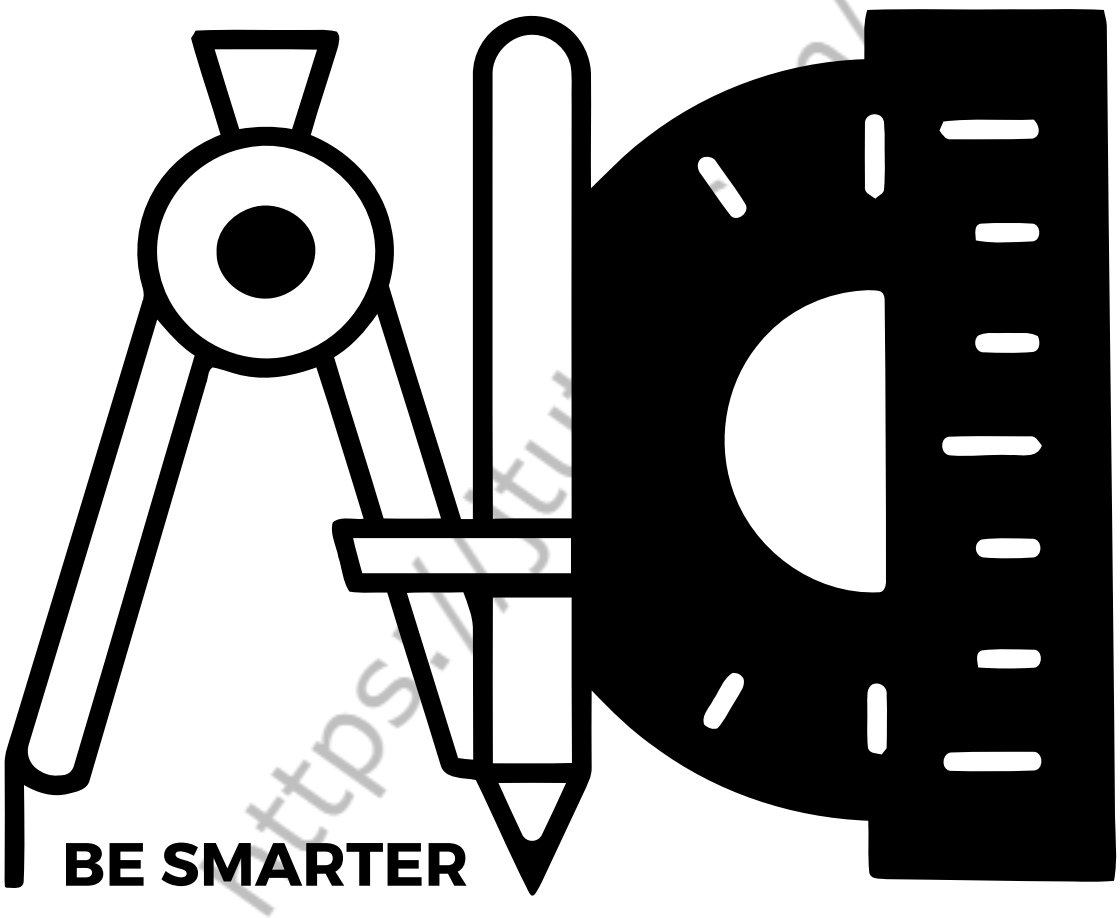
J-TUTES



YEAR 5 WORKBOOK

TERM 4 SYLLABUS

CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

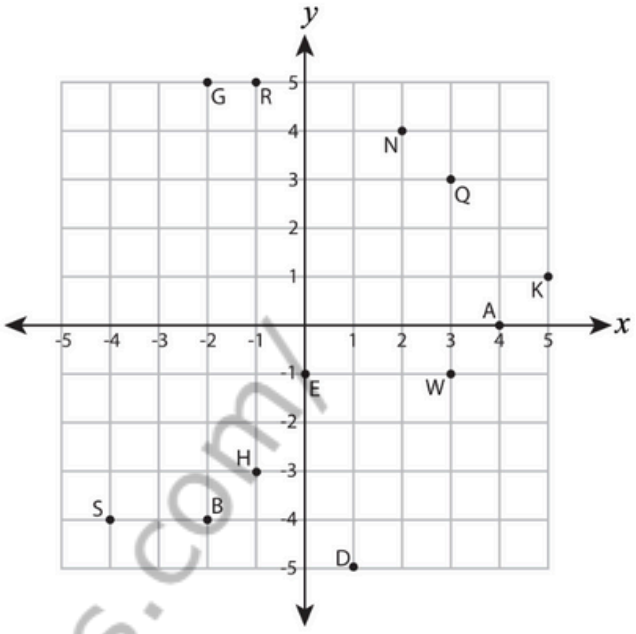
CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

A) Write the point that is located at each ordered pair.

1) (2, 4) _____ 2) (-2, 5) _____

3) (-4, -4) _____ 4) (5, 1) _____

5) (1, -5) _____ 6) (-2, -4) _____

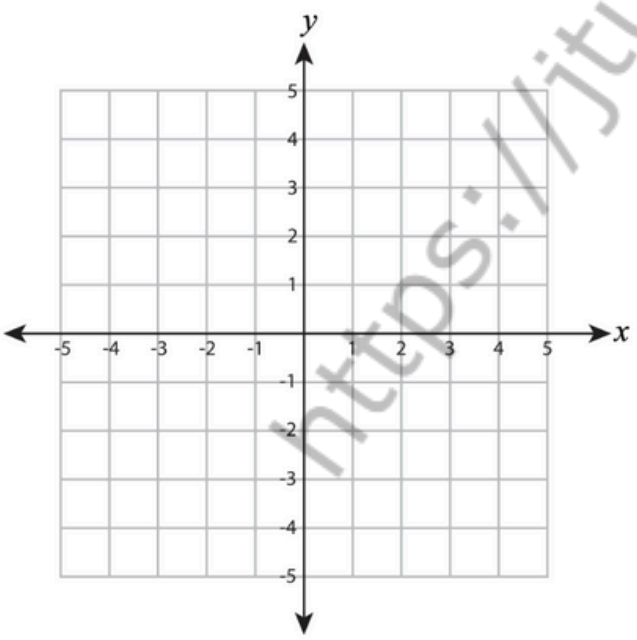


B) Write the ordered pair for each point.

