ cm

2) 247.9 mm = _____ cm

3) 13.21 mm = _____ cm

4) 47.25 mm = _____ cm

5) 745.2 mm = _____ cm

6) 8,740 mm = _____ cm

7) 478 mm = _____ cm

8) 590 mm = _____ cm

Convert each measure from centimeters to millimeters.

1) 65 cm = _____ mm

2) 90 cm = _____ mm

3) 15.2 cm = _____ mm

4) 49.25 cm = _____ mm

5) 84 cm = _____ mm

6) 30 cm = _____ mm

7) 31.86 cm = _____ mm

8) 36 cm = _____ mm

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

UNIT CONVERSION | MILLIMETERS AND CENTIMETERS

Convert each measure from millimeters to centimeters.

1) 180 mm = _____ cm

2) 70 mm = _____ cm

3) 49.23 mm = _____ cm

4) 630 mm = _____ cm

5) 980 mm = _____ cm

6) 785 mm = _____ cm

7) 260 mm = _____ cm

8) 412 mm = _____ cm

Convert each measure from centimeters to millimeters.

1) 87 cm = _____ mm

2) 56 cm = _____ mm

3) 36.9 cm = _____ mm

4) 640 cm = _____ mm

5) 11.9 cm = _____ mm

6) 987 cm = _____ mm

7) 5.2 cm = _____ mm

8) 23 cm = _____ mm

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

UNIT CONVERSION | MM, CM, M, AND KM

1) 18 mm = _____ cm

2) 3 m = _____ mm

3) 32.5 cm = _____ mm

4) 17.8 m = _____ cm

5) 6.3 km = _____ m

6) 5,989 cm = _____ m

7) 610 cm = _____ m

8) 234 mm = _____ cm

9) 4.9 m = _____ mm

10) 510 cm = _____ mm

11) 1,900 mm = _____ m

12) 7,692 m = _____ km

13) 3,210 m = _____ km

14) 96 m = _____ cm

15) 37 cm = _____ mm

16) 4.65 km = _____ m

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

UNIT CONVERSION | MM, CM, M, AND KM

1) 5,000 m = _____ km

2) 7,910 mm = _____ m

3) 200 cm = _____ m

4) 7.8 km = _____ m

5) 3,900 m = _____ km

6) 18.1 cm = _____ mm

7) 6.82 m = _____ mm

8) 1.45 km = _____ m

9) 380 mm = _____ cm

10) 5.6 m = _____ cm

11) 120 cm = _____ m

12) 3.6 km = _____ m

13) 8.5 m = _____ mm

14) 55.2 cm = _____ mm

15) 402 mm = _____ cm

16) 13.5 m = _____ cm

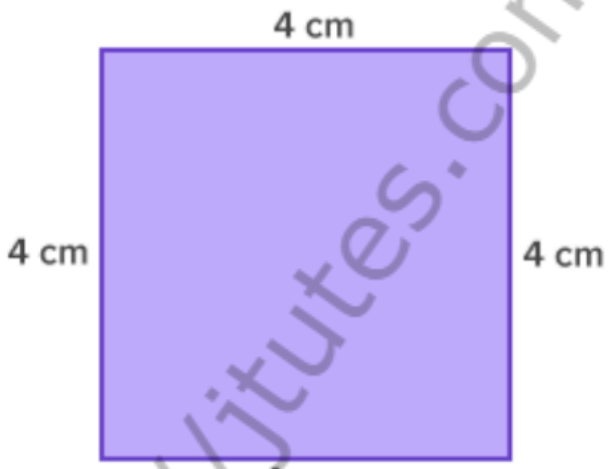
CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

WHAT IS PERIMETER?

In geometry, perimeter can be defined as the path or the boundary that surrounds a shape. It can also be defined as the length of the outline of a shape.

The perimeter of all polygons can be determined by adding the lengths of their sides/edges.

Regular Polygons



Perimeter = 4 + 4 + 4 + 4

= 16 cm

OR

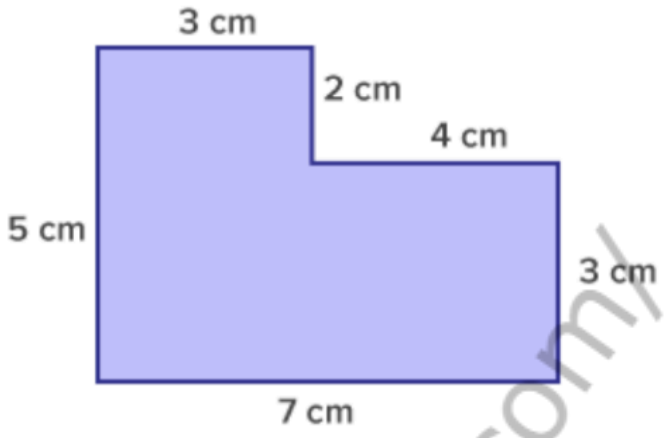
Perimeter of regular polygons =

number of sides x length of one side

= 4 x 4

= 16

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

Irregular Polygons

Perimeter of irregular polygons = 5 + 3 + 2 + 4 + 3 + 7 = 24 cm

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

Here's how the perimeter of some common shapes is calculated:

Polygon name :	Polygon Picture/Image :	Perimeter Formula :
Equilateral Triangle		P = 3 x a
Scalene Triangle		P = a + b + c
Square		P = 4 x a
Rectangle		P = 2 (a + b)
Quadrilateral		P = a + b + c + d
Regular Pentagon		P = 5 x a
Regular Hexagon		P = 6 x a
Regular Octagon		P = 8 x a
Regular N-gon	A regular n-gon with each side a units long	P = n x a , where ***n*** is the number of sides and ***a*** is the lenght of the sides.

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

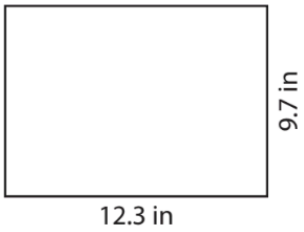
PERIMETER OF A RECTANGLE

Find the perimeter of each rectangle.

1)

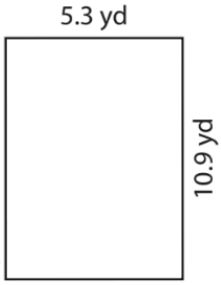
Perimeter = _____

2)



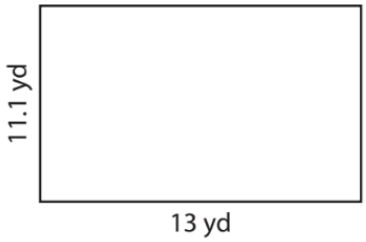
Perimeter = _____

3)



Perimeter = _____

4)

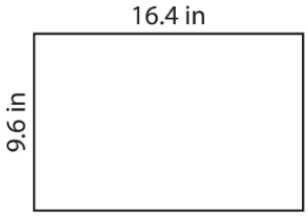


Perimeter = _____

5)

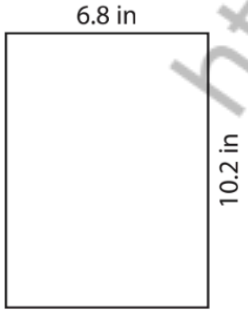
Perimeter = _____

6)



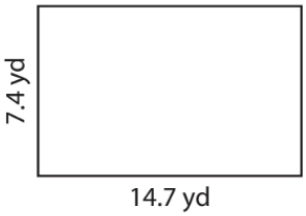
Perimeter = _____

7)



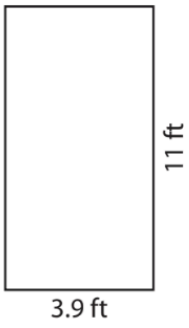
Perimeter = _____

8)



Perimeter = _____

9)



Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

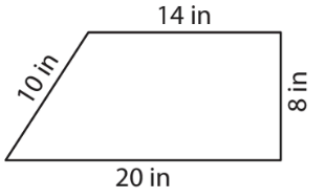
PERIMETER OF A QUADRILATERAL

Find the perimeter of each quadrilateral.

1)

Perimeter = _____

2)

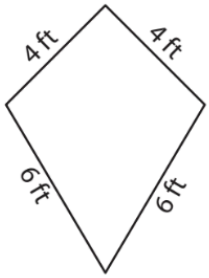


Perimeter = _____

3)

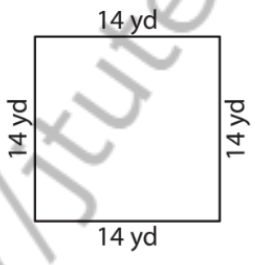
Perimeter = _____

4)



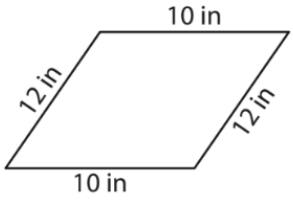
Perimeter = _____

5)



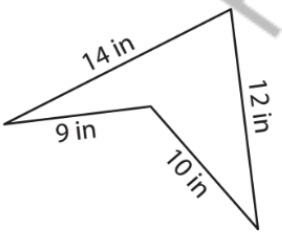
Perimeter = _____

6)



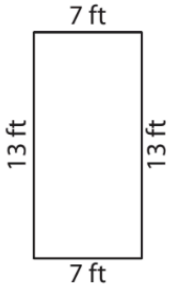
Perimeter = _____

7)



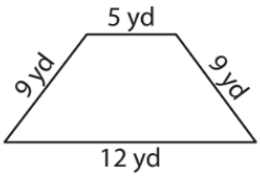
Perimeter = _____

8)



Perimeter = _____

9)



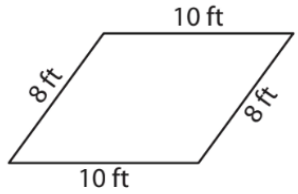
Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF A QUADRILATERAL

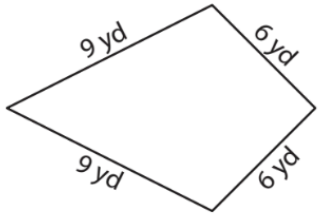
Find the perimeter of each quadrilateral.

1)



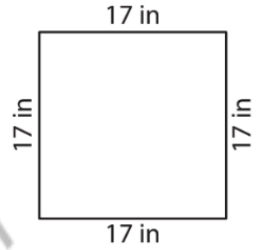
Perimeter = _____

2)



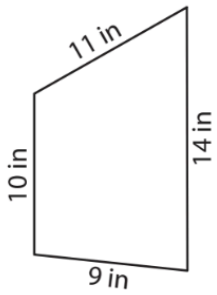
Perimeter = _____

3)



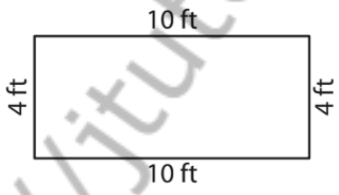
Perimeter = _____

4)



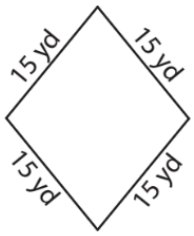
Perimeter = _____

5)



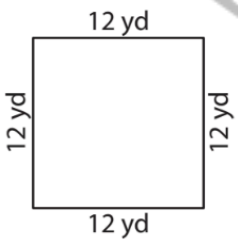
Perimeter = _____

6)



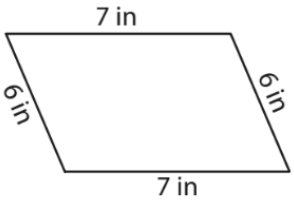
Perimeter = _____

7)



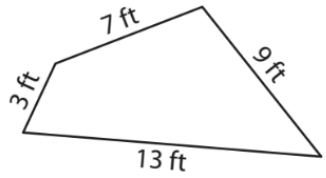
Perimeter = _____

8)



Perimeter = _____

9)



Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

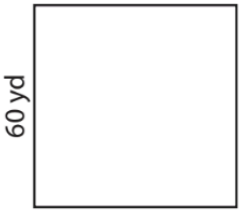
PERIMETER OF A SQUARE

Find the perimeter of each square.

1)

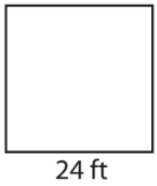
Perimeter = _____

2)



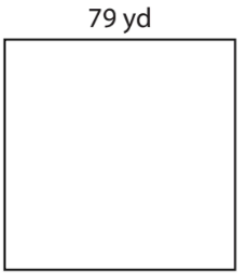
Perimeter = _____

3)



Perimeter = _____

4)

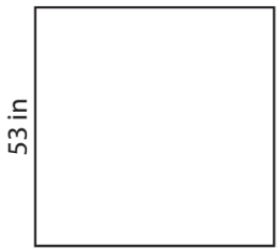


Perimeter = _____

5)

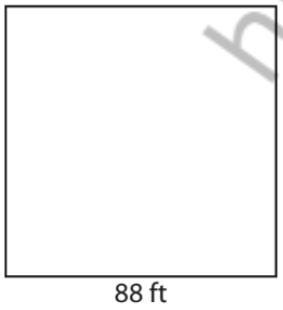
Perimeter = _____

6)



Perimeter = _____

7)

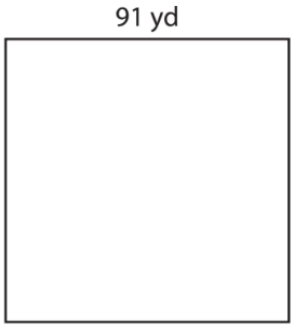


Perimeter = _____

8)

Perimeter = _____

9)



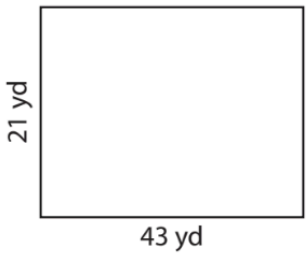
Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF A RECTANGLE

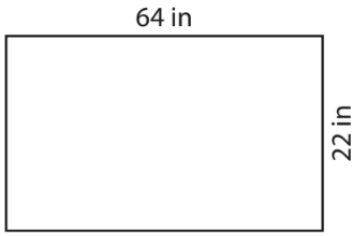
Find the perimeter of each rectangle.

1)



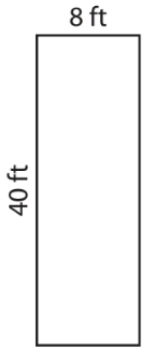
Perimeter = _____

2)



Perimeter = _____

3)



Perimeter = _____

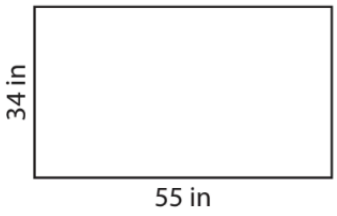
4)

Perimeter = _____

5)

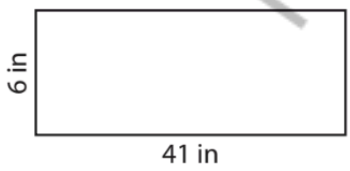
Perimeter = _____

6)



Perimeter = _____

7)



Perimeter = _____

8)

Perimeter = _____

9)

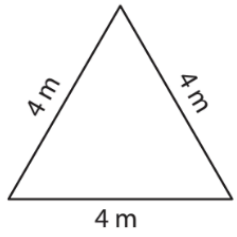
Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF A TRIANGLE

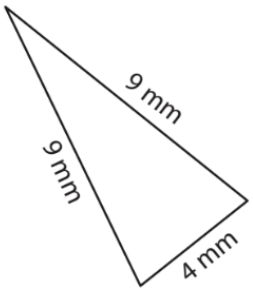
Find the perimeter of each triangle.

1)



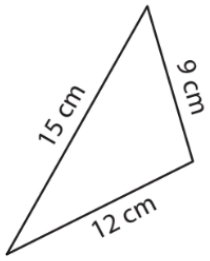
Perimeter = _____

2)



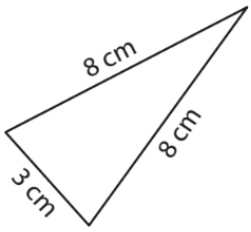
Perimeter = _____

3)



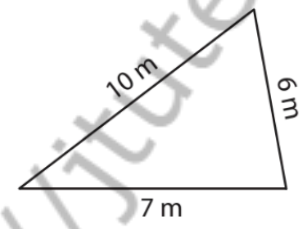
Perimeter = _____

4)



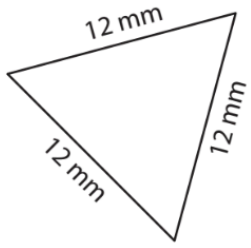
Perimeter = _____

5)



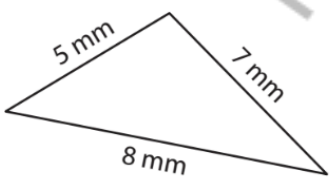
Perimeter = _____

6)



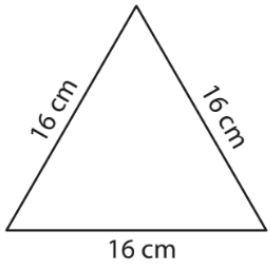
Perimeter = _____

7)



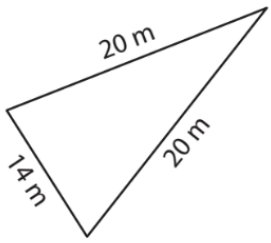
Perimeter = _____

8)



Perimeter = _____

9)



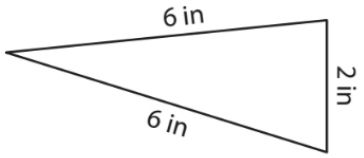
Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF A TRIANGLE

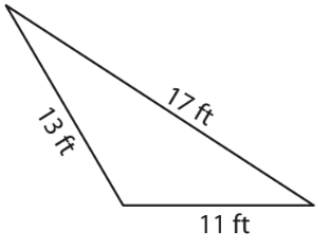
Find the perimeter of each triangle.

1)



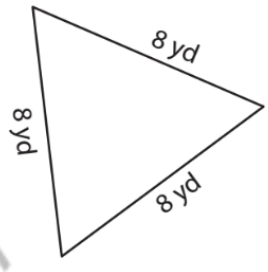
Perimeter = _____

2)



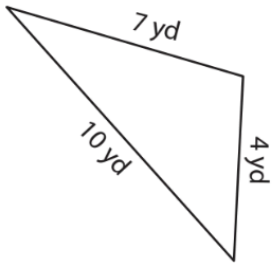
Perimeter = _____

3)



Perimeter = _____

4)

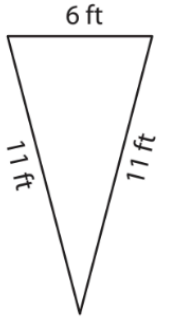


Perimeter = _____

5)

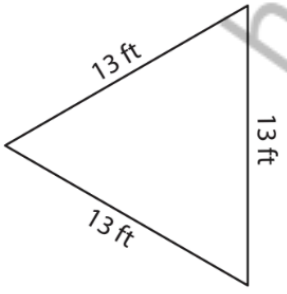
Perimeter = _____

6)



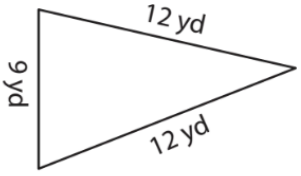
Perimeter = _____

7)



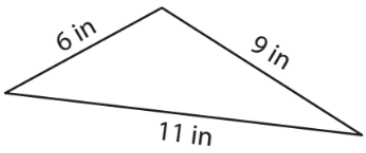
Perimeter = _____

8)



Perimeter = _____

9)

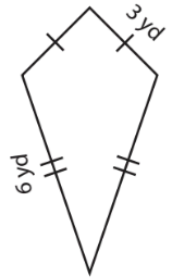


Perimeter = _____

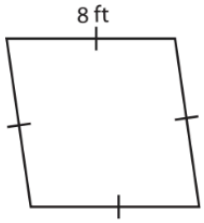
CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF A QUADRILATERAL

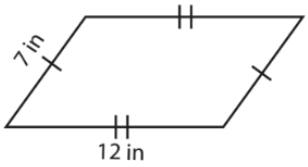
Find the perimeter of each quadrilateral.

1) 

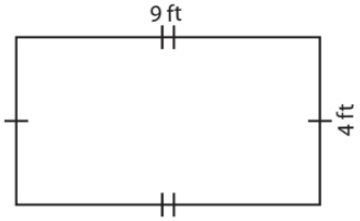
Perimeter = _____

2) 

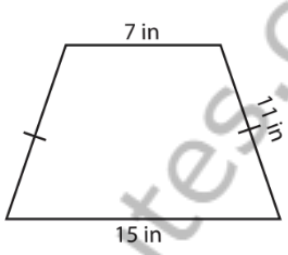
Perimeter = _____

3) 

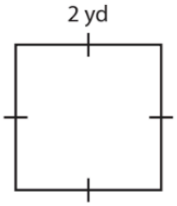
Perimeter = _____

4) 

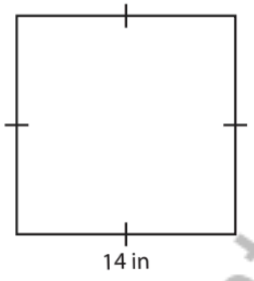
Perimeter = _____

5) 

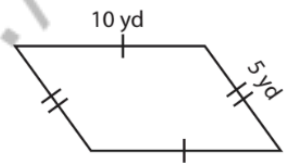
Perimeter = _____

6) 

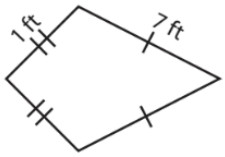
Perimeter = _____

7) 

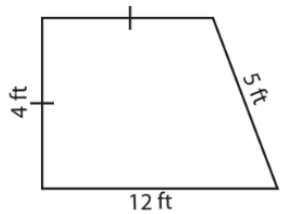
Perimeter = _____

8) 

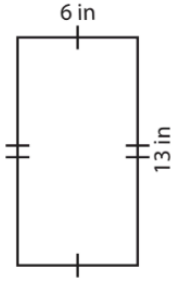
Perimeter = _____

9) 

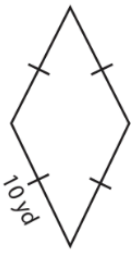
Perimeter = _____

10) 

Perimeter = _____

11) 

Perimeter = _____

12) 

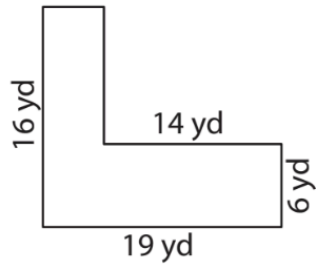
Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF RECTILINEAR SHAPES

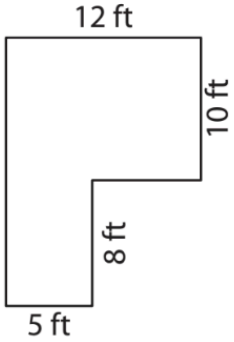
Find the perimeter of each shape.

1)



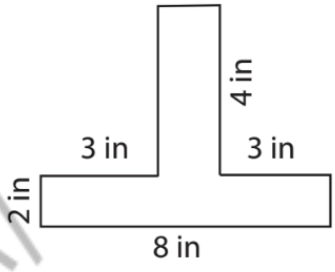
Perimeter = _____

2)



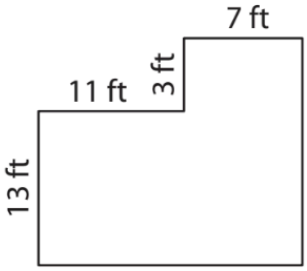
Perimeter = _____

3)



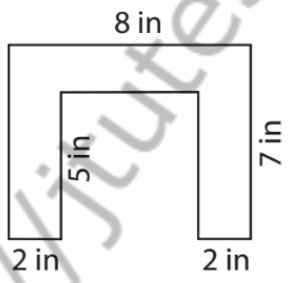
Perimeter = _____

4)



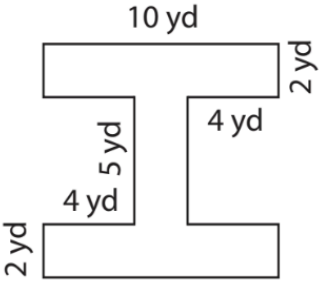
Perimeter = _____

5)



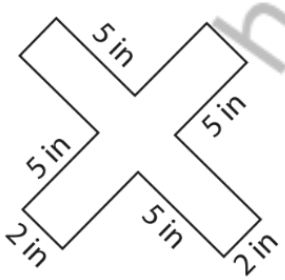
Perimeter = _____

6)



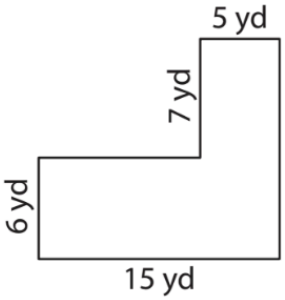
Perimeter = _____

7)



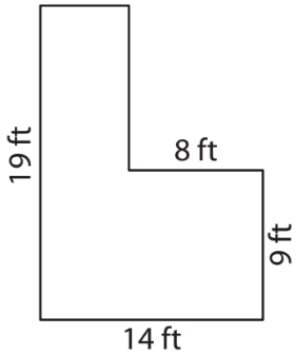
Perimeter = _____

8)



Perimeter = _____

9)



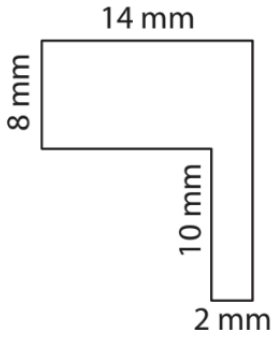
Perimeter = _____

CHAPTER 6 - UNITS OF MEASUREMENT & PERIMETER

PERIMETER OF RECTILINEAR SHAPES

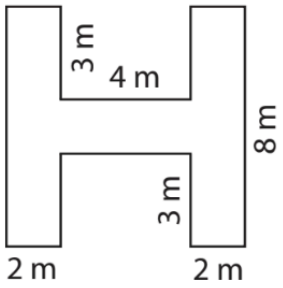
Find the perimeter of each shape.

1)



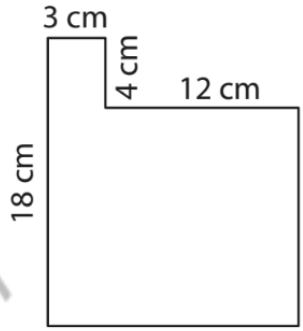
Perimeter = _____

2)



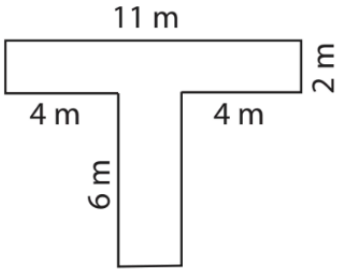
Perimeter = _____

3)



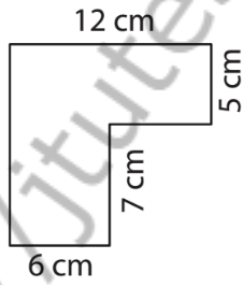
Perimeter = _____

4)



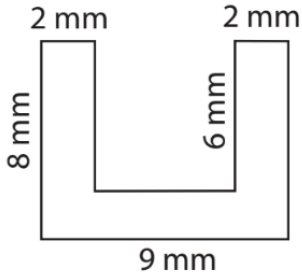
Perimeter = _____

5)



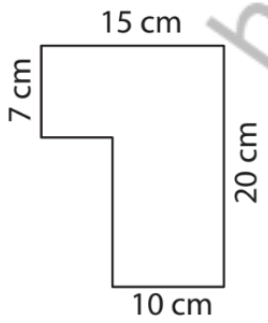
Perimeter = _____

6)



Perimeter = _____

7)



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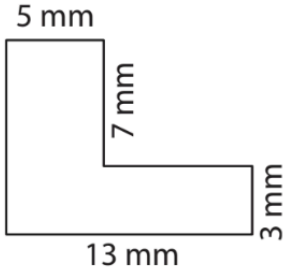
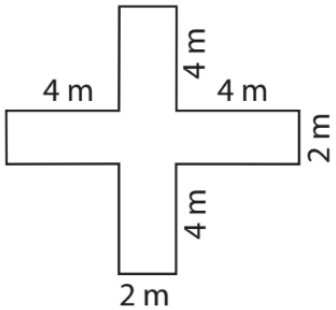
8)



Perimeter = _____

9)



Perimeter = _____

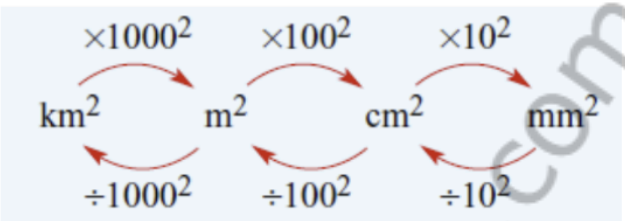
CHAPTER 7 -
AREA & VOLUME

CHAPTER 7 - AREA & VOLUME

Area

The area of a two-dimensional shape is a measure of the space enclosed within its boundaries.

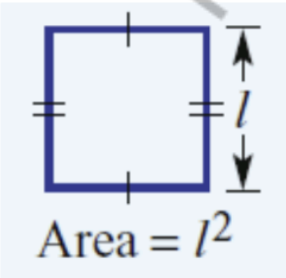
Conversion of area units



$$10^2 = 10 \times 10 = 100$$
$$100^2 = 100 \times 100 = 10\,000$$
$$1000^2 = 1000 \times 1000 = 1\,000\,000$$

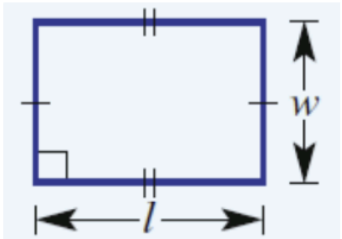
Formulas for Area

SQUARE



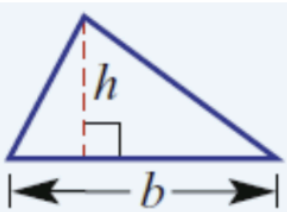
$\text{Area} = l^2$

RECTANGLE



$\text{Area} = l \times w$

TRIANGLE

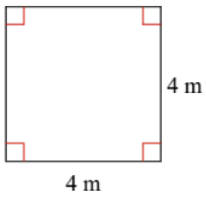


$\text{Area} = \frac{1}{2} b \times h$

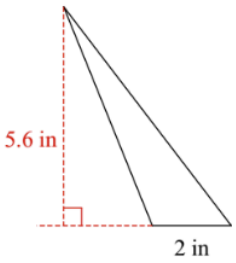
CHAPTER 7 - AREA & VOLUME

FIND THE AREA OF EACH.

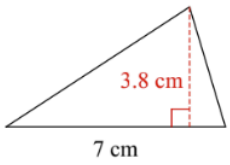
1)



2)

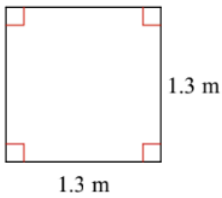


3)

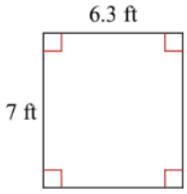


4)

5)



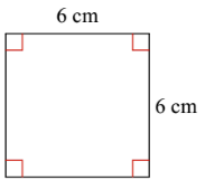
6)



CHAPTER 7 - AREA & VOLUME

FIND THE AREA OF EACH.

7)



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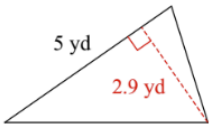

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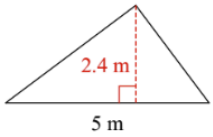

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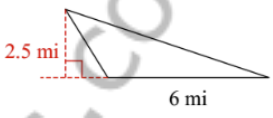

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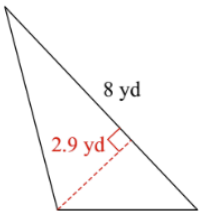

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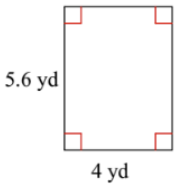

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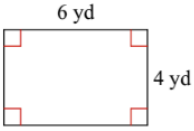

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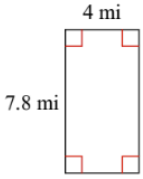
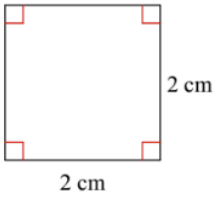


CHAPTER 7 - AREA & VOLUME

FIND THE AREA OF EACH.

15)



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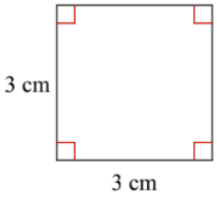
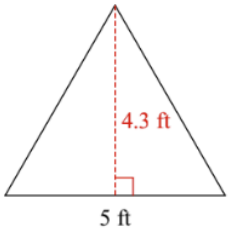
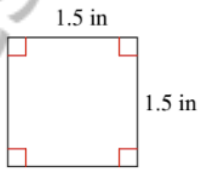


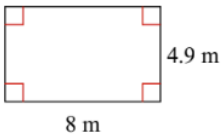
17)



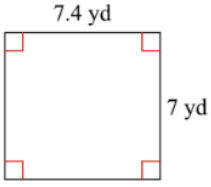
18)



19)



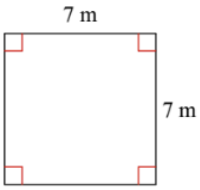
20)



CHAPTER 7 - AREA & VOLUME

FIND THE AREA OF EACH.

21)



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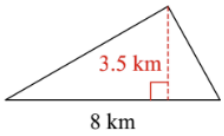
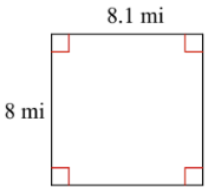


23)



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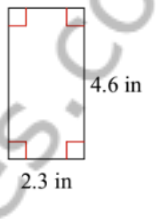

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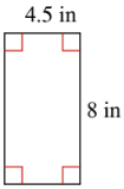
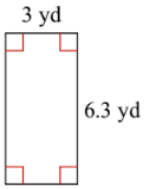
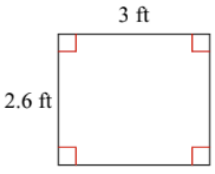


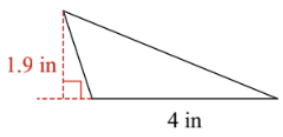
26)



27)



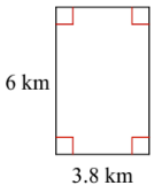
28)



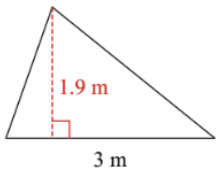
CHAPTER 7 - AREA & VOLUME

FIND THE AREA OF EACH.

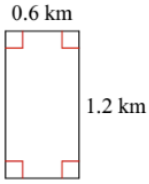
29)



30)



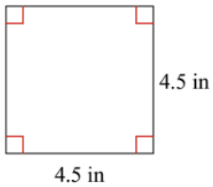
31)



32)

33)

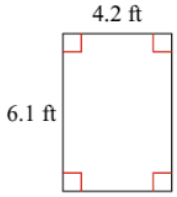
34)



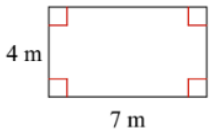
CHAPTER 7 - AREA & VOLUME

FIND THE AREA OF EACH.

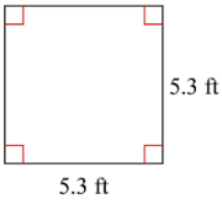
35)



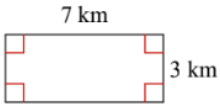
36)



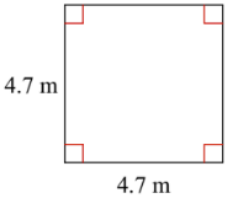
37)



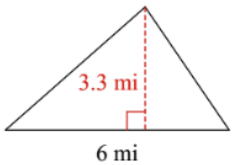
38)



39)



40)



CHAPTER 7 - AREA & VOLUME

Area v/s Volume

Area and Volume can create considerable confusion in understanding the terms. Although they seem to be of like a similar quantity of measurement, in reality, they are very much different from each other. Let us understand the underlying meaning of both terms.

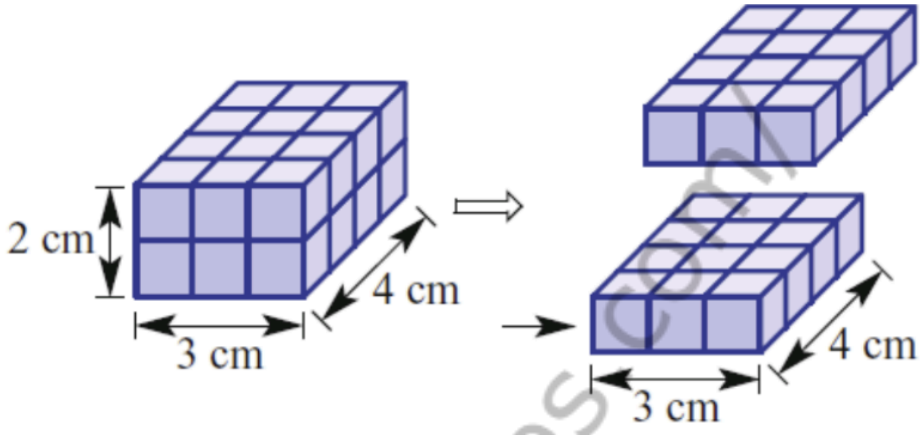
What is the difference between Area and Volume?

Area	Volume
It is to be noted that area is always defined in two dimensions or object in a plane.	The volume is always defined for a three-dimensional object.
The area is the amount of space occupied by a two-dimensional flat object in a plane.	Volume is defined as the space occupied by the three-dimensional object.
It is always measured in square units.	It is always measured in cubic units.
It is measured in 2 dimension	It is measured in 3 dimension

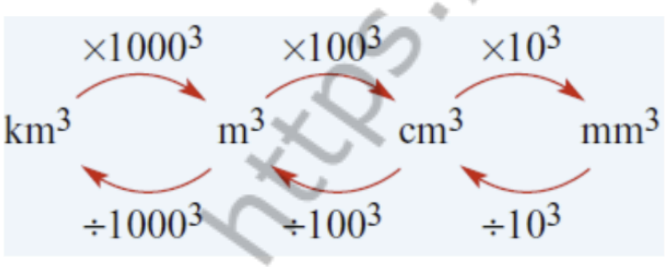
CHAPTER 7 - AREA & VOLUME

Volume

Volume is the number of cubic units contained within a three-dimensional object.



Common metric units for **volume** include **cubic kilometres** (km^3), **cubic metres** (m^3), **cubic centimetres** (cm^3) and **cubic millimetres** (mm^3).

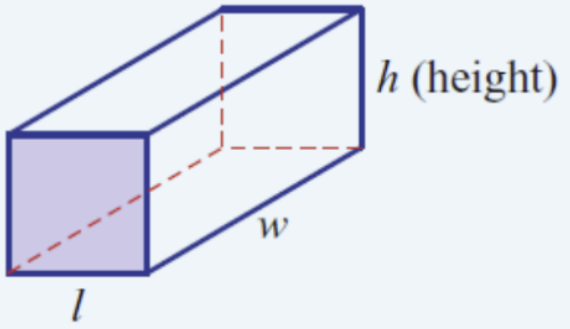


$1000^3 = 1\,000\,000\,000$
$100^3 = 1\,000\,000$
$10^3 = 1000$

CHAPTER 7 - AREA & VOLUME

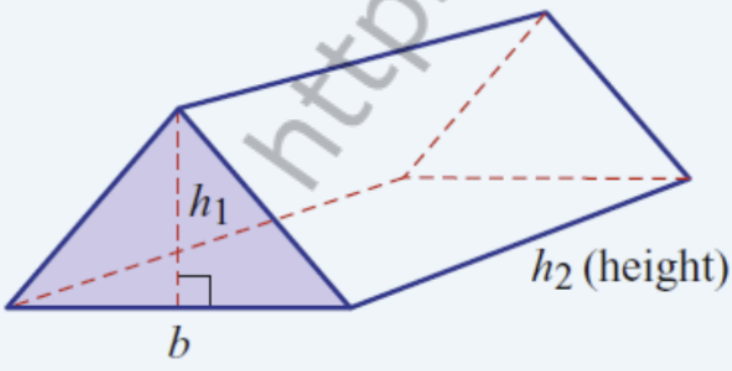
Volume Formulas:

Rectangular prism (cuboid)



$$\begin{aligned} V &= A \times h \\ &= l \times w \times h \\ &= lwh \end{aligned}$$

Triangular prism

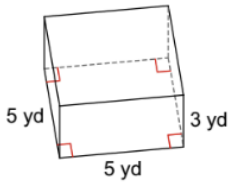


$$\begin{aligned} V &= A \times h \\ &= (\tfrac{1}{2} \times b \times h_1) \times h_2 \\ &= (\tfrac{1}{2} b h_1) \times h_2 \end{aligned}$$

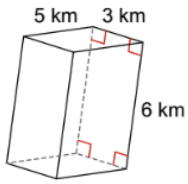
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

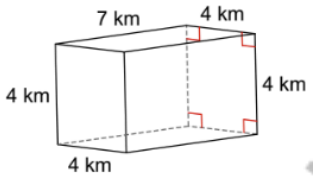
1)



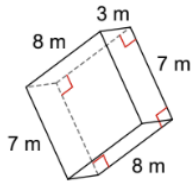
2)



3)



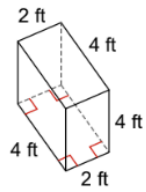
4)



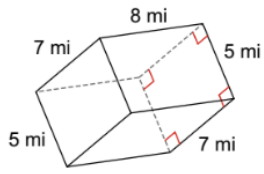
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

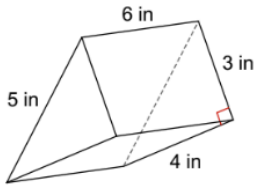
5)



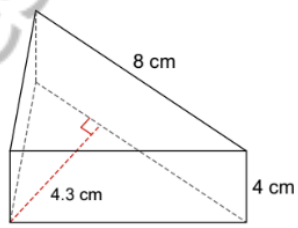
6)



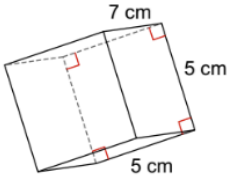
7)



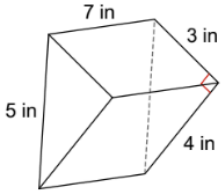
8)



9)



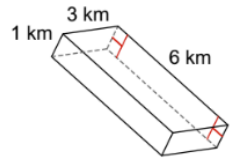
10)



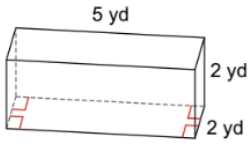
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

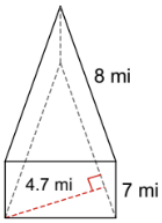
11)



12)



13)



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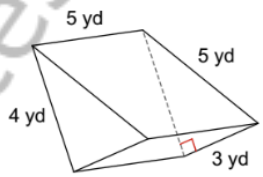

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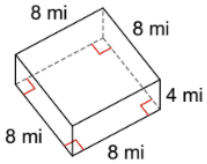
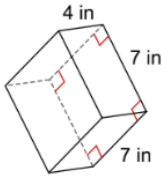


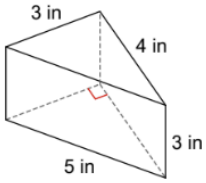
16)



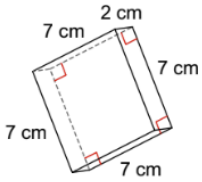
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

17)



18)



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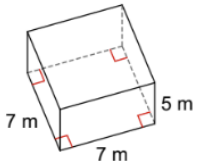

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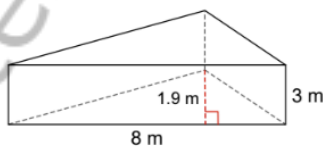
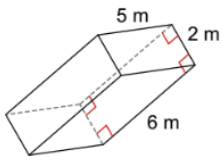
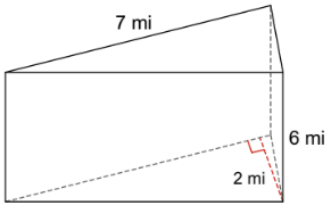


21)



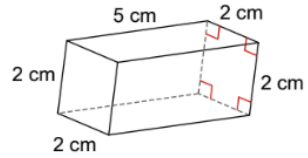
22)



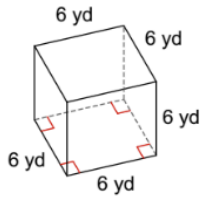
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

23)



24)



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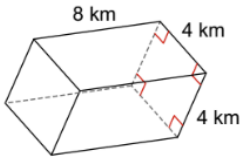
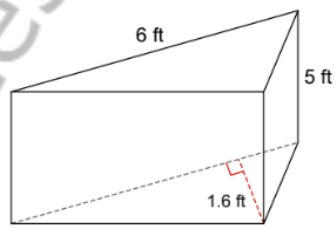
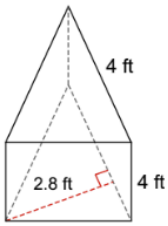


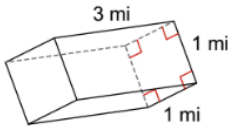
26)



27)



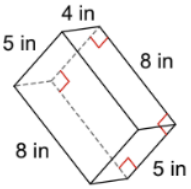
28)



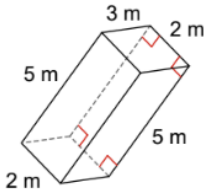
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

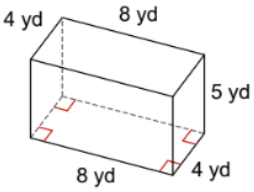
29)



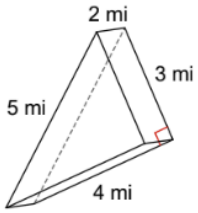
30)



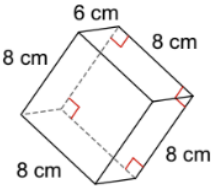
31)



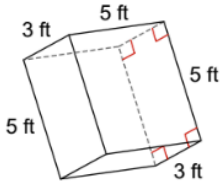
32)



33)



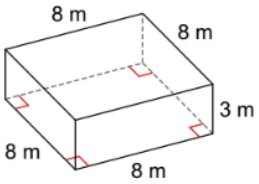
34)



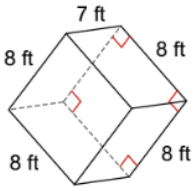
CHAPTER 7 - AREA & VOLUME

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

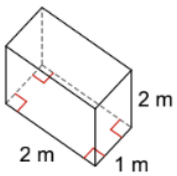
35)



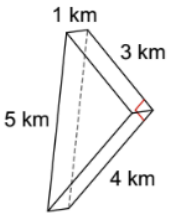
36)



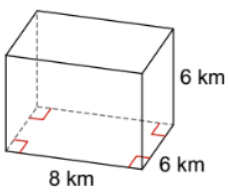
37)



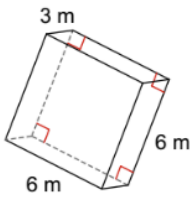
38)



39)



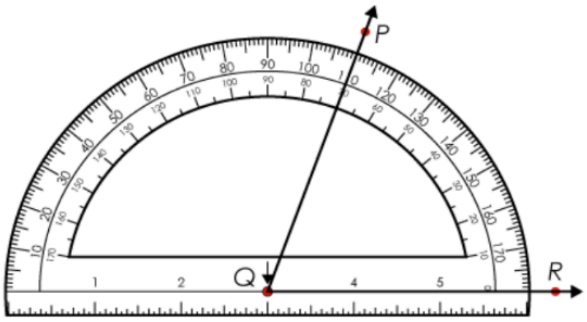
40)



CHAPTER 8 - MEASURING ANGLES

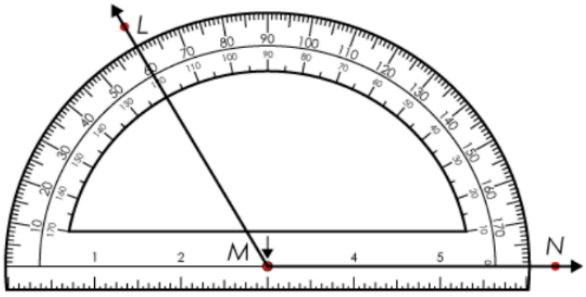
CHAPTER 8 - MEASURING ANGLES

USING A PROTRACTOR

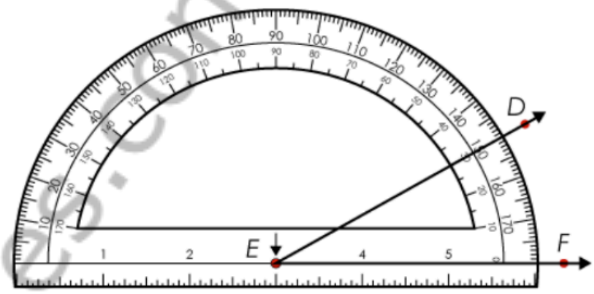


The protractor's arrow and pen hole is placed on the angle's vertex. The 0° line is placed over one side of the angle. Read the measure where the other leg of the angle intersects the protractor.