7) Q(___ , ___) 8) E(___ , ___)

9) H(___ , ___) 10) R(___ , ___)

11) W(___ , ___) 12) A(___ , ___)



C) Plot each point on the coordinate grid.

13) U(-3, -3) 14) S(-4, 5)

15) F(0, -4) 16) X(2, 2)

17) T(1, -1) 18) K(5, -2)

D) Draw each shape on the coordinate grid.

19) Draw ▭ at (1, 3)

20) Draw △ at (-5, -5)

21) Draw ☆ at (4, 1)

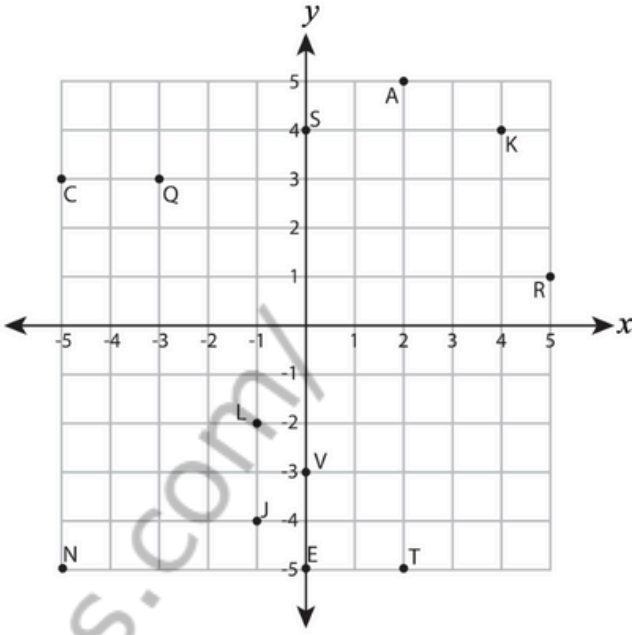
CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

A) Write the point that is located at each ordered pair.