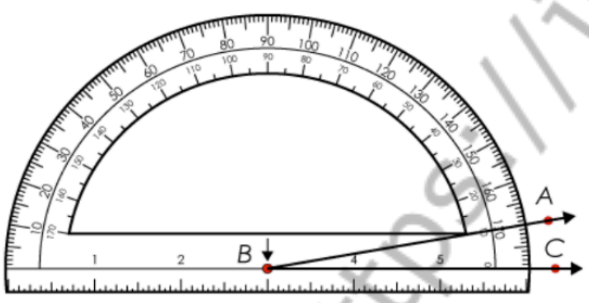
$\angle PQR$ measures 70°.



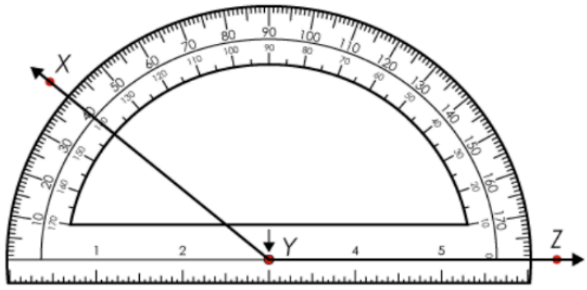
$\angle LMN =$ _____



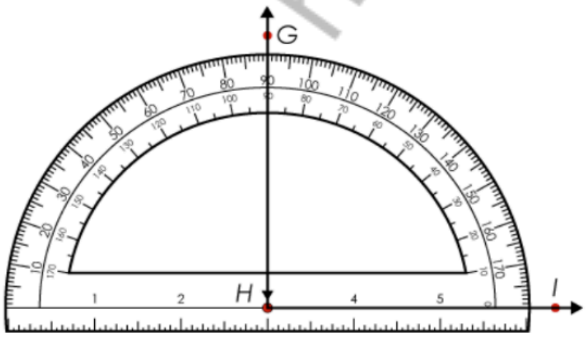
$\angle DEF =$ _____



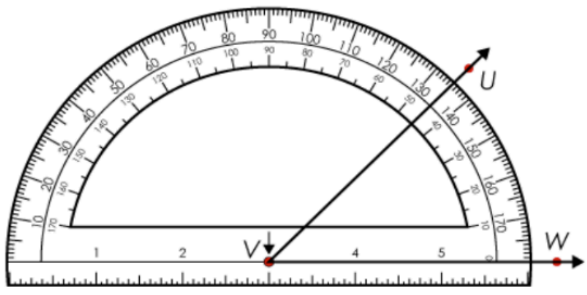
$\angle ABC =$ _____



$\angle XYZ =$ _____



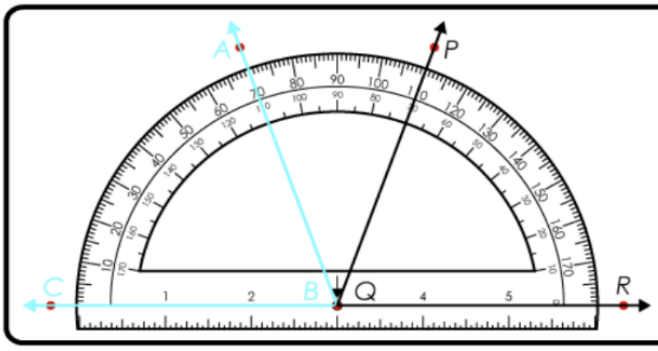
$\angle GHI =$ _____



$\angle UVW =$ _____

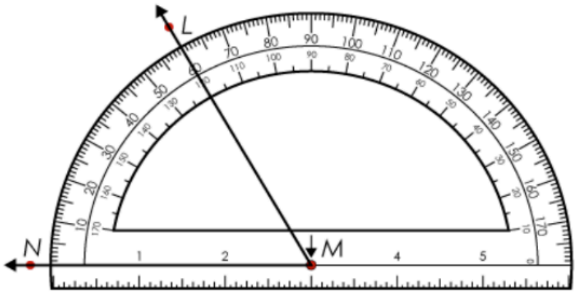
CHAPTER 8 - MEASURING ANGLES

USING A PROTRACTOR

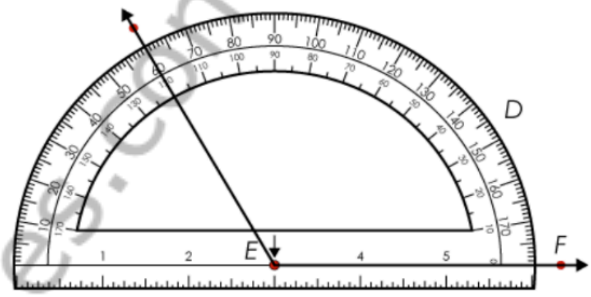


The protractor's arrow and pen hole is placed on the angle's vertex. The 0° line is placed over one side of the angle. If the 0° line is used on the left of the pen hole, use the outside edge for the measure. If the 0° line is used on the right of the pen hole, use the the inside edge. Read the measure where the other leg of the angle intersects the protractor.

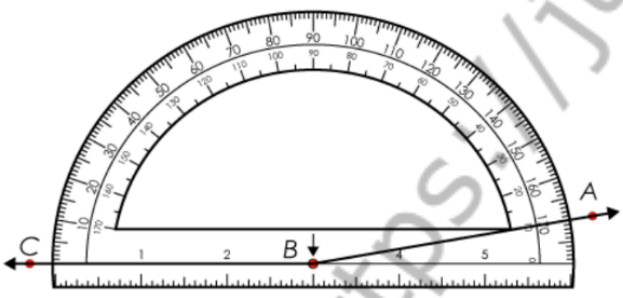
$\angle ABC$ and $\angle PQR$ both measure 70°.



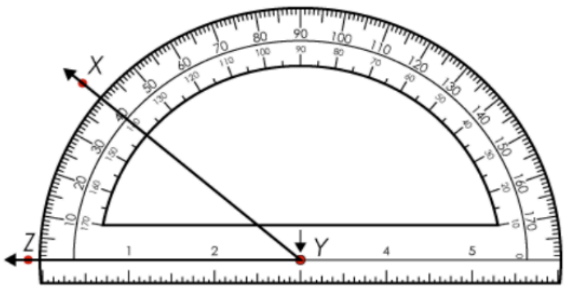
$\angle LMN =$ _____



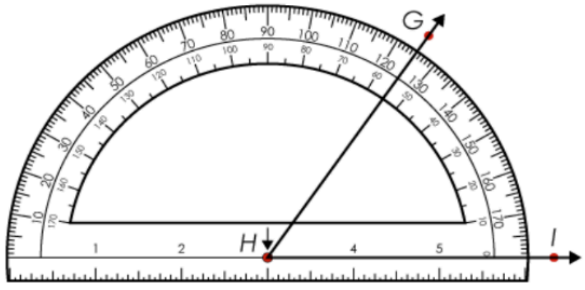
$\angle DEF =$ _____



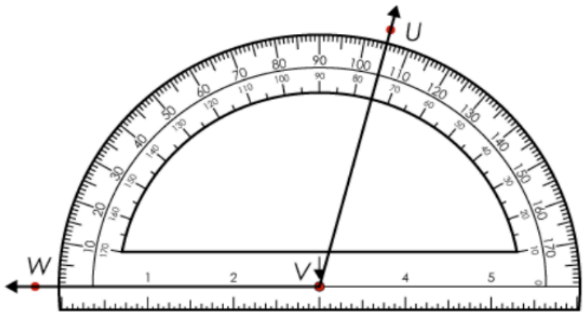
$\angle ABC =$ _____



$\angle XYZ =$ _____



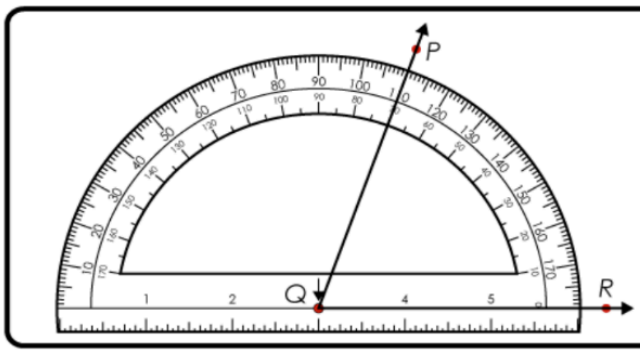
$\angle GHI =$ _____



$\angle UVW =$ _____

CHAPTER 8 - MEASURING ANGLES

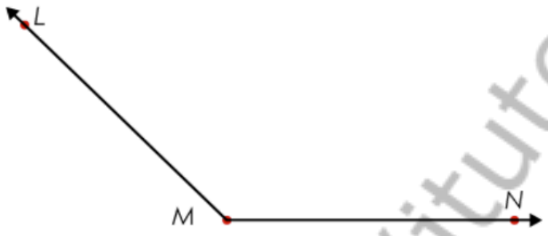
MEASURING WITH A PROTRACTOR



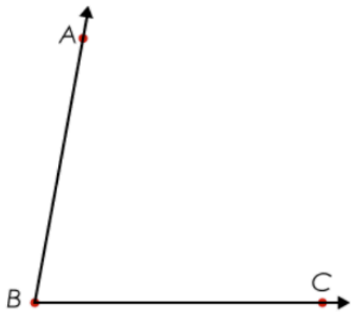
The protractor's arrow and pen hole is placed on the angle's vertex. The 0° line is placed over one side of the angle. Read the measure where the other leg of the angle intersects the protractor.

$\angle PQR$ measures 70°.

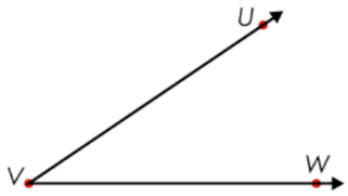
Using a protractor, measure the angles.



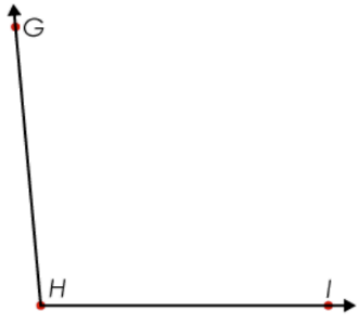
$\angle LMN =$ _____



$\angle ABC =$ _____



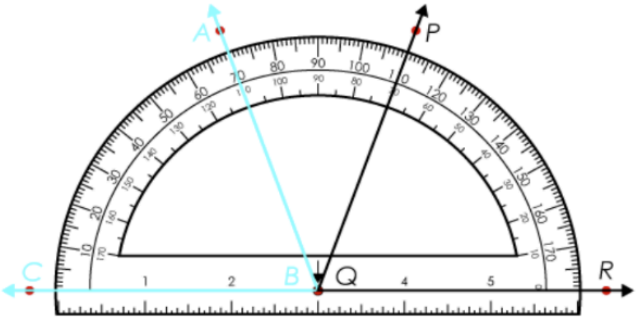
$\angle UVW =$ _____



$\angle GHI =$ _____

CHAPTER 8 - MEASURING ANGLES

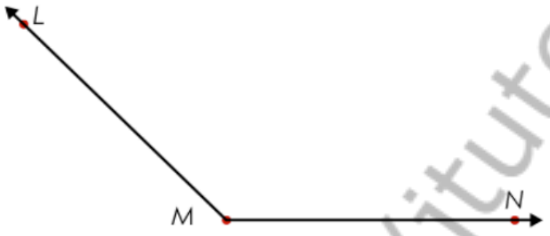
MEASURING WITH A PROTRACTOR



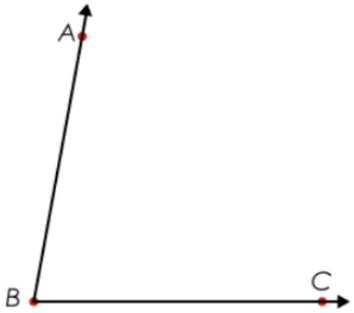
The protractor's arrow and pen hole is placed on the angle's vertex. The 0° line is placed over one side of the angle. If the 0° line is used on the left of the pen hole, use the outside edge for the measure. If the 0° line is used on the right of the pen hole, use the the inside edge. Read the measure where the other leg of the angle intersects the protractor.

$\angle ABC$ and $\angle PQR$ both measure 70°.

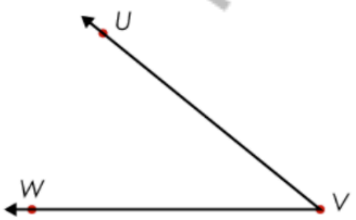
Using a protractor, measure the angles.



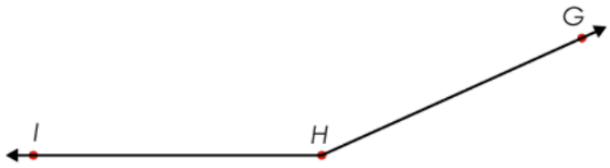
$\angle LMN =$ _____



$\angle ABC =$ _____



$\angle UVW =$ _____

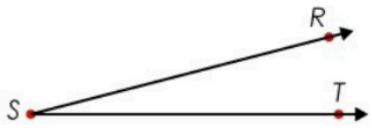


$\angle GHI =$ _____

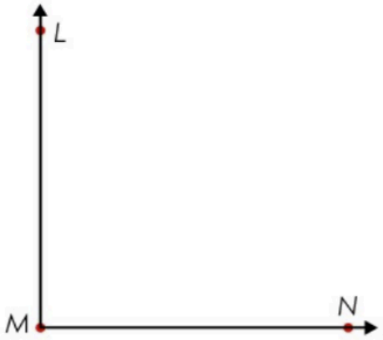
CHAPTER 8 - MEASURING ANGLES

Using a protractor, measure the angles.

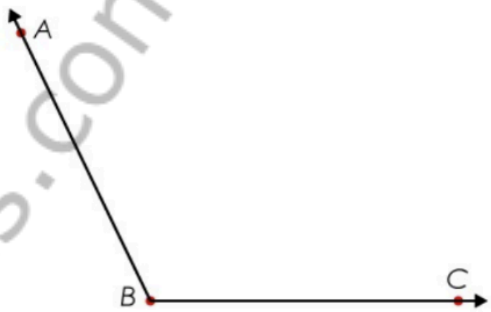
∠DEF = _____



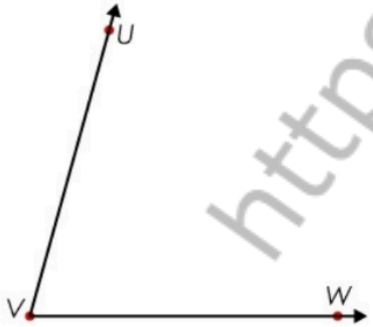
∠RST = _____



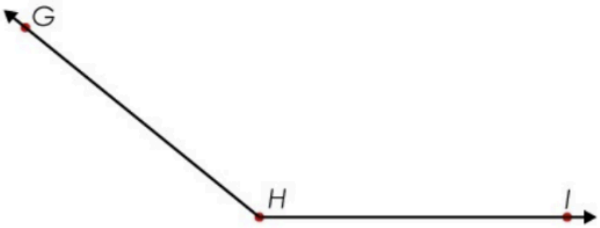
∠LMN = _____



∠ABC = _____



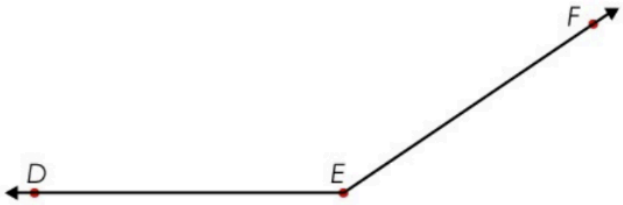
∠UVW = _____



∠GHI = _____

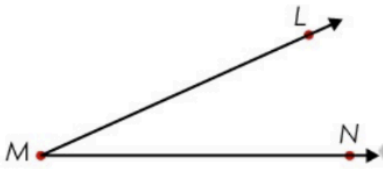
CHAPTER 8 - MEASURING ANGLES

Using a protractor, measure the angles.

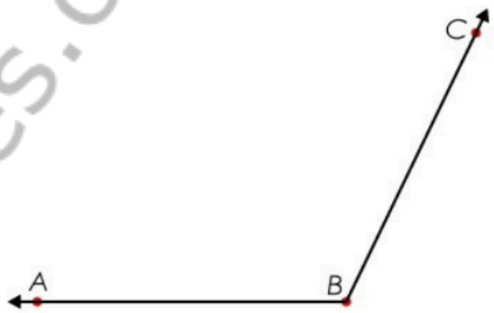


∠DEF = _____

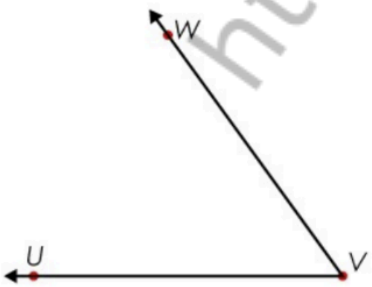
∠RST = _____



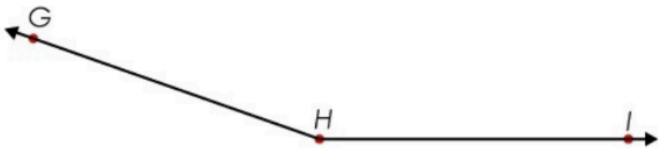
∠LMN = _____



∠ABC = _____



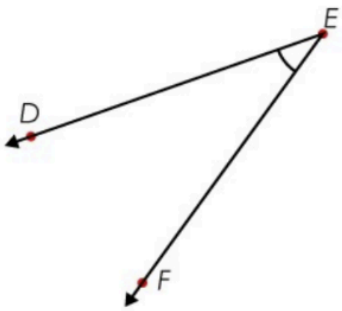
∠UVW = _____



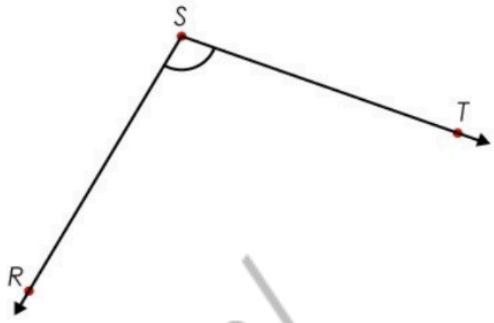
∠GHI = _____

CHAPTER 8 - MEASURING ANGLES

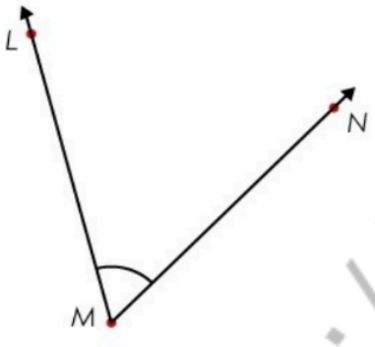
Using a protractor, measure the angles.



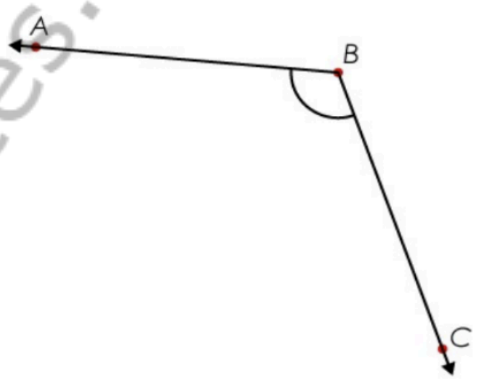
∠DEF = _____



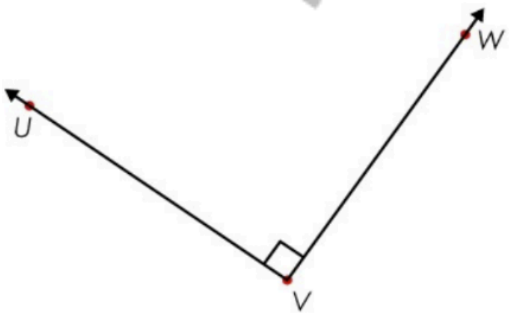
∠RST = _____



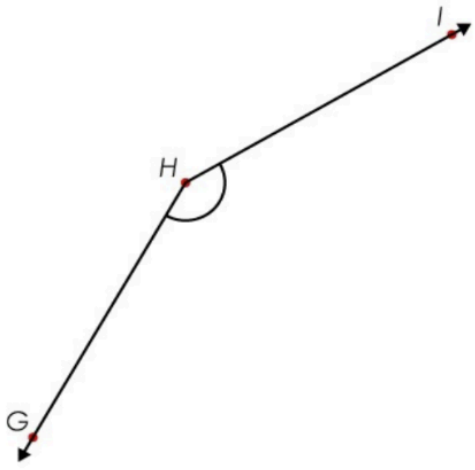
∠LMN = _____



∠ABC = _____



∠UVW = _____

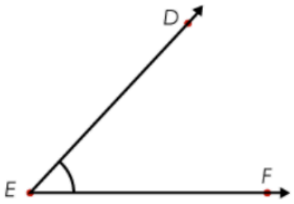


∠GHI = _____

CHAPTER 8 - MEASURING ANGLES

ANGLES

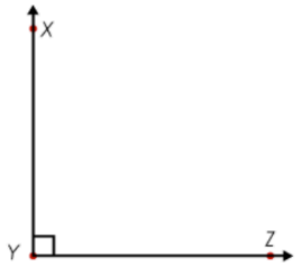
Identify each type of angle shown and estimate the angle's measurement. Circle the correct choice of each.



(acute) obtuse right

90° (45°) 120°

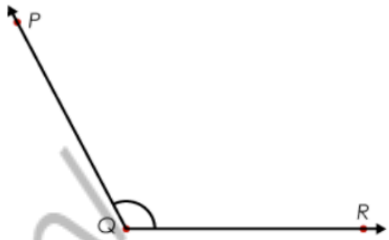
angle name= ∠DEF



acute obtuse right

90° 80° 100°

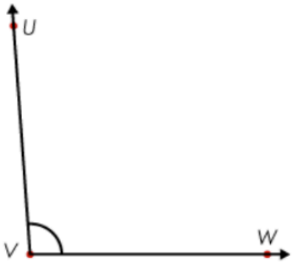
angle name=_____



acute obtuse right

90° 45° 120°

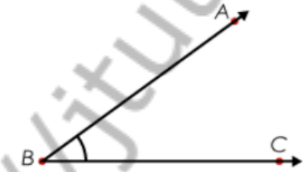
angle name=_____



acute obtuse right

80° 95° 110°

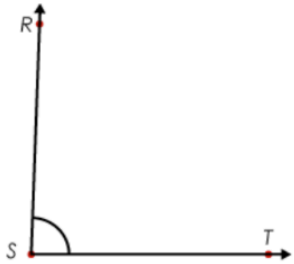
angle name=_____



acute obtuse right

90° 35° 145°

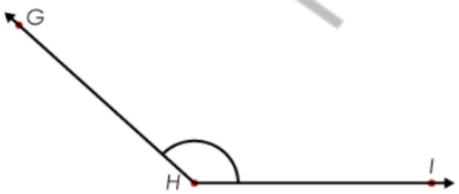
angle name=_____



acute obtuse right

85° 90° 95°

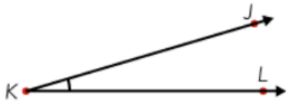
angle name=_____



acute obtuse right

100° 140° 120°

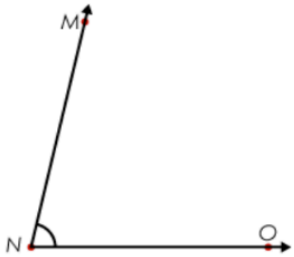
angle name=_____



acute obtuse right

45° 30° 15°

angle name=_____



acute obtuse right

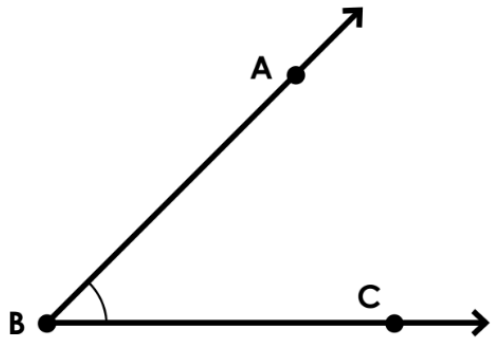
80° 90° 70°

angle name=_____

CHAPTER 8 - MEASURING ANGLES

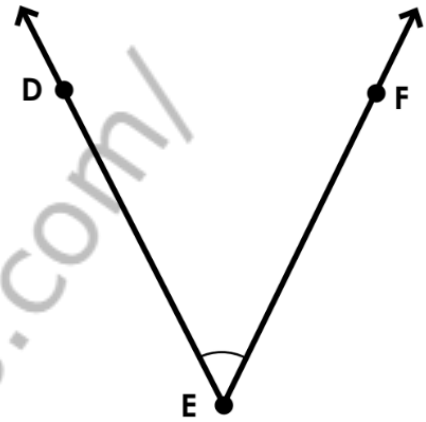
MEASURING ANGLES

Use a protractor to measure ∠**ABC**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



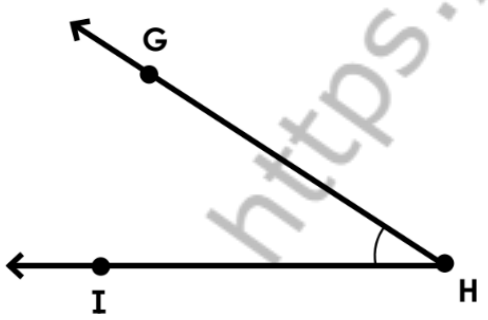
1.

Use a protractor to measure ∠**DEF**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



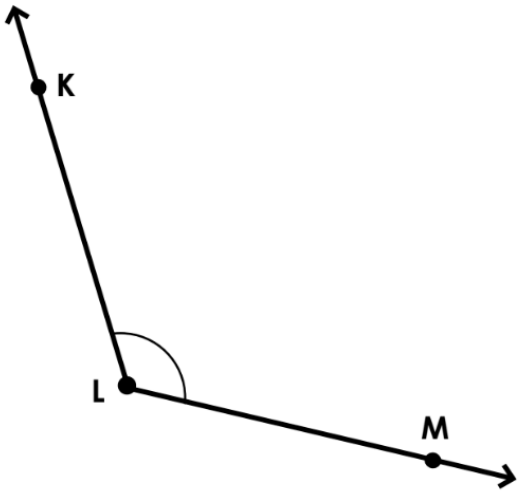
2.

Use a protractor to measure ∠**GHI**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



3.

Use a protractor to measure ∠**KLM**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.

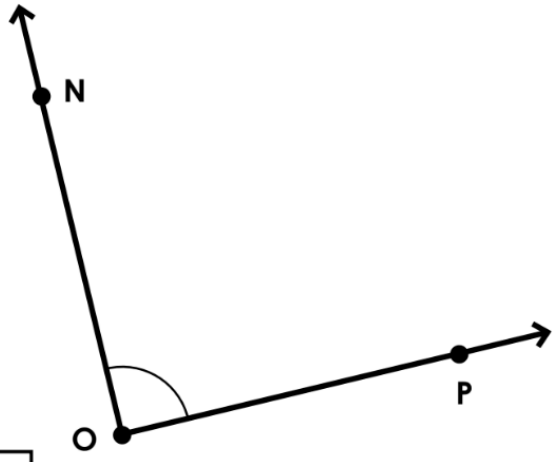


4.

CHAPTER 8 - MEASURING ANGLES

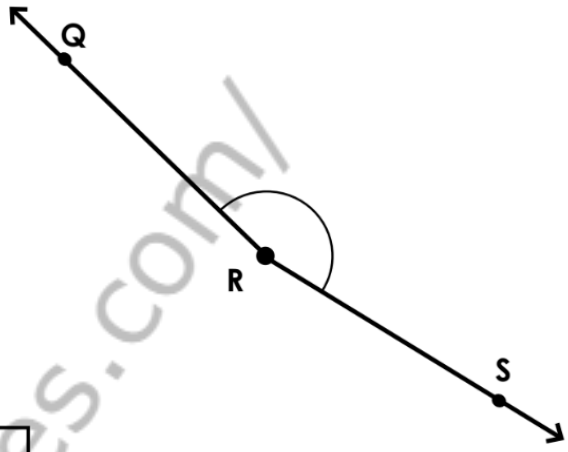
MEASURING ANGLES

Use a protractor to measure ∠**NOP**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



5.

Use a protractor to measure ∠**QRS**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.

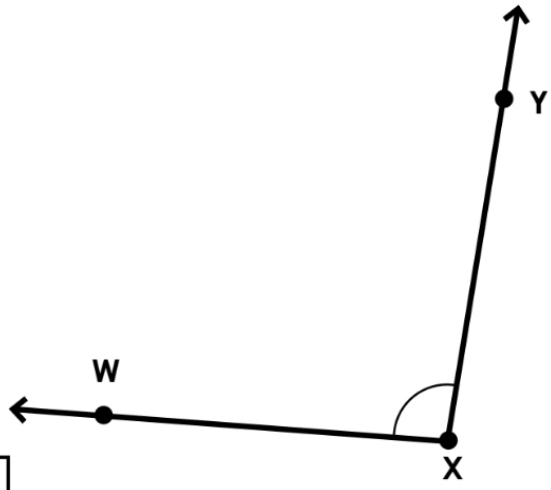


6.

Use a protractor to measure ∠**TUV**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.

7.

Use a protractor to measure ∠**WXY**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.

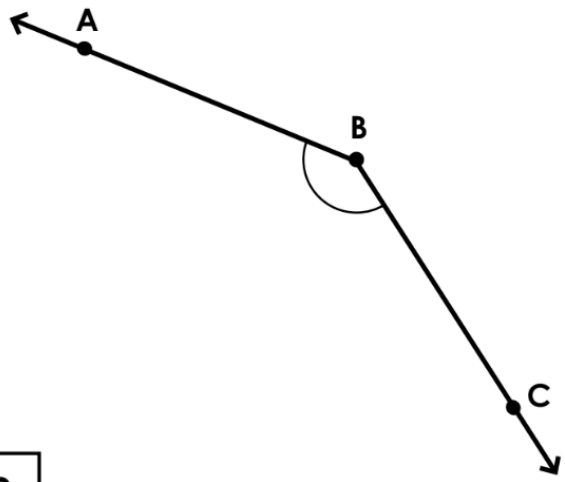


8.

CHAPTER 8 - MEASURING ANGLES

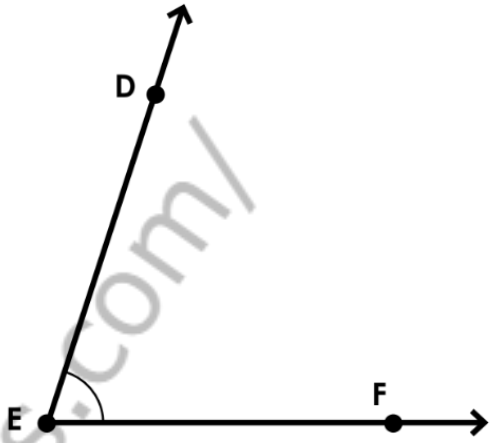
MEASURING ANGLES

Use a protractor to measure ∠**ABC**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



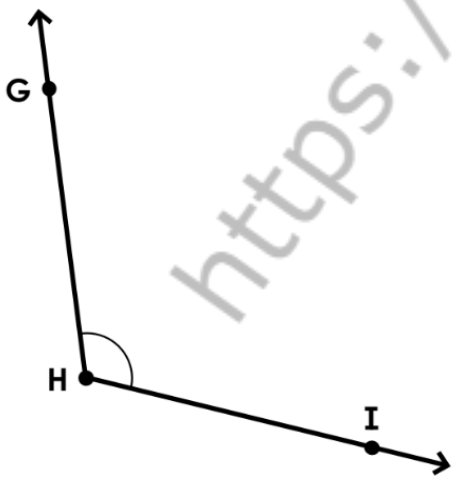
9.

Use a protractor to measure ∠**DEF**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



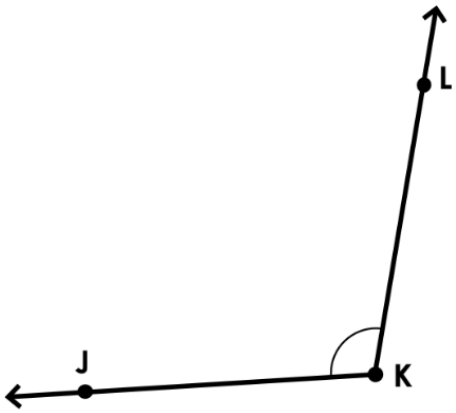
10.

Use a protractor to measure ∠**GHI**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



11.

Use a protractor to measure ∠**JKL**
Also, tell whether the angle is **acute**, **obtuse**, or **right**.



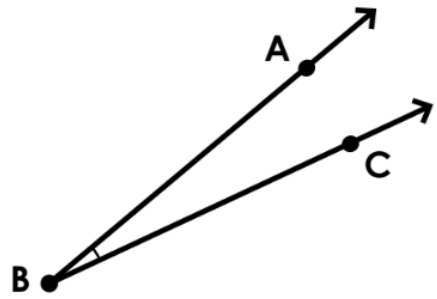
12.

CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

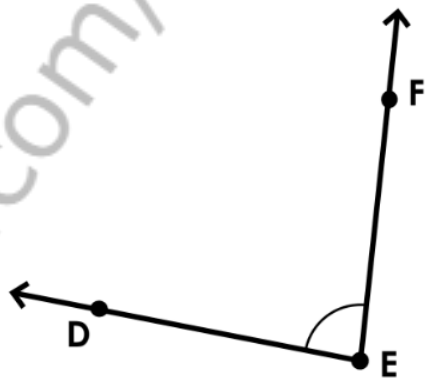
1.

Use a protractor to measure ∠ **ABC**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



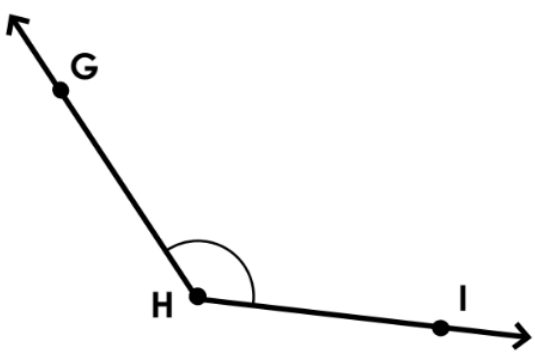
2.

Use a protractor to measure ∠ **DEF**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



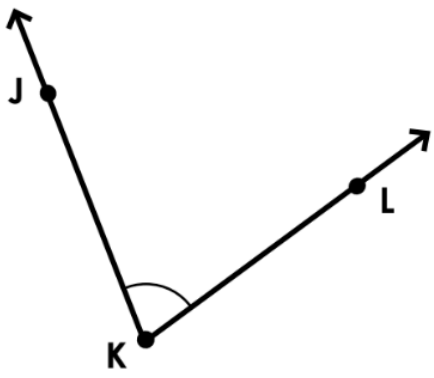
3.

Use a protractor to measure ∠ **GHI**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



4.

Use a protractor to measure ∠ **JKL**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

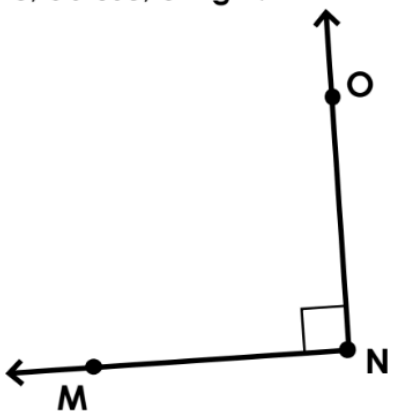


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

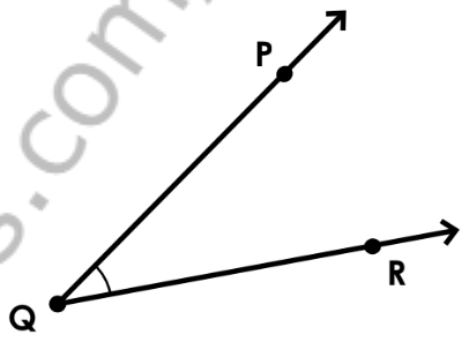
5.

Use a protractor to measure ∠ **MNO**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



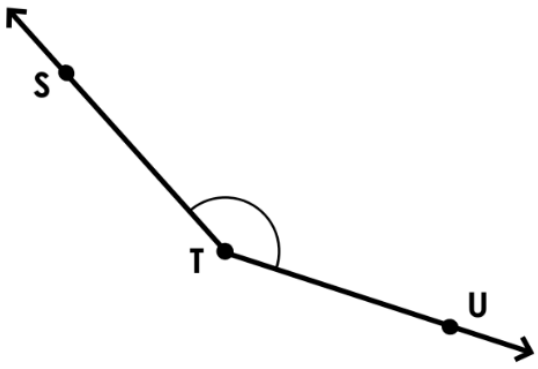
6.

Use a protractor to measure ∠ **PQR**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



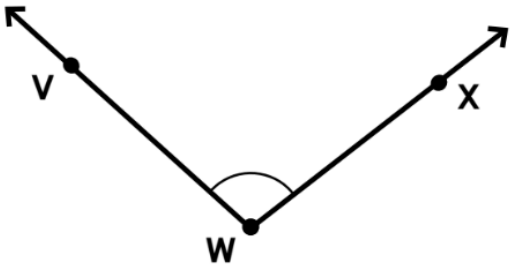
7.

Use a protractor to measure ∠ **STU**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



8.

Use a protractor to measure ∠ **VWX**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

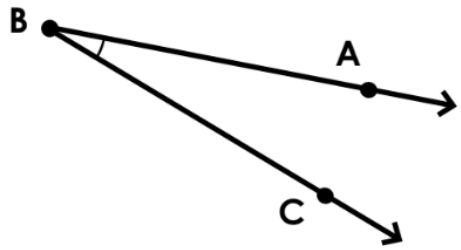


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

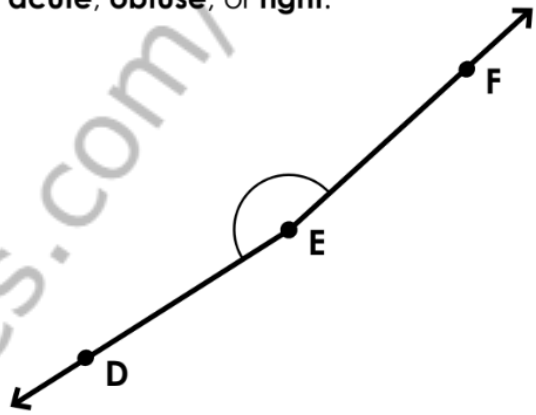
9.

Use a protractor to measure ∠ **ABC**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



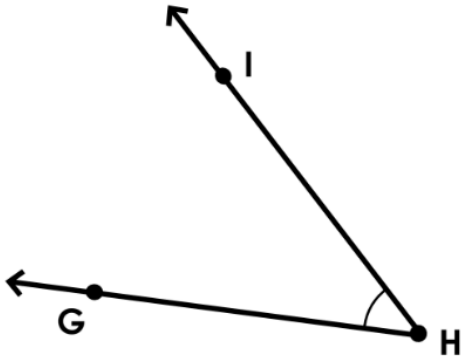
10.

Use a protractor to measure ∠ **DEF**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



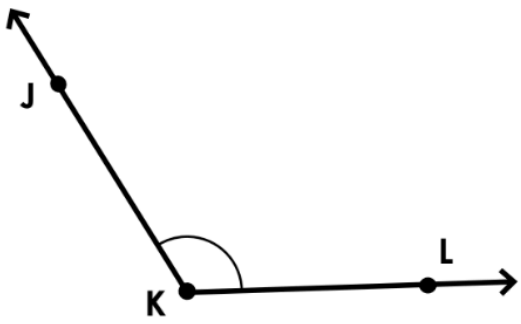
11.

Use a protractor to measure ∠ **GHI**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



12.

Use a protractor to measure ∠ **JKL**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

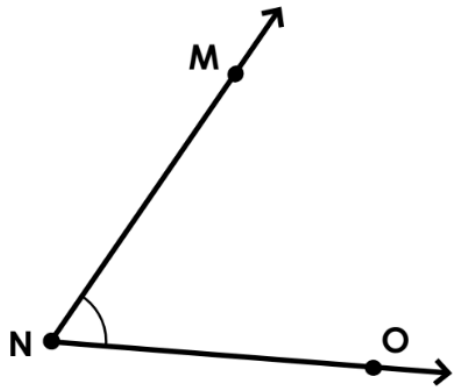


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

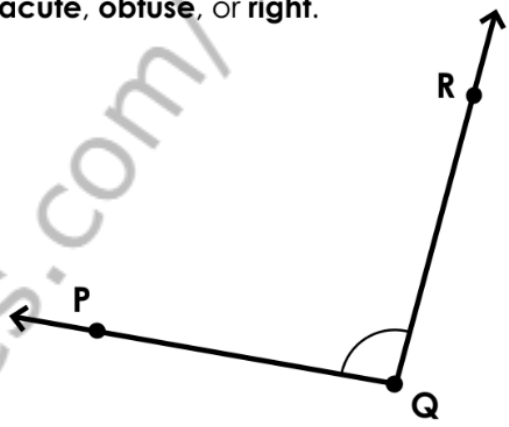
13.

Use a protractor to measure ∠ **MNO**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



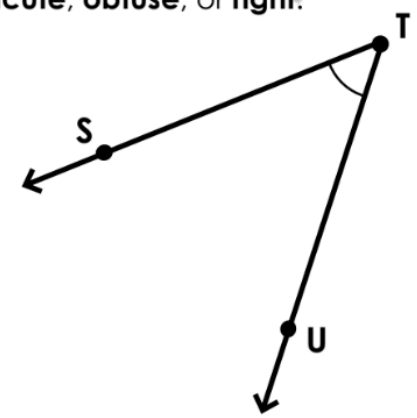
14.

Use a protractor to measure ∠ **PQR**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



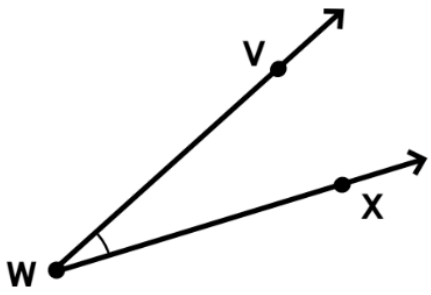
15.

Use a protractor to measure ∠ **STU**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



16.