1) (-1, -4) _____ 2) (-3, 3) _____

3) (2, 5) _____ 4) (5, 1) _____

5) (0, -5) _____ 6) (-5, -5) _____

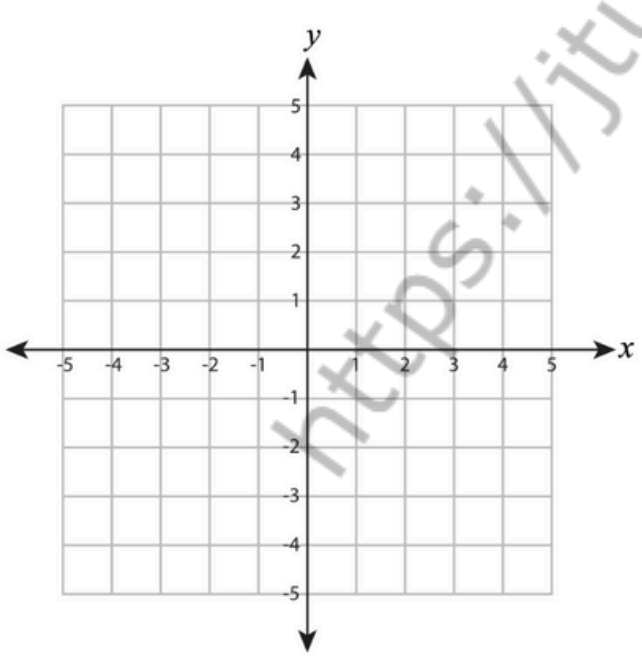


B) Write the ordered pair for each point.

7) L(___ , ___) 8) K(___ , ___)

9) V(___ , ___) 10) T(___ , ___)

11) C(___ , ___) 12) S(___ , ___)



C) Plot each point on the coordinate grid.

13) H(-5, -3) 14) Z(0, 1)

15) D(4, -4) 16) P(-4, 2)

17) Y(3, 5) 18) M(-3, -1)

D) Draw each shape on the coordinate grid.

19) Draw ◯ at (-1, -4)

20) Draw △ at (-2, 5)

21) Draw ☆ at (5, -5)

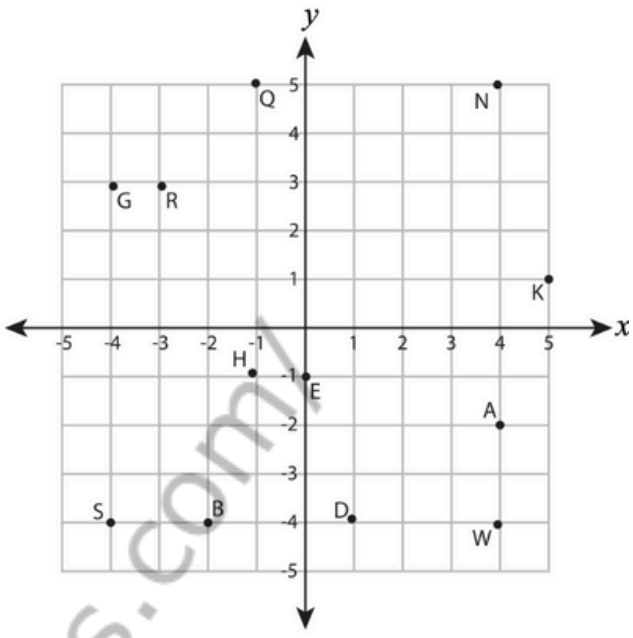
CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

A) Write the point that is located at each ordered pair.