Use a protractor to measure ∠ **VWX**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

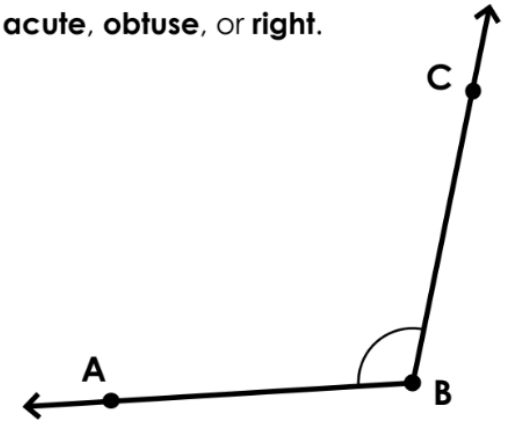


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

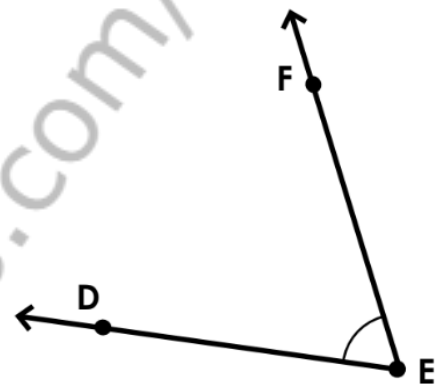
17.

Use a protractor to measure ∠ **ABC**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



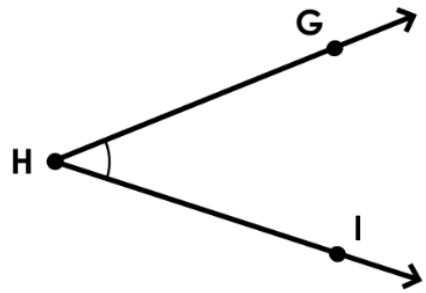
18.

Use a protractor to measure ∠ **DEF**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



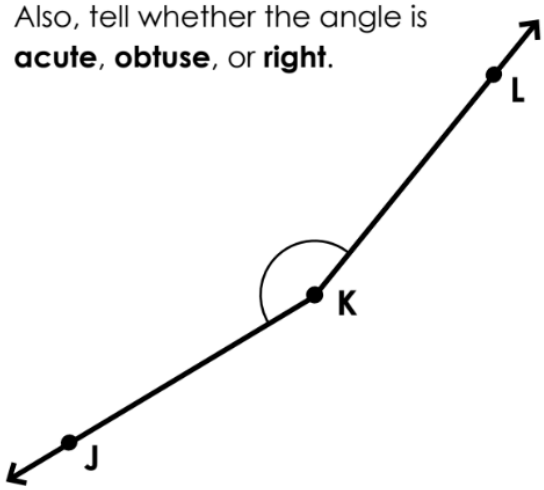
19.

Use a protractor to measure ∠ **GHI**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



20.

Use a protractor to measure ∠ **JKL**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

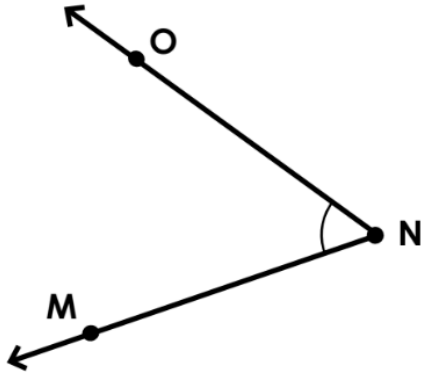


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

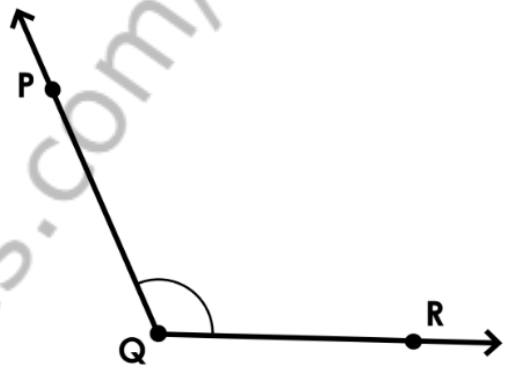
21.

Use a protractor to measure ∠ **MNO**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



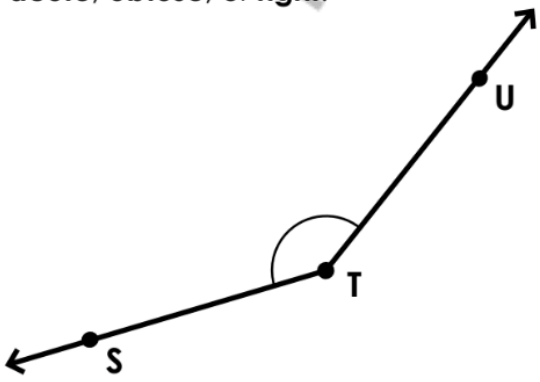
22.

Use a protractor to measure ∠ **PQR**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



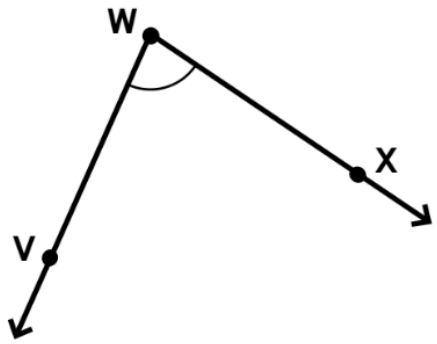
23.

Use a protractor to measure ∠ **STU**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



24.

Use a protractor to measure ∠ **VWX**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

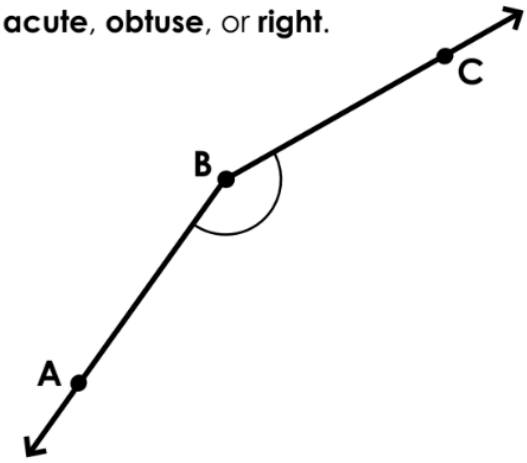


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

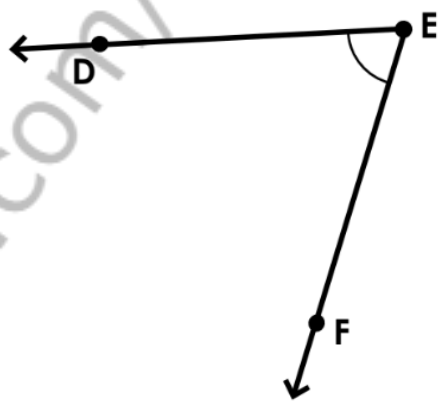
25.

Use a protractor to measure ∠ **ABC**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



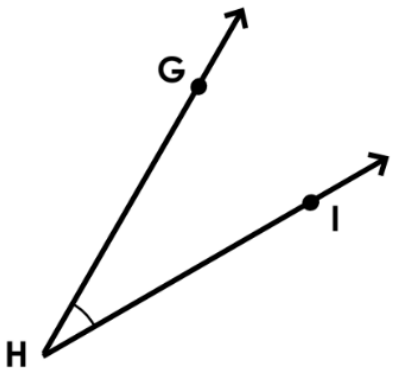
26.

Use a protractor to measure ∠ **DEF**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



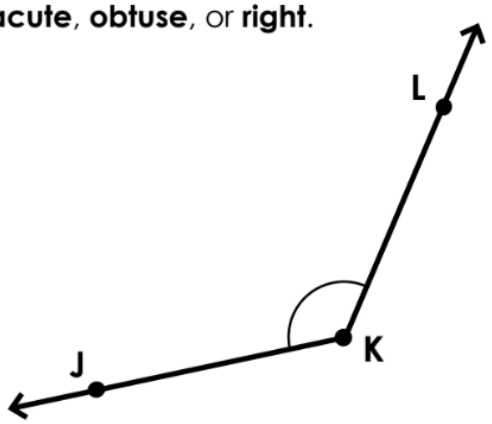
27.

Use a protractor to measure ∠ **GHI**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



28.

Use a protractor to measure ∠ **JKL**
Also, tell whether the angle is
acute, **obtuse**, or **right**.

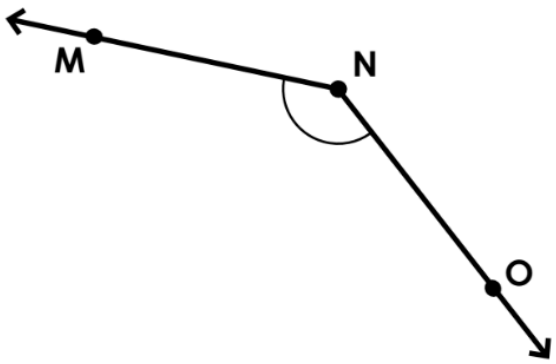


CHAPTER 8 - MEASURING ANGLES

MEASURING ANGLES

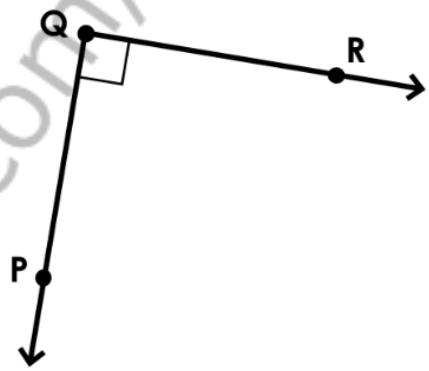
29.

Use a protractor to measure $\angle$ **MNO**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



30.

Use a protractor to measure $\angle$ **PQR**
Also, tell whether the angle is
acute, **obtuse**, or **right**.



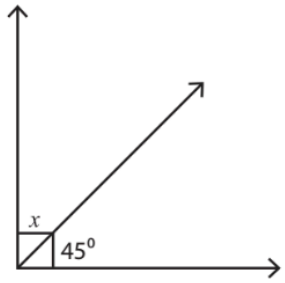
CHAPTER 9 -
ANGLES AT A POINT

CHAPTER 9 - ANGLES AT A POINT

COMPLEMENTARY ANGLES

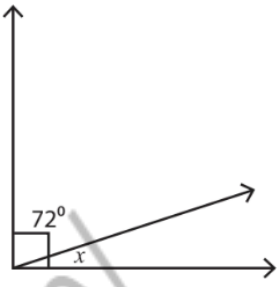
Find the value of x in each right angle.

1)



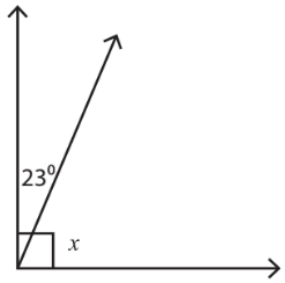
$x =$ _____

2)



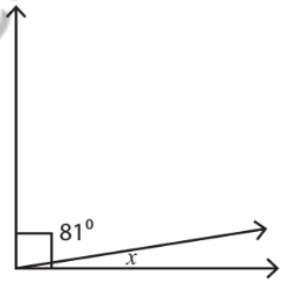
$x =$ _____

3)



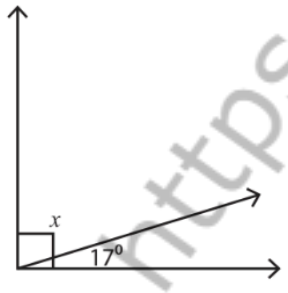
$x =$ _____

4)



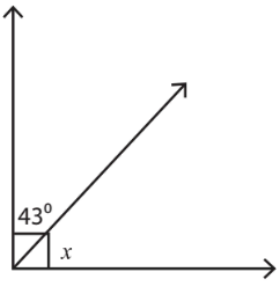
$x =$ _____

5)



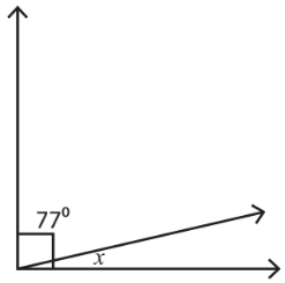
$x =$ _____

6)



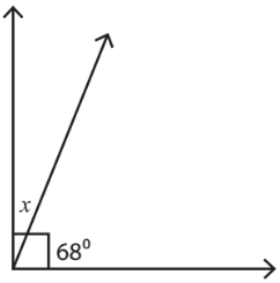
$x =$ _____

7)



$x =$ _____

8)



$x =$ _____

CHAPTER 9 - ANGLES AT A POINT

PAIR OF ANGLES

Find the complement of each angle.

1) 23^0

Complement of 23^0 = _____

2) 61^0

Complement of 61^0 = _____

3) 54^0

Complement of 54^0 = _____

4) 47^0

Complement of 47^0 = _____

5) 30^0

Complement of 30^0 = _____

6) 28^0

Complement of 28^0 = _____

7) 75^0

Complement of 75^0 = _____

8) 82^0

Complement of 82^0 = _____

---

9) If $m\angle 1 = 45^0$ and $\angle 1$ and $\angle 2$ are complementary angles. Find $m\angle 2$.

_____

10) If $m\angle 2 = 63^0$ and $\angle 1$ and $\angle 2$ form a right angle. Find $m\angle 1$.

_____

11) If $\angle 1$ and $\angle 2$ are complementary angles and $m\angle 2 = 32^0$. Find $m\angle 1$.

_____

12) If $\angle 1$ and $\angle 2$ form a right angle and $m\angle 1 = 15^0$. Find $m\angle 2$.

_____

CHAPTER 9 - ANGLES AT A POINT

PAIR OF ANGLES

Find the complement of each angle.

1) 46^0

Complement of 46^0 = _____

2) 41^0

Complement of 41^0 = _____

3) 4^0

Complement of 4^0 = _____

4) 77^0

Complement of 77^0 = _____

5) 60^0

Complement of 60^0 = _____

6) 88^0

Complement of 88^0 = _____

7) 55^0

Complement of 55^0 = _____

8) 14^0

Complement of 14^0 = _____

---

9) If $m\angle 1 = 55^0$ and $\angle 1$ and $\angle 2$ are complementary angles. Find $m\angle 2$.

_____

0) If $m\angle 2 = 33^0$ and $\angle 1$ and $\angle 2$ form a right angle. Find $m\angle 1$.

_____

1) If $\angle 1$ and $\angle 2$ are complementary angles and $m\angle 2 = 47^0$. Find $m\angle 1$.

_____

2) If $\angle 1$ and $\angle 2$ form a right angle and $m\angle 1 = 34^0$. Find $m\angle 2$.

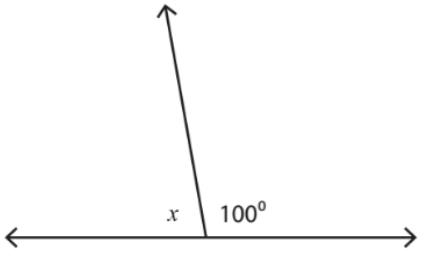
_____

CHAPTER 9 - ANGLES AT A POINT

SUPPLEMENTARY ANGLES

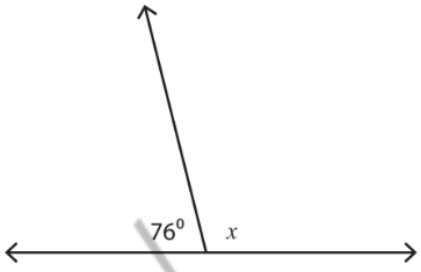
Find the value of x in each linear pair.

1)



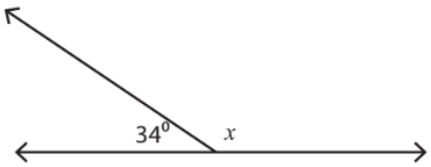
$x =$ _____

2)



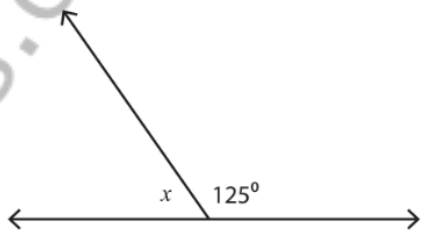
$x =$ _____

3)



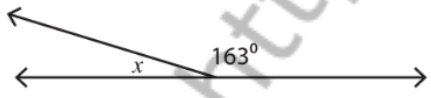
$x =$ _____

4)



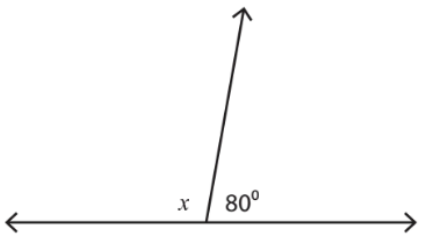
$x =$ _____

5)



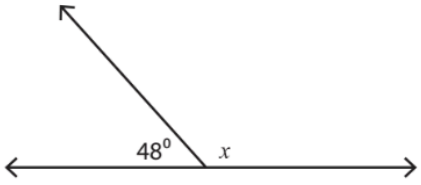
$x =$ _____

6)



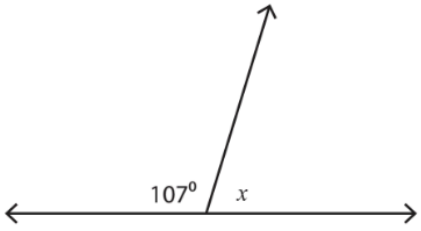
$x =$ _____

7)



$x =$ _____

8)



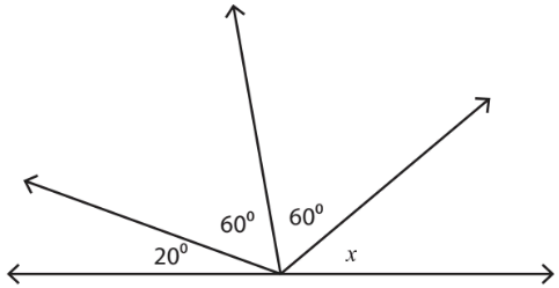
$x =$ _____

CHAPTER 9 - ANGLES AT A POINT

ANGLES IN A STRAIGHT LINE

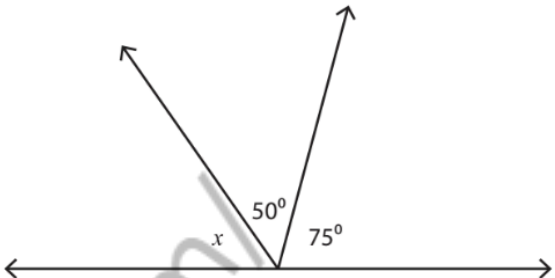
Find the unknown angle in each problem.

1)



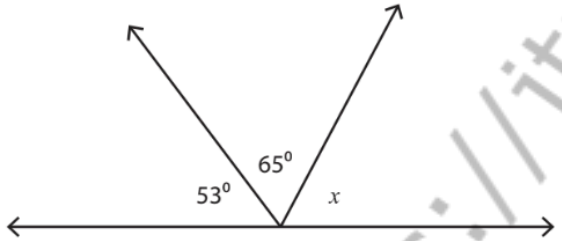
$x =$ _____

2)



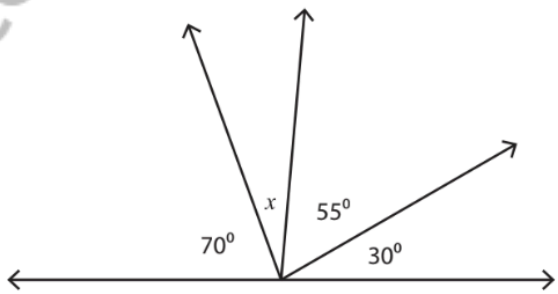
$x =$ _____

3)



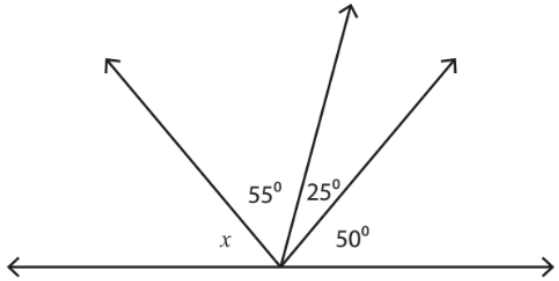
$x =$ _____

4)



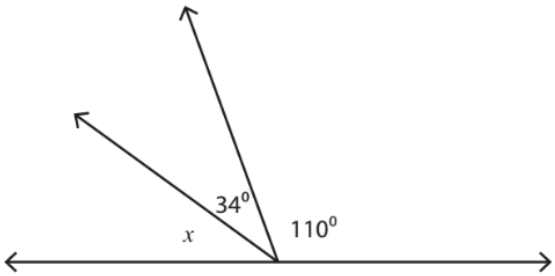
$x =$ _____

5)



$x =$ _____

6)



$x =$ _____

CHAPTER 9 - ANGLES AT A POINT

PAIR OF ANGLES

1) Match the complementary and supplementary angles.

a)	Complement of 50^0	130^0
b)	Supplement of 145^0	14^0
c)	Complement of 27^0	40^0
d)	Supplement of 50^0	35^0
e)	Complement of 76^0	63^0

---

2) Find the complement and supplement of each angle.

a) 35^0

Complement of 35^0 = _____

Supplement of 35^0 = _____

b) 42^0

Complement of 42^0 = _____

Supplement of 42^0 = _____

c) 66^0

Complement of 66^0 = _____

Supplement of 66^0 = _____

d) 81^0

Complement of 81^0 = _____

Supplement of 81^0 = _____

e) 20^0

Complement of 20^0 = _____

Supplement of 20^0 = _____

f) 75^0

Complement of 75^0 = _____

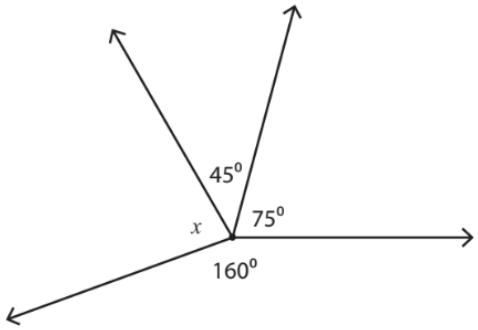
Supplement of 75^0 = _____

CHAPTER 9 - ANGLES AT A POINT

ANGLES AROUND A POINT

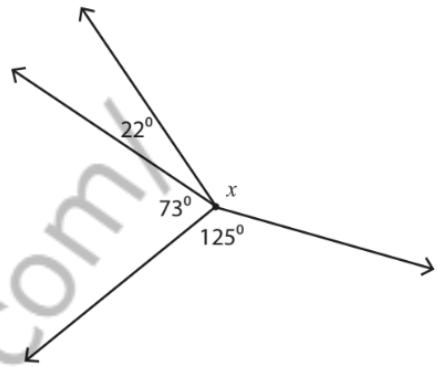
Find the unknown angle around a point in each problem.