1) (4, 5) _____ 2) (-1, 5) _____

3) (4, -4) _____ 4) (5, 1) _____

5) (1, -4) _____ 6) (-2, -4) _____

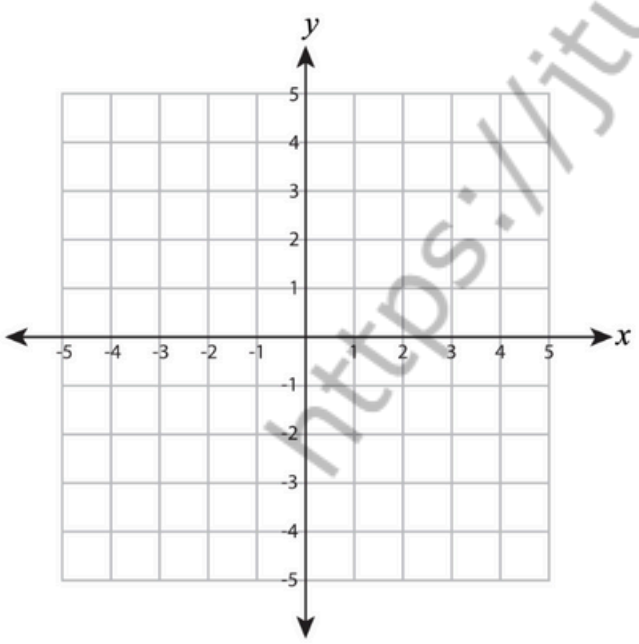


B) Write the ordered pair for each point.

7) Q(___ , ___) 8) E(___ , ___)

9) H(___ , ___) 10) R(___ , ___)

11) W(___ , ___) 12) A(___ , ___)



C) Plot each point on the coordinate grid.

13) U(3, -3) 14) S(-2, 5)

15) F(0, -1) 16) X(3, 2)

17) T(-1, -1) 18) K(4, -2)

D) Draw each shape on the coordinate grid.

19) Label A at (3, 3)

20) Label B at (-1, -5)

21) Label C at (4, -1)

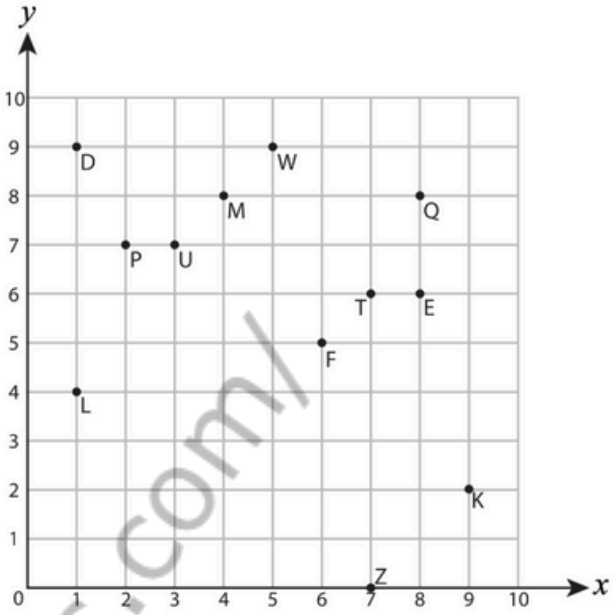
CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

A) Write the point that is located at each ordered pair.