1)



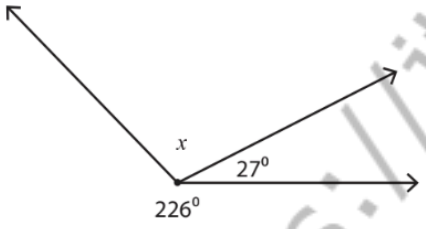
$x =$ _____

2)



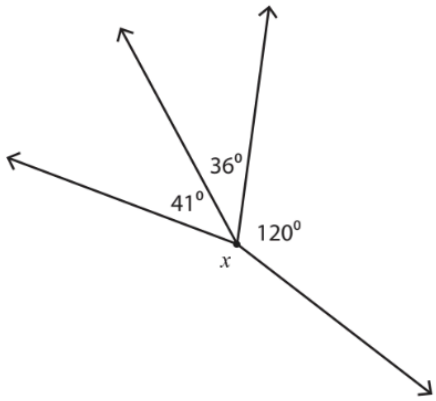
$x =$ _____

3)



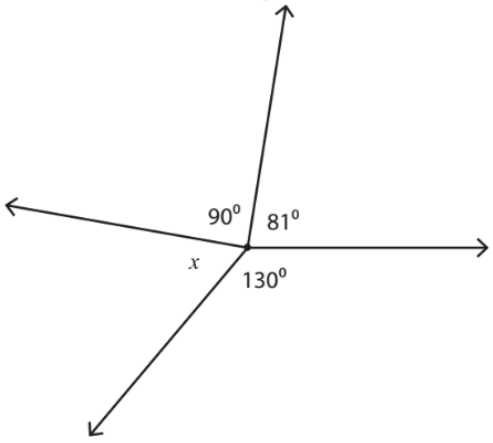
$x =$ _____

4)



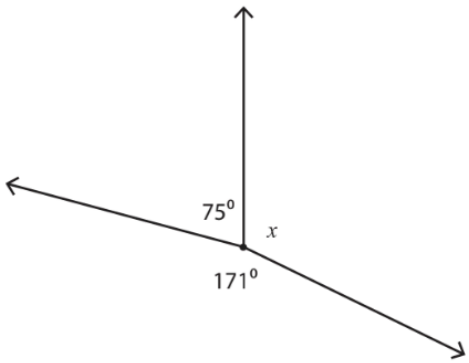
$x =$ _____

5)



$x =$ _____

6)

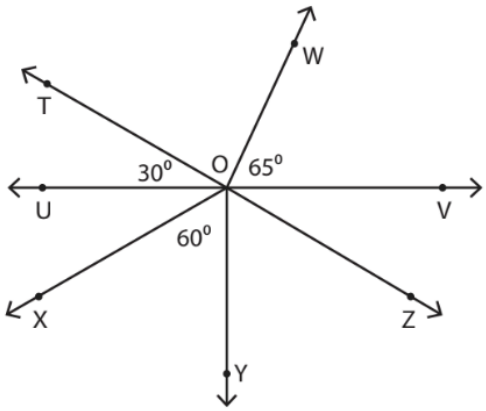


$x =$ _____

CHAPTER 9 - ANGLES AT A POINT

PAIRS OF ANGLES

1)



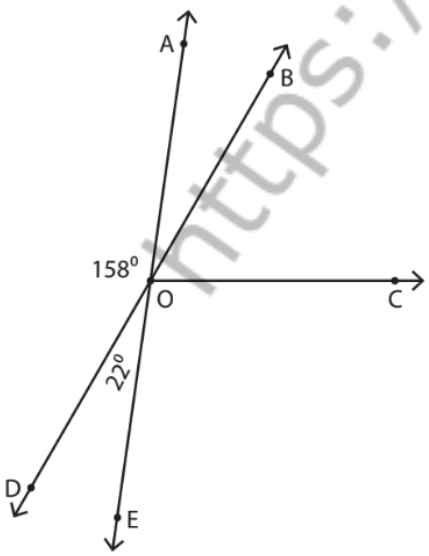
a) Name the angles adjacent to 60^0.

b) Find $\angle TOW$.

c) $\angle TOU$ and $\angle ZOV$ are vertical angles. Find $\angle ZOV$.

d) Name the adjacent angles with side OV.

2)



a) $\angle AOB$ and $\angle AOD$ are linear. Find $\angle AOB$.

b) Name the adjacent angles with side OB.

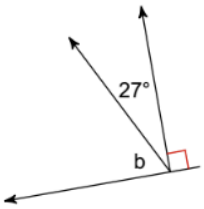
c) Name the angle vertical to 158^0.

d) Name the angles adjacent to $\angle DOA$.

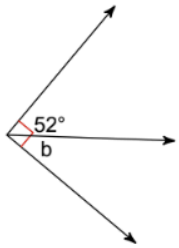
CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

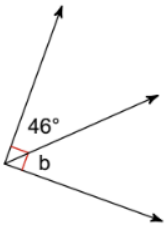
1)



2)



3)



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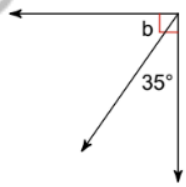

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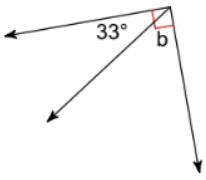

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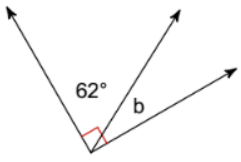
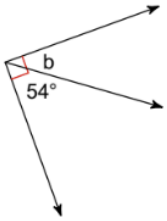


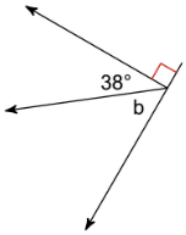
CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

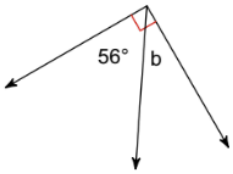
7)



8)



9)



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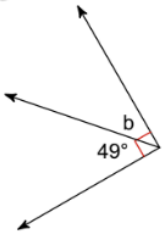

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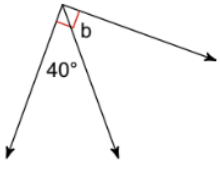

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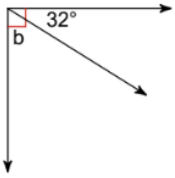
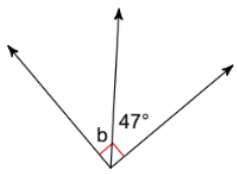


CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

13)



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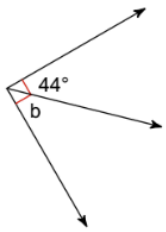

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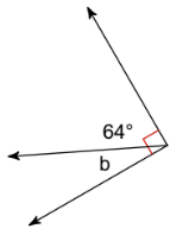

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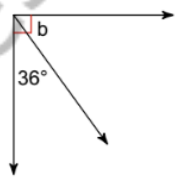

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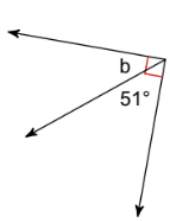

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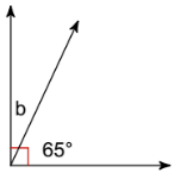
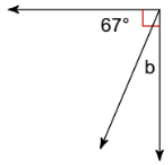


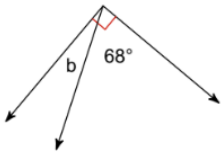
CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

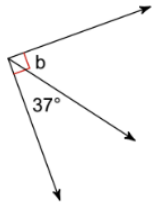
19)



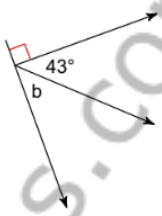
20)



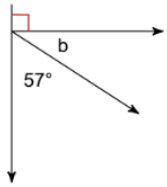
21)



22)



23)



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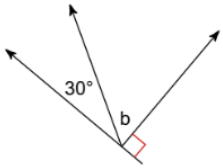

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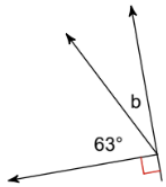

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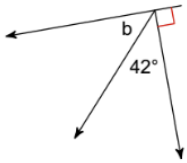
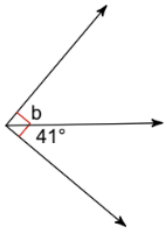


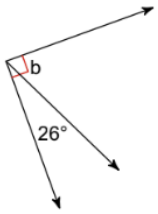
CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

27)



28)



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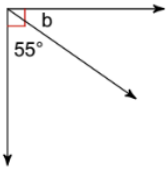

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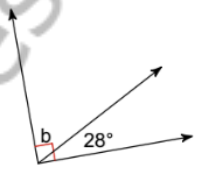

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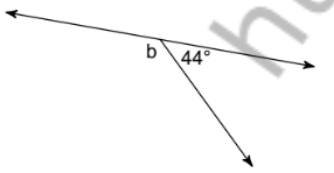
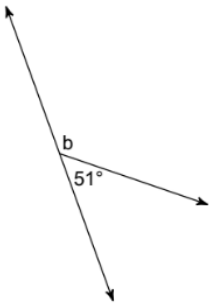


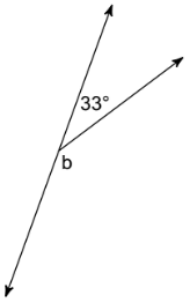
32)



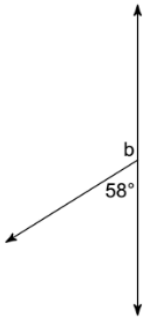
CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

33)



34)



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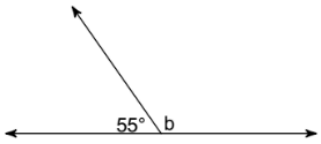

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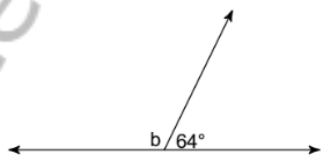

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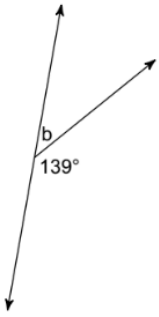
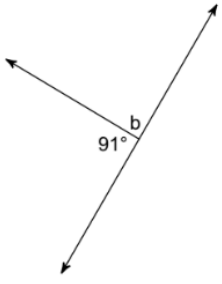


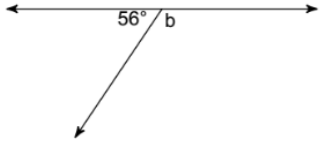
38)



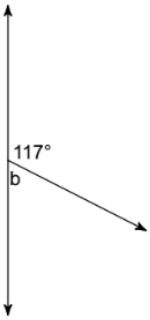
CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

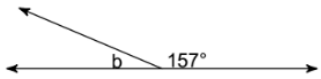
39)



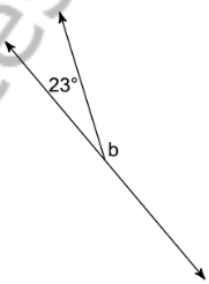
40)



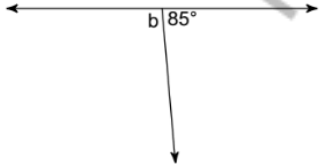
41)



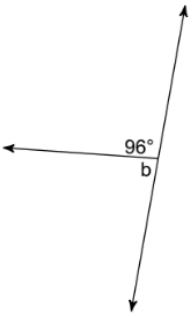
42)



43)



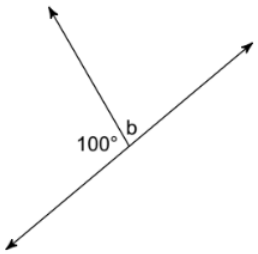
44)



CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

45)



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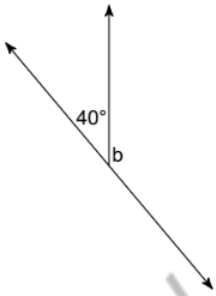

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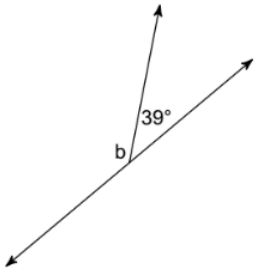

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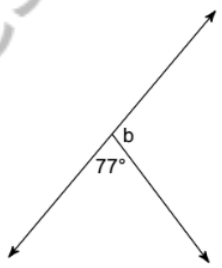

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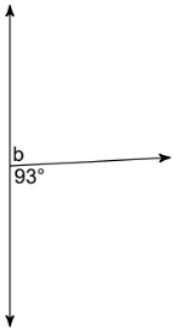

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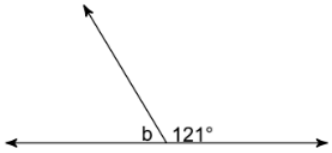
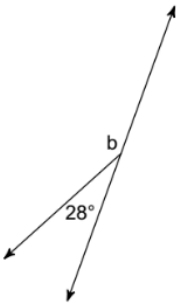


CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

51)



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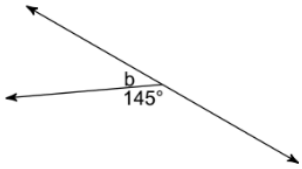

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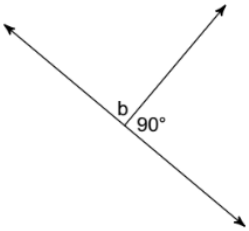

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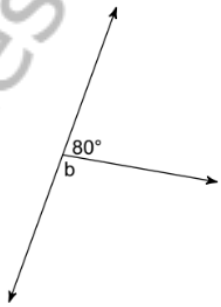

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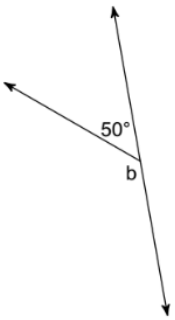

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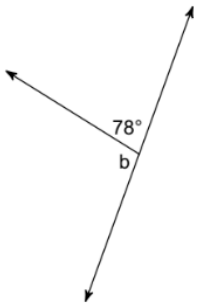
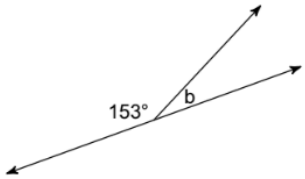


CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

57)



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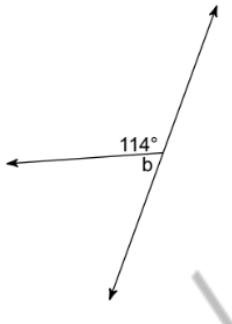

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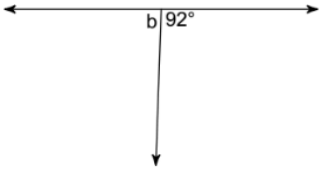

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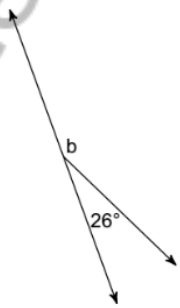

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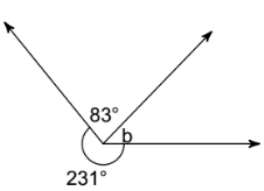

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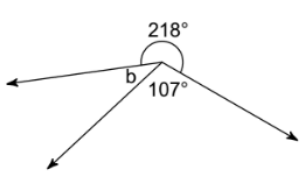
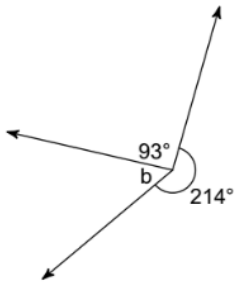


CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

63)



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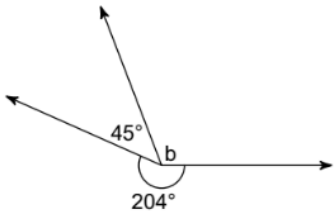

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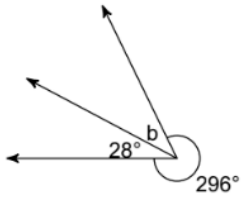

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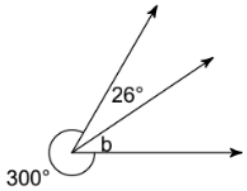

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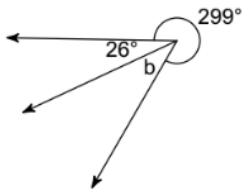

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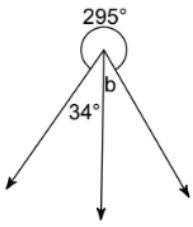
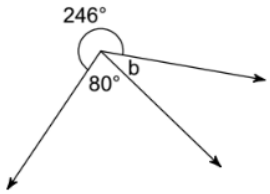


CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

69)



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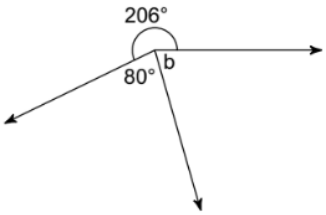

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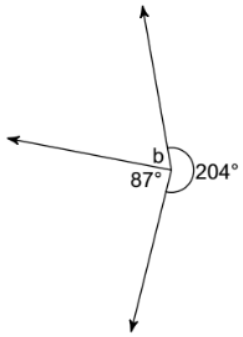

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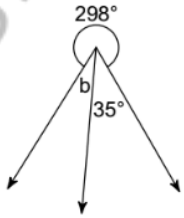

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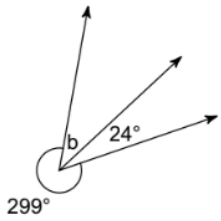

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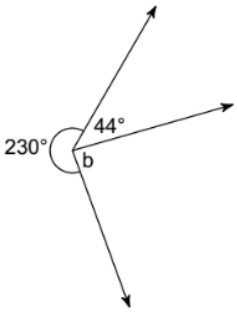
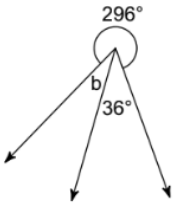


CHAPTER 9 - ANGLES AT A POINT

Find the measure of angle b.

75)



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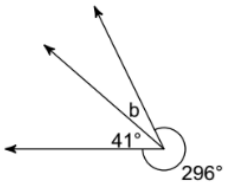

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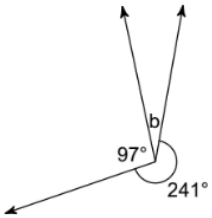

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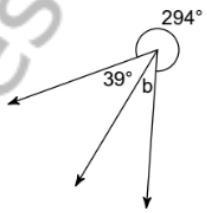

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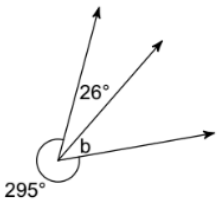

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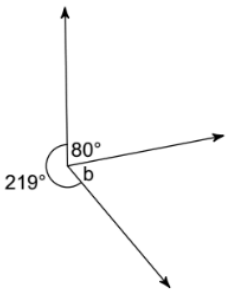


CHAPTER 10 - ANGLES ON PARALLEL LINES

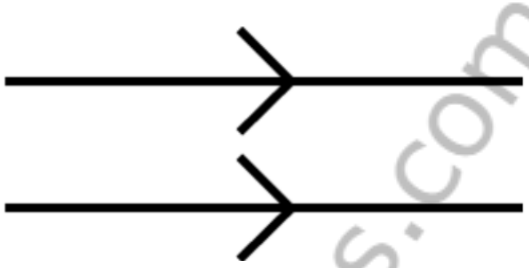
CHAPTER 10 - ANGLES ON PARALLEL LINES

Parallel Lines

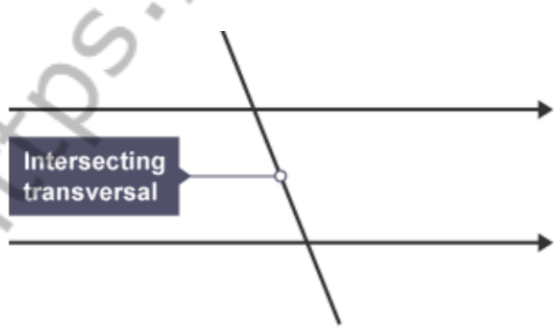
Lines are parallel if they are always the same distance apart (called "equidistant") and will never meet. Just remember:

Always the same distance apart and never touching.

By definition **Parallel lines** are straight lines which have the same direction and so never meet. Arrowheads show lines are parallel.



A straight line that cuts a pair of parallel lines is called an intersecting transversal.

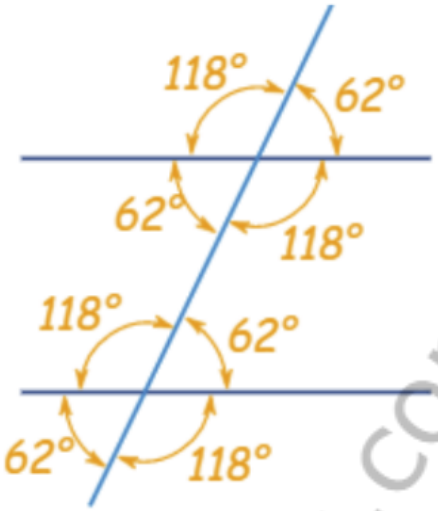


When a pair of parallel lines meet an intersecting transversal, pairs of angles with particular properties are made.

CHAPTER 10 - ANGLES ON PARALLEL LINES

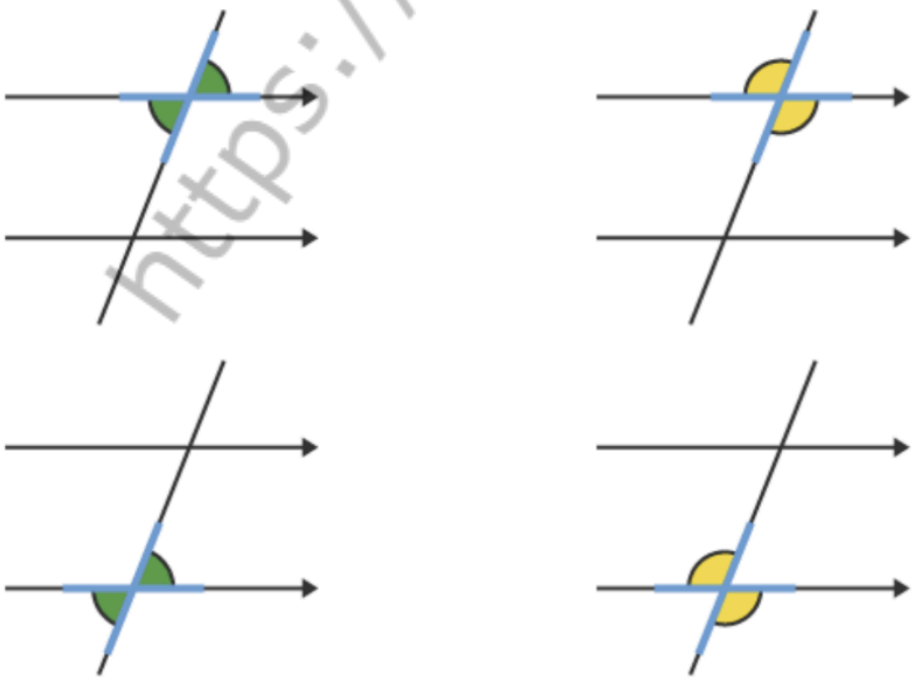
Pairs of Angles and Classification:

These angles can be made into **pairs of angles** which have special names.



Vertically opposite angles

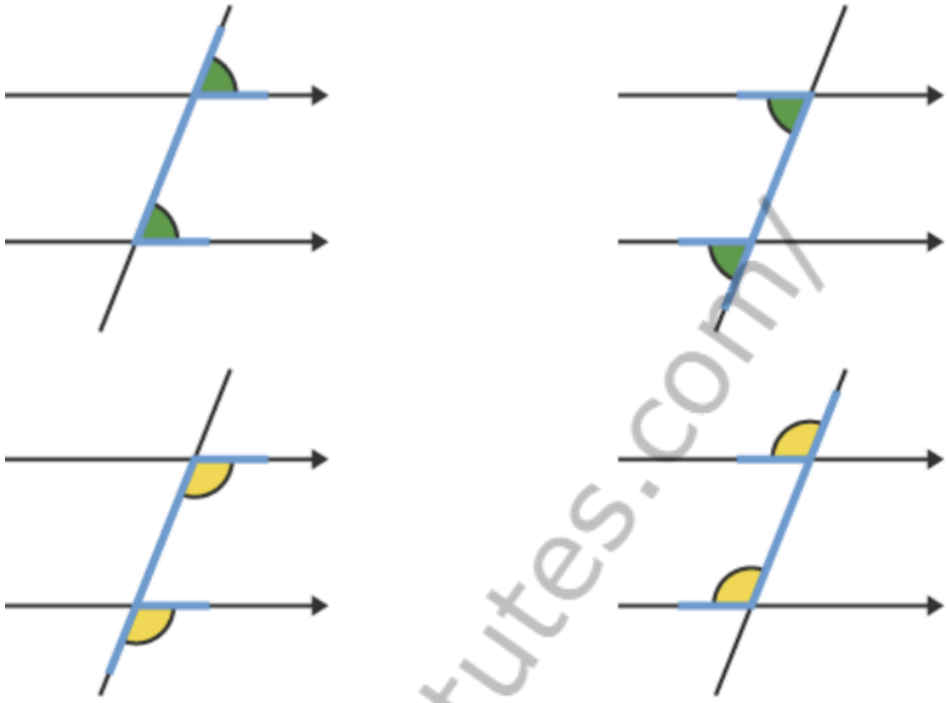
We've already seen that intersecting lines create vertically opposite angles that are equal. The lines make an **X shape**.



CHAPTER 10 - ANGLES ON PARALLEL LINES

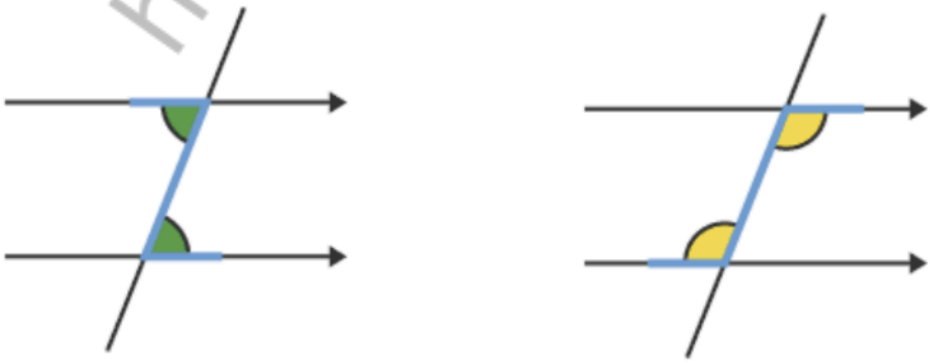
Corresponding angles

Corresponding angles are equal. The lines make an **F shape**. Notice that the F shape can be upside down or back to front.



Alternate angles

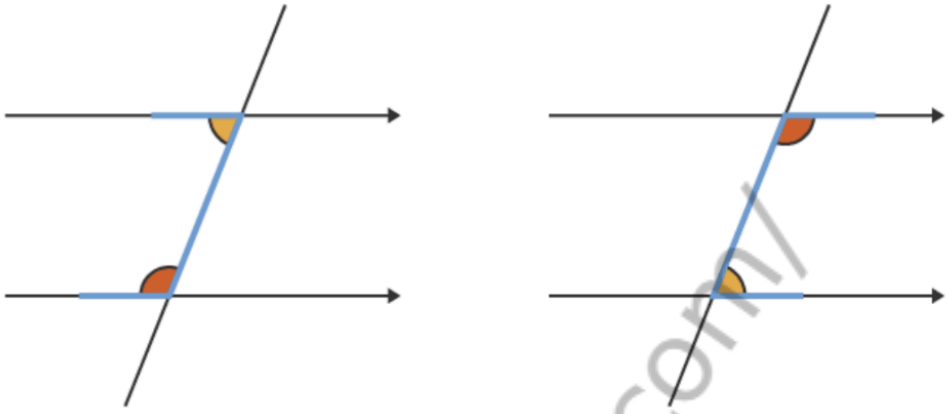
Alternate angles are equal. The lines make a **Z shape** which can also be back to front.



CHAPTER 10 - ANGLES ON PARALLEL LINES

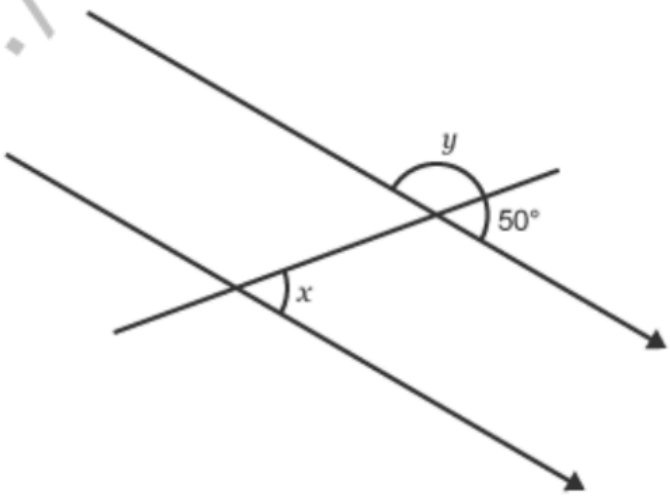
Co-interior angles

Co-interior angles add up to 180°. The lines make a **C shape** which can also be back to front.



Solve :

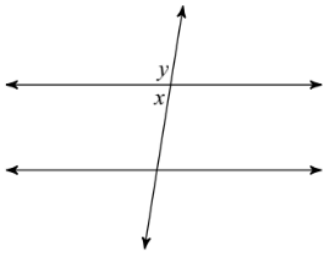
Calculate the angles x and y. Give reasons for your answers.



CHAPTER 10 - ANGLES ON PARALLEL LINES

Identify each pair of angles as corresponding, interior, exterior, vertical, or adjacent.

1)



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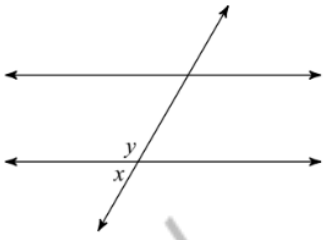

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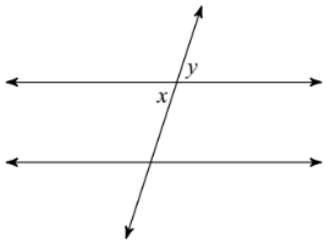

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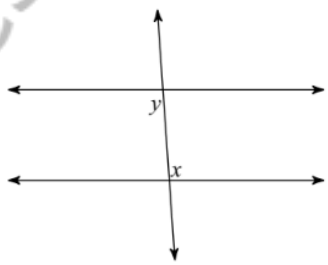

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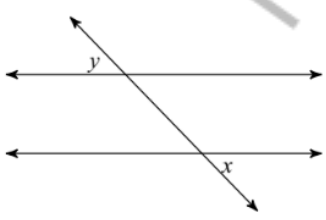

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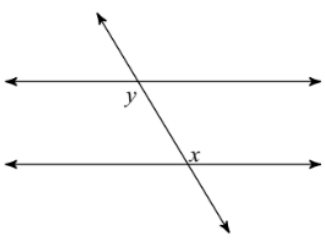
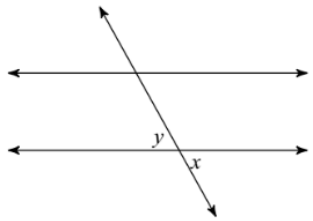


CHAPTER 10 - ANGLES ON PARALLEL LINES

Identify each pair of angles as corresponding, interior, exterior, vertical, or adjacent.

7)



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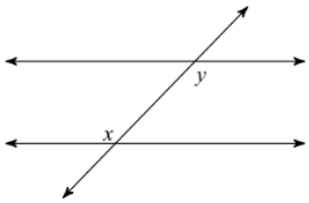

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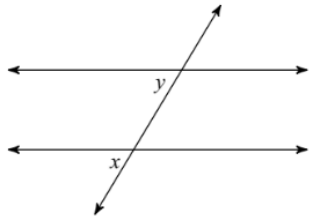

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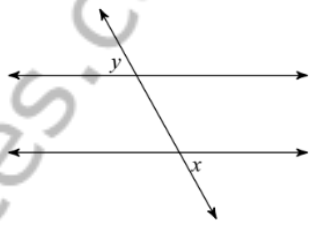
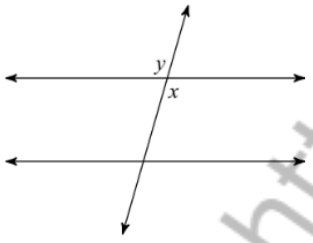


11)



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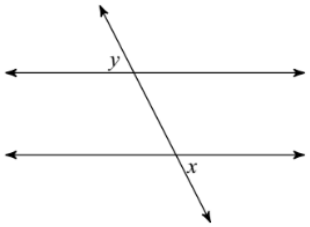
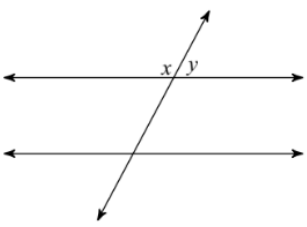


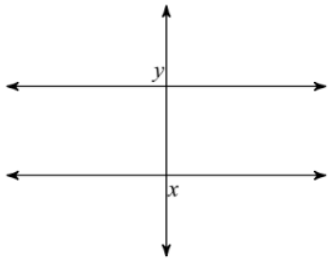
13)



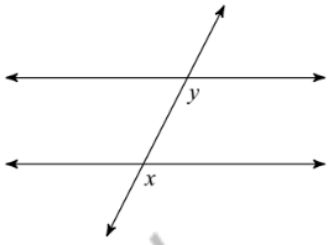
CHAPTER 10 - ANGLES ON PARALLEL LINES

Identify each pair of angles as corresponding, interior, exterior, vertical, or adjacent.

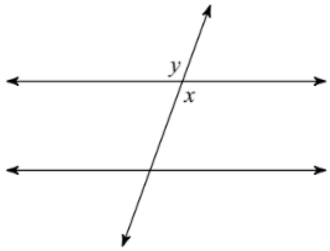
14)



15)



16)



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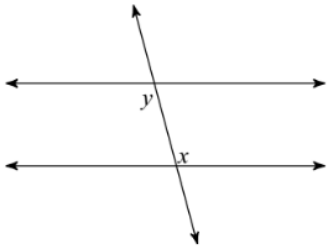
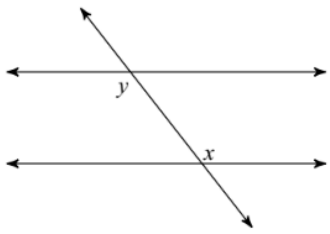


18)



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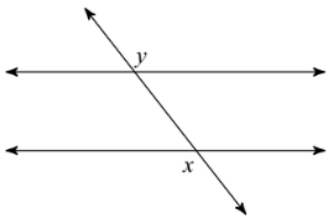
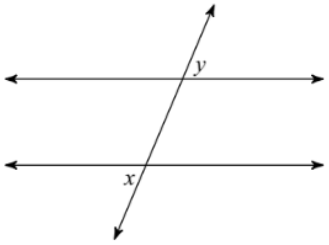


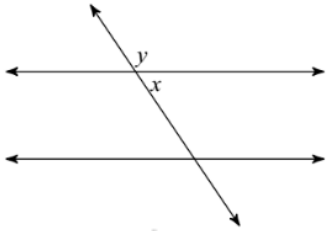
CHAPTER 10 - ANGLES ON PARALLEL LINES

Identify each pair of angles as corresponding, interior, exterior, vertical, or adjacent.

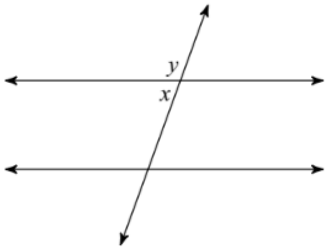
20)



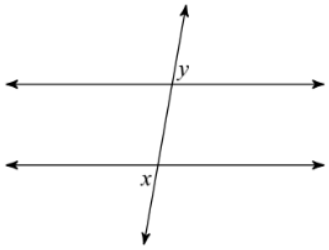
21)



22)



23)



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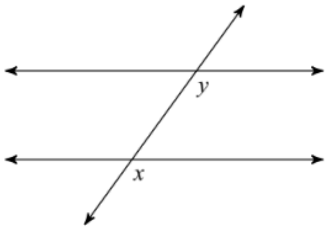

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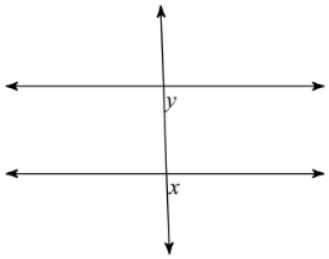
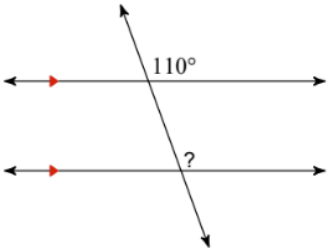


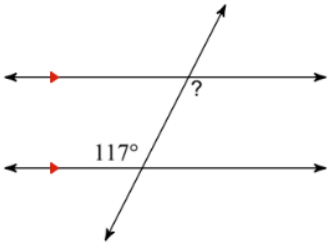
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

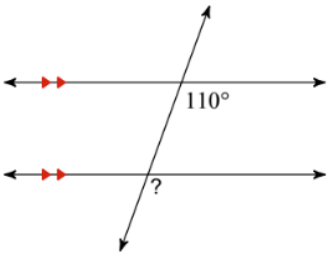
26)



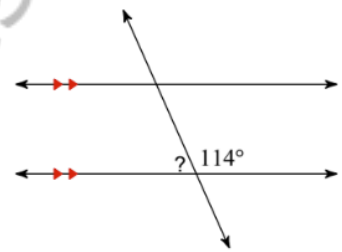
27)



28)



29)



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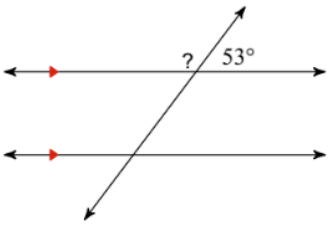

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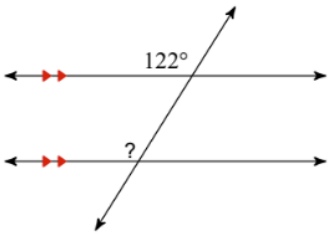
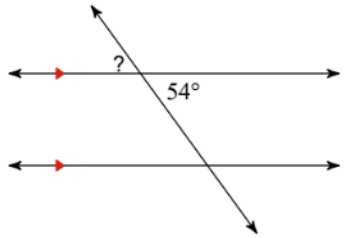


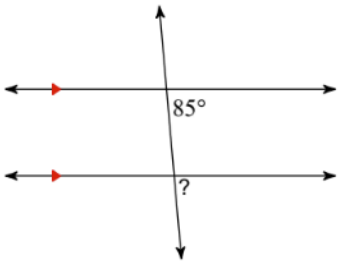
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

32)



33)



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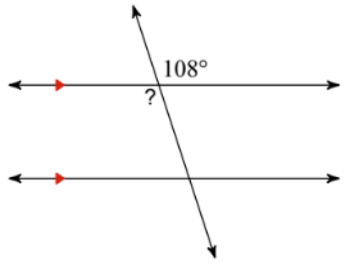

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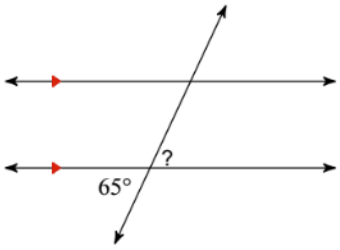

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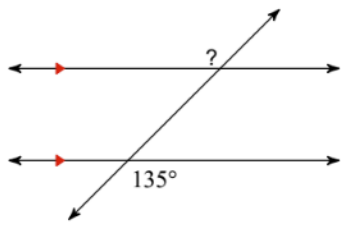
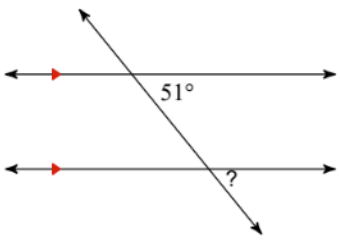


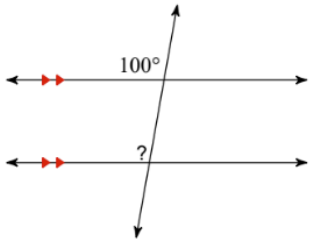
37)



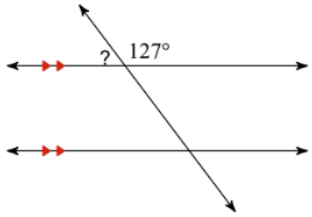
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

38)



39)



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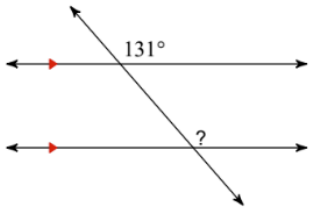

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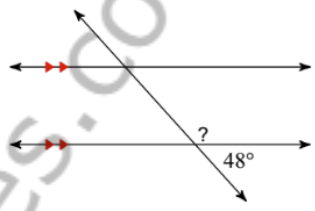

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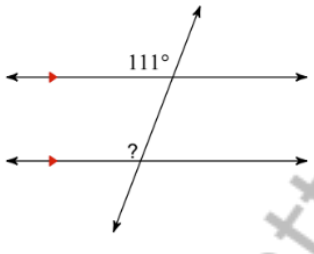
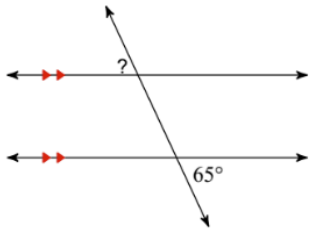


43)



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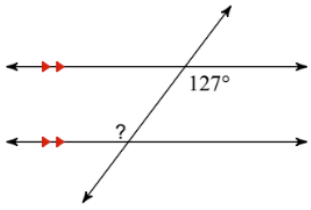
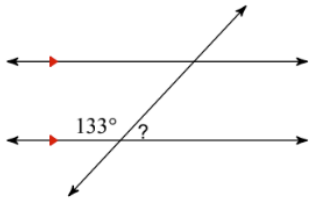


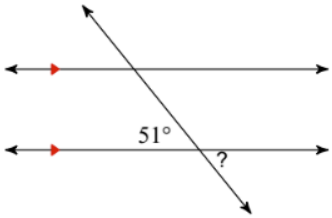
45)



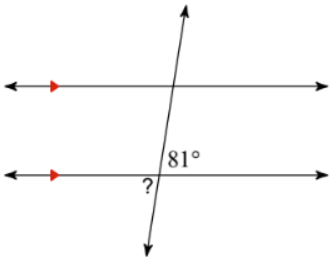
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

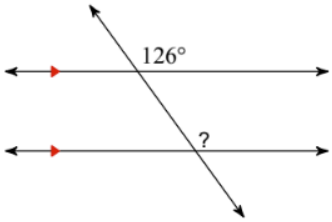
46)



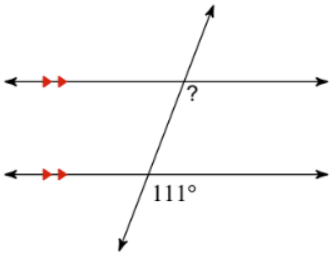
47)



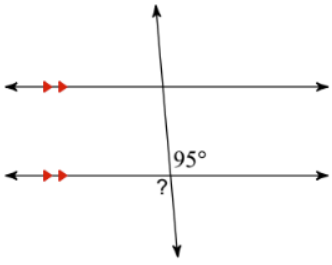
48)



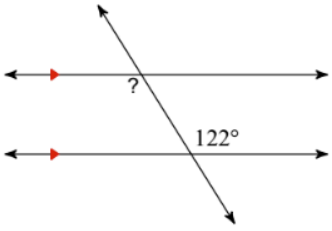
49)



50)



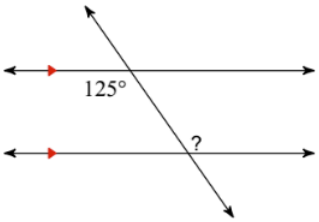
51)



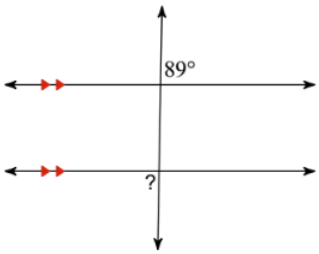
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

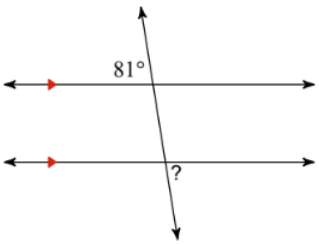
52)



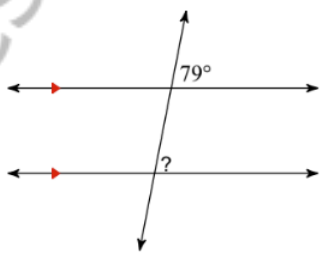
53)



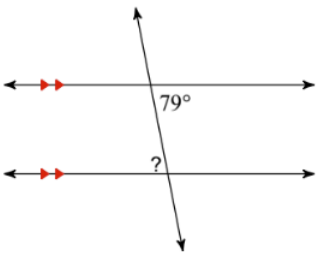
54)



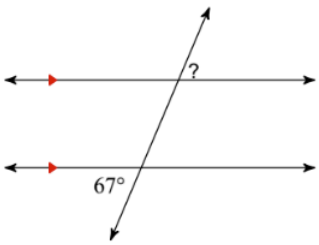
55)



56)



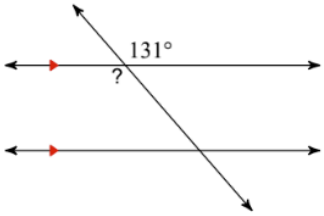
57)



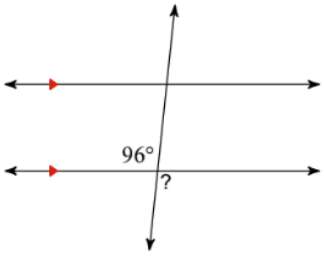
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