1) (3, 7) _____ 2) (7, 0) _____

3) (9, 2) _____ 4) (5, 9) _____

5) (1, 4) _____ 6) (8, 8) _____

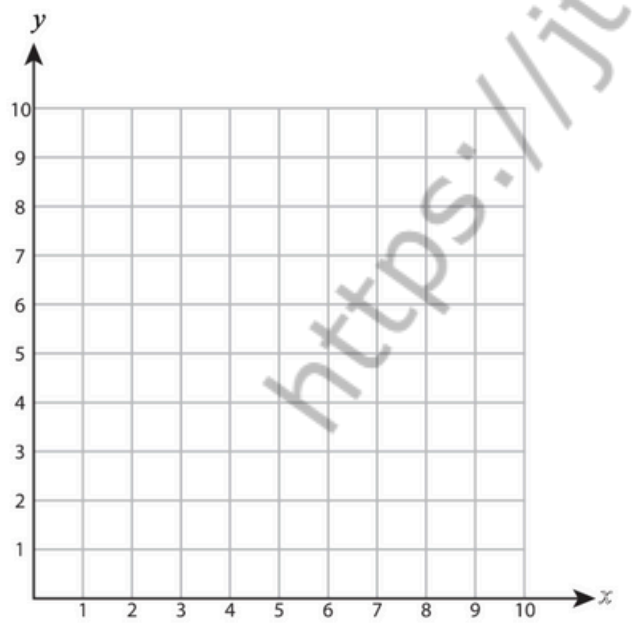


B) Write the ordered pair for each point.

7) D(___ , ___) 8) F(___ , ___)

9) T(___ , ___) 10) E(___ , ___)

11) M(___ , ___) 12) P(___ , ___)



C) Plot each point on the coordinate grid.

13) A(1, 3) 14) S(10, 5)

15) N(4, 9) 16) J(7, 4)

17) C(8, 3) 18) Y(9, 7)

D) Draw each shape on the coordinate grid.

19) Draw △ at (0, 5)

20) Draw ○ at (2, 10)

21) Draw □ at (5, 5)

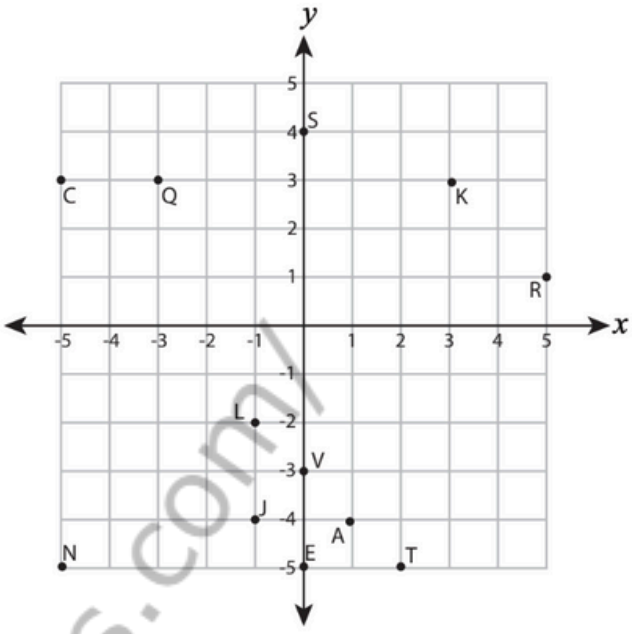
CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

A) Write the point that is located at each ordered pair.

1) (1, -4) _____ 2) (3, 3) _____

3) (-5, 3) _____ 4) (5, 1) _____

5) (0, -5) _____ 6) (-5, -5) _____

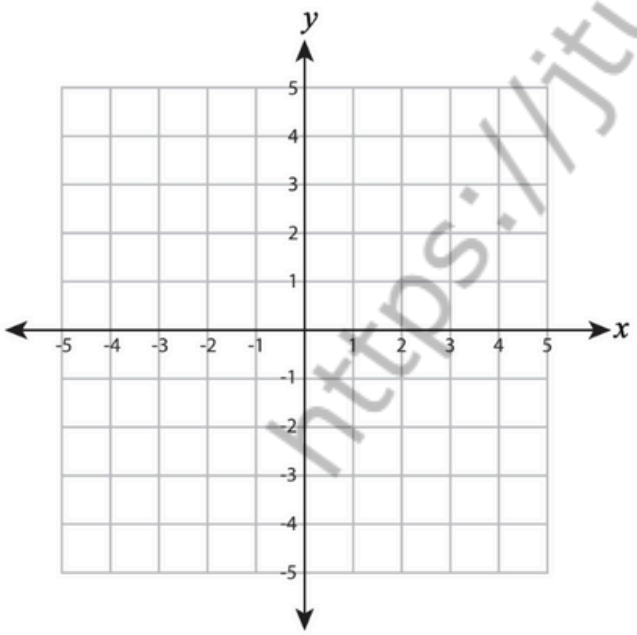


B) Write the ordered pair for each point.