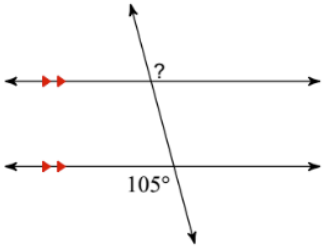
58)



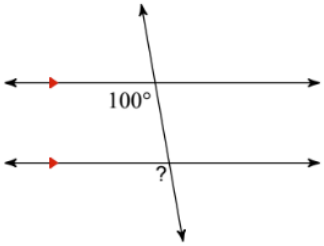
59)



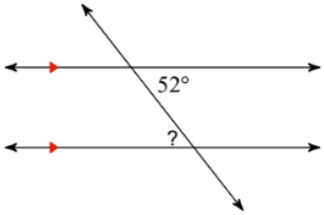
60)



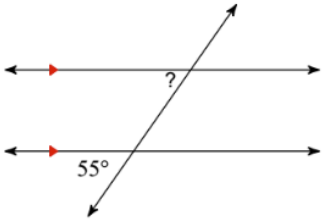
61)



62)



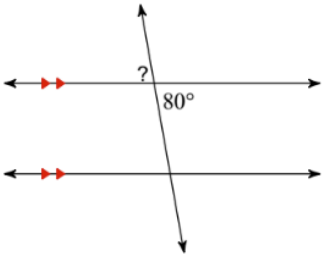
63)



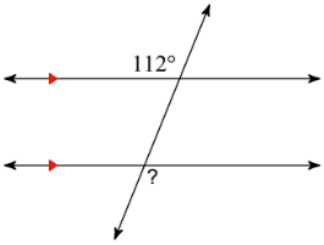
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

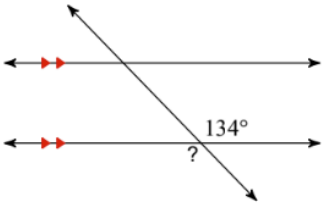
64)



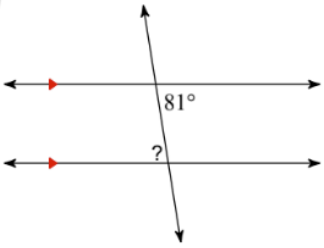
65)



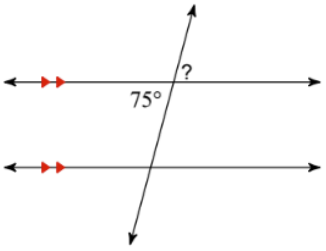
66)



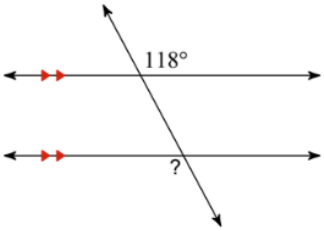
67)



68)



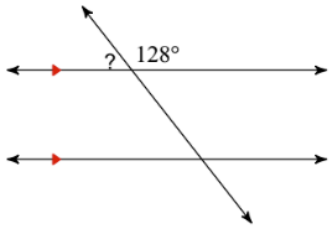
69)



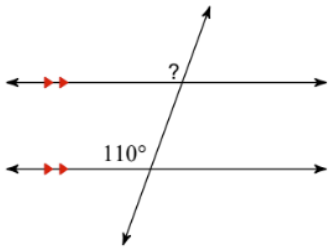
CHAPTER 10 - ANGLES ON PARALLEL LINES

Find the measure of each angle indicated.

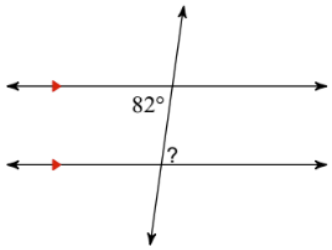
70)



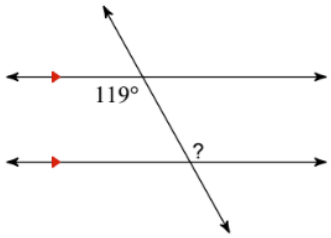
71)



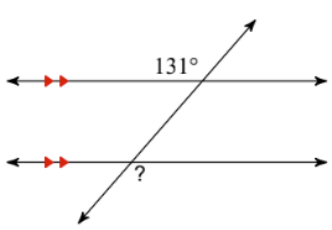
72)



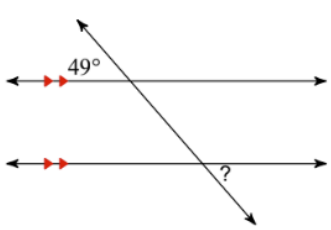
73)



74)



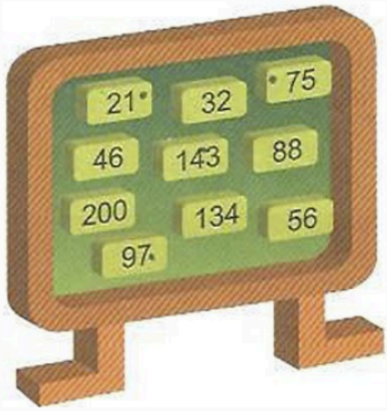
75)



ICAS

ICAS

1. Rosie has some tiles on a board.



Each tile has a number on it.

How many of these numbers are odd?

(A) 4
(B) 6
(C) 8
(D) 10

2. Cai wrote down a number pattern.

97

93

?

85

81

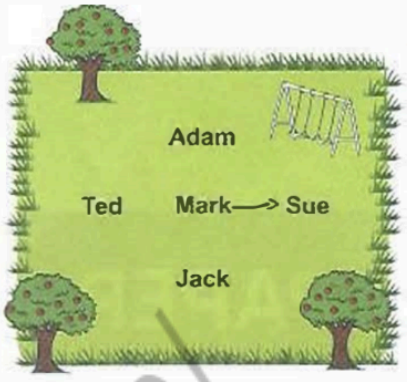
What number should ? be?

(A) 87
(B) 88
(C) 89
(D) 90

3. Which of these numbers has its largest digit in the tens column?

(A) 135
(B) 983
(C) 356
(D) 967

4. Five students are standing in a park.



Mark is facing Sue.

Who is standing behind Mark?

(A) Ted
(B) Sue
(C) Jack
(D) Adam

5. Kimi decided to start fishing at the morning high tide. She looked up the times for low tide and high tide that day.

MONDAY 6 JUNE

LOW	3:10 am 0.18 m
HIGH	9:01 am 1.30 m
LOW	2:40 pm 0.33 m
HIGH	9:30 pm 1.71 m

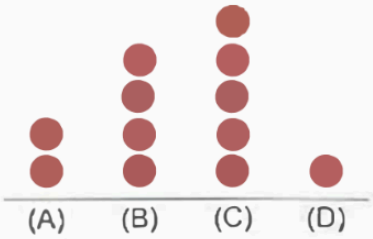
At what time should Kimi start fishing?

(A) 3:10 am
(B) 9:01 am
(C) 2:40 pm
(D) 9:30 pm

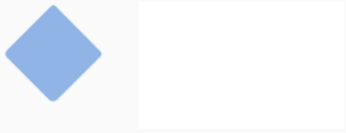
ICAS

6. Lulu asked 12 friends what they had for lunch. She recorded the results as a dot plot. Two more friends had rice than salad.

Which column shows the number of friends who had salad?



7. Toma had this card.



Which of these cards is identical to Toma's card?

8. What is the mass shown on the scale?

(A) 4.75 kilograms
(B) 4.25 kilograms
(C) 3.75 kilograms
(D) 3.25 kilograms

9. Which of these is almost certain to happen?

(A)

Jim tosses a coin and it lands on heads.

(B)

Sasi turns the page on the calendar and the next day is Friday.

(C)

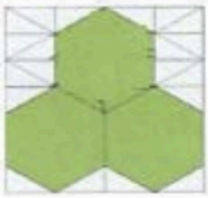
Mary flicks the spinner and it lands on 3.

(D)

Harry picks the green jellybean without looking.

ICAS

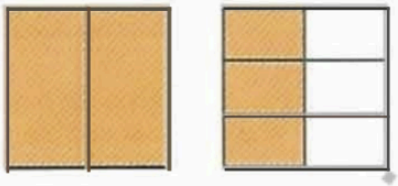
10. Lani drew three hexagons on triangular grid paper and shaded them green.

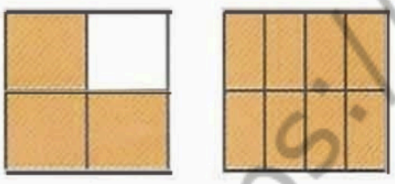


How many triangles did Lani shade?

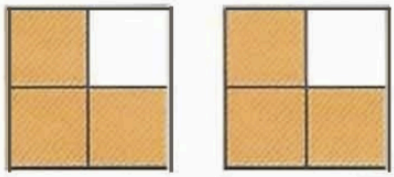
(A) 18
(B) 20
(C) 30
(D) 36

11. Which of these pictures shows $1\frac{3}{4}$ shaded squares?

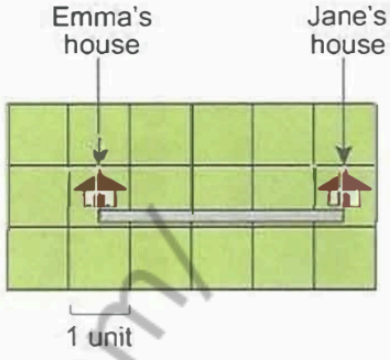
(A)


(B)


(C)


(D)


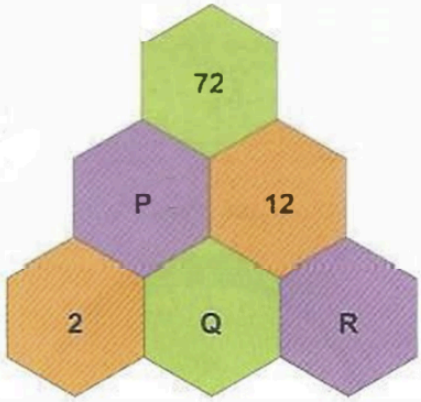
12. The entrance to Emma's house is 200 metres from the entrance to Jane's house as shown.



What does 1 unit on the map represent?

(A) 20 metres
(B) 25 metres
(C) 40 metres
(D) 50 metres

13. To obtain the number in each hexagon, Holly multiplied the numbers in the two hexagons directly below it.



What are the values of P, Q and R?

	P	Q	R
(A)	6	3	4
(B)	8	3	4
(C)	6	4	3
(D)	8	4	3

ICAS

14. Gina had a compass.

Gina followed these directions in order:

- turn west and walk 10 metres
- turn north and walk 20 metres
- turn east and walk 40 metres
- turn south and walk 20 metres.

How far was Gina from her starting point?

(A) 10 metres
(B) 20 metres
(C) 30 metres
(D) 40 metres

15. Toby had a playlist with 6 songs.

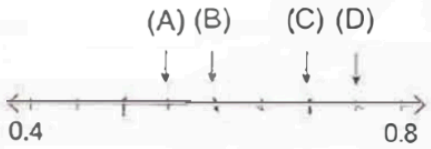
Track	Time	
	minutes	seconds
Song 1	2	30
Song 2	1	50
Song 3	2	50
Song 4	1	40
Song 5	4	20
Song 6	7	10

He played the songs in order from the start of Song 1, without pausing.

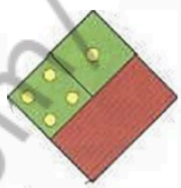
Which song was playing exactly 7 minutes after Toby started the playlist?

(A) Song 3
(B) Song 4
(C) Song 5
(D) Song 6

16. Where is 0.7 on this number line?

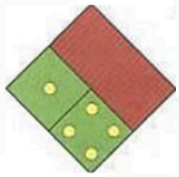


17. Janice drew this shape.



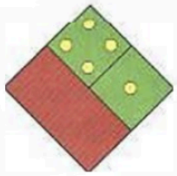
Janice rotated it anticlockwise by a quarter of a turn.

Which of these shows the shape after this rotation?


(A)


(B)


(C)

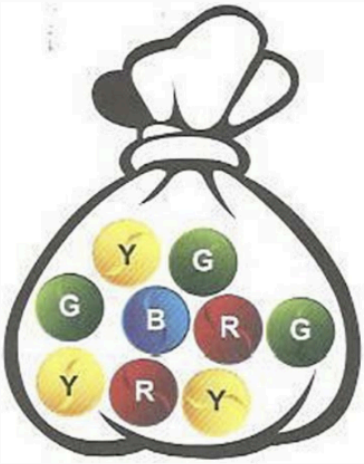

(D)

18. Which two numbers differ by 43?

(A) 28 and 71
(B) 38 and 71
(C) 28 and 75
(D) 38 and 75

ICAS

19. There are 9 marbles in this bag.



KEY
B = blue
G = green
R = red
Y = yellow

Tom took out a green marble leaving 8 marbles in the bag.

Then it was Julie's turn to take out a marble without looking.

Which two colours does Julie have the same chance of taking out?

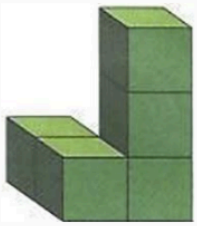
(A) yellow and red
(B) green and red
(C) green and yellow
(D) red and blue

20. In a small wildlife park, one-quarter of the animals are snakes and the rest are lizards or birds. There are 70 snakes in the wildlife park.

How many lizards and birds are there?

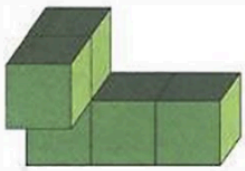
(A) 70
(B) 140
(C) 210
(D) 280

21. Lin made this solid using five cubes.

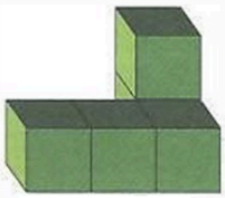


Which of these is **NOT** Lin's solid?

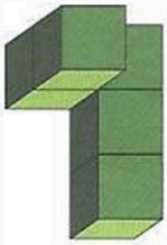
(A)



(B)



(C)



(D)

22. Ardi, Priya and Raj took turns to paint their house. The house painting began at 7 am and finished at 11 pm without a break.

Priya painted for one-quarter of the time. Ardi painted for the same amount of time as Raj.

How long did Raj spend painting the house?

(A) 12 hours
(B) 6 hours
(C) 4 hours
(D) 3 hours

ICAS

23. Emma is making a pattern of diamonds using small triangles.

Shape 1
2 triangles

Shape 2
8 triangles

Shape 3
18 triangles

Shape 4

How many small triangles will she need to make the 4th shape in her pattern?

(A) 32
(B) 28
(C) 25
(D) 22

24. Lynne cut a piece out of this square.

Which of these is the cut-out piece?

(A)

(C)

(D)

25. There are 12 animal signs in the Chinese calendar. They repeat every 12 years in the same order. For example, people born in 1955 or 1967 were born in the 'Year of the Goat'.

1955

Year of the Goat

1956

Year of the Monkey

1957

Year of the Rooster

1958

Year of the Dog

Cai turned 35 o :0 April 2017.

In v hich 'Year' was he born?

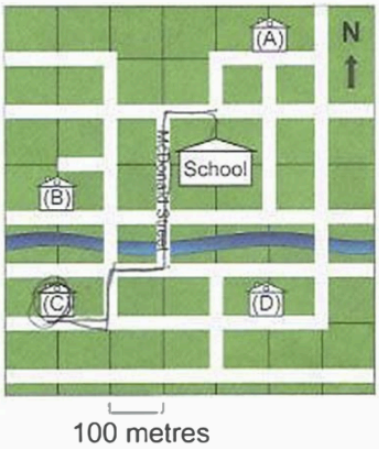
(A) Year of the Dog
(B) Year of the Goat
(C) Year of the Rooster
(D) Year of the Monkey

ICAS

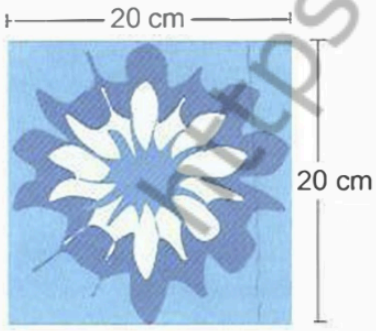
26. Freya left this note with the directions to her house.

> Leave school, turn left onto McDonald Street and walk to the end. Turn right and walk 100 metres. Turn left and walk 100 metres then turn right and walk 100 metres. My house is the white one.

Which house is Freya's?



27. Josh wants to make a quilt for his bed using a number of these squares.



The rectangular quilt must cover his bed measuring 80 cm by 200 cm and have an extra 20 cm on all four sides.

How many squares does Josh need to make the quilt?

(A) 40 (B) 44
(C) 68 (D) 72

28. Fadi only had from 3: 40pm until 5: 25pm to see a movie with his friends.

This was the movie timetable.

Return of the Snowman	Length: 2 hours 10 minutes Showing 3: 40pm and 5:50 pm
Flying Home	Length: 1 hour 20 minutes Showing 3: 20pm and 4:05 pm
Wally the Watchmaker	Length: 1 hour 45 minutes Showing 3: 30pm and 5: 20pm
The Secret Door	Length: 1 hour 40 minutes Showing 3:50 pm and 4:55 pm

Fadi and his friends watched one complete movie together.

Which movie did they watch?

(A) *Return of the Snowman*
(B) *Flying Home*
(C) *Wally the Watchmaker*
(D) *The Secret Door*

29. Debbie used the digits 4, 7 and 8 to make 2-digit numbers. For example, 47 and 88 were two of the nine numbers that Debbie made.

How many of these 2-digit numbers are divisible by 3?

(A) 1
(B) 2
(C) 3
(D) 4

ICAS

30 ✪ − 12 = ◈

◈ + ◈ + ◈ = ✪ + ✪

What is value of ✪ ?

(A) 18
(B) 24
(C) 30
(D) 36

31. There are 24 students in Mr Sim's class.

Four students play two sports. All other students play only one sport.

Mr Sim is making a table to show the number of students who play each sport.

Sport	Number
Tennis	
Soccer	
Volleyball	5
Basketball	?

One-quarter of the students play tennis.

How many students in Mr Sim's class play basketball?

(A) 9
(B) 8
(C) 6
(D) 5

32. Dani is a baker.

She started with 1 gram of yeast. The amount of yeast doubled every 12 hours.

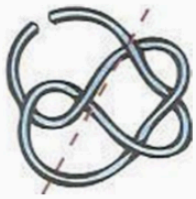
How much yeast was there after 48 hours?

(A) 4 grams
(B) 8 grams
(C) 16 grams
(D) 24 grams

33. Aditya had this tangled piece of wool.

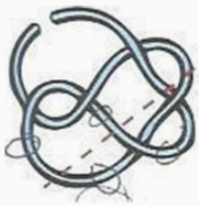
He cut the wool into 7 pieces using one straight cut.

Which of the following diagrams shows the path Aditya took to cut the wool?

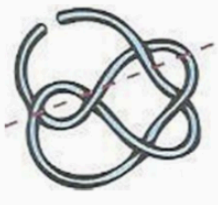


(A)

(B)



(C)



(D)

ICAS

34.

$$\begin{array}{r} \blacktriangle\ \bigstar \\ \bigstar\ 7 \\ +\quad 1\ \blacktriangle \\ \hline 1\ 0\ \bigstar \end{array}$$

(A) $\blacktriangle = 2$ $\bigstar = 6$
(B) $\blacktriangle = 3$ $\bigstar = 6$
(C) $\blacktriangle = 3$ $\bigstar = 5$
(D) $\blacktriangle = 4$ $\bigstar = 5$

35. Mike makes advertising signs. The length is always twice the height.

This picture shows the most popular size.

6 m

3 m

A customer wants Mike to make a sign with a perimeter of 42 metres.

What are the dimensions of this sign?

(A) 5 metres and 16 metres
(B) 7 metres and 14 metres
(C) 6 metres and 7 metres
(D) 14 metres and 28 metres

36 Raj went shopping.

On Monday he spent half of his money.

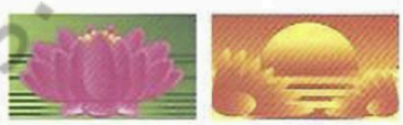
On Tuesday he spent one-quarter of his remaining money.

He was left with $18.

How much money did Raj begin with?

(A) $48
(B) $72
(C) $108
(D) $144

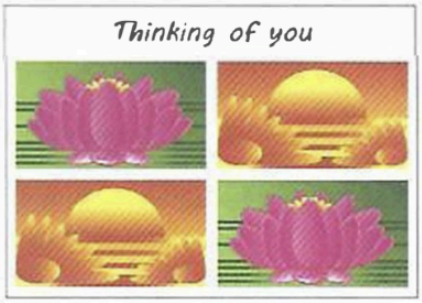
37. Carol is making greeting cards using these images.



Each image is

- placed the same way up
- put in one of four positions
- used twice in her design.

This is one possible greeting card.



How many different greeting cards can Carol make?

(A) 4
(B) 6
(C) 8
(D) 12

ICAS

38. Four luggage bags were weighed.

Bags	Total mass (kilograms)
bag 1, bag 2, bag 3	70
bag 1, bag 3, bag 4	75
bag 1, bag 2, bag 3, bag 4	100

What was the total mass of bag 1 and bag 3?

(A) 25 kilograms
(B) 30 kilograms
(C) 45 kilograms
(D) 55 kilograms

39. There are 48 boxes of tissues in a carton. Inside each box are 100 tissues.

Each person, in an office of 50 people, uses an average of 3 tissues per day.

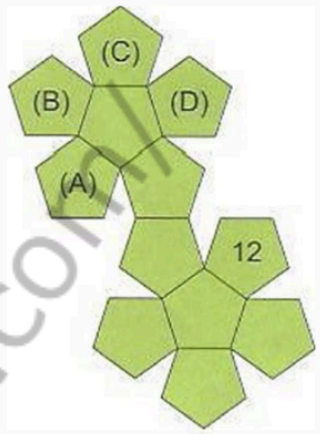
How long would it take these 50 people to use 9 cartons of tissues?

(A) 32 days
(B) 72 days
(C) 210 days
(D) 288 days

40. Lien folded this net to make a 12-sided dice.

He placed it on the table so that 12 was showing on top.

Which face was on the bottom?



2 x 4 =

2 x 7 =

2 x 9 =

2 x 5 =

2 x 2 =

2 x 11 =

2 x 6 =

2 x 8 =

2 x 12 =

2 x 3 =

5 x 4 =

5 x 7 =

5 x 9 =

5 x 5 =

5 x 2 =

5 x 11 =

5 x 6 =

5 x 8 =

5 x 12 =

5 x 3 =

6 x 4 =

6 x 7 =

6 x 9 =

6 x 5 =

6 x 2 =

6 x 11 =

6 x 6 =

6 x 8 =

6 x 12 =

6 x 3 =

3 x 4 =

3 x 7 =

3 x 9 =

3 x 5 =

3 x 2 =

3 x 11 =

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