7) L(___ , ___) 8) K(___ , ___)

9) V(___ , ___) 10) T(___ , ___)

11) C(___ , ___) 12) S(___ , ___)



C) Plot each point on the coordinate grid.

13) H(-5, -3) 14) Z(0, 1)

15) D(4, -4) 16) P(-4, 2)

17) Y(3, 5) 18) M(-3, -1)

D) Draw each shape on the coordinate grid.

19) Label A at (0, 3)

20) Label B at (2, -5)

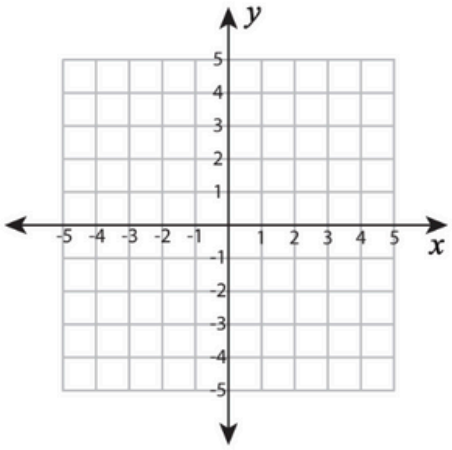
21) Label C at (0,- 1)

CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

PLOTTING POINTS - SHAPES

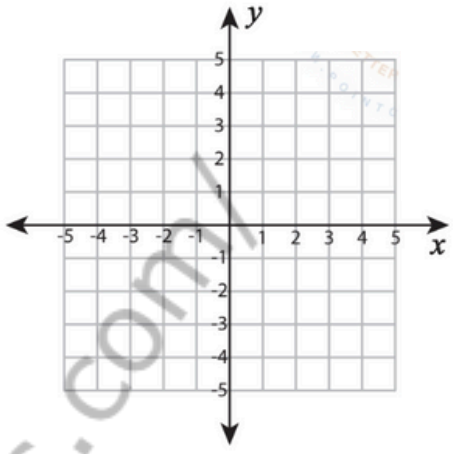
Plot and join the points in the given order. Complete the figure by joining the end points. Identify the shape.

1) (5, 3), (5, -3), (2, -3), (2, 3)



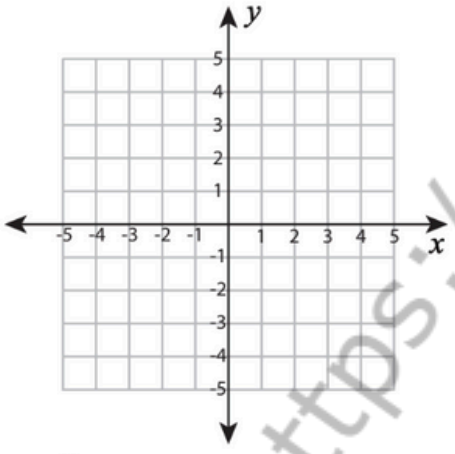
Shape: _____

2) (-1, 2), (1, 2), (2, 0), (1, -2), (-1, -2), (-2, 0)



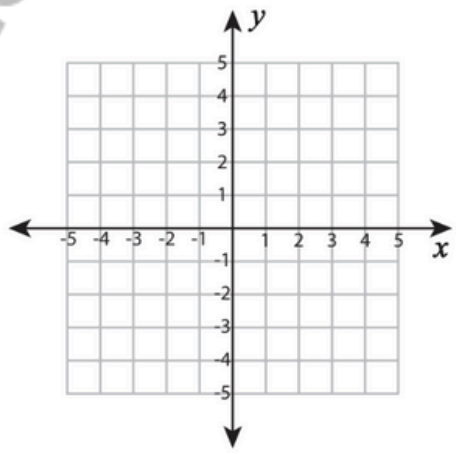
Shape: _____

3) (-2, -1), (1, -1), (1, -4), (-2, -4)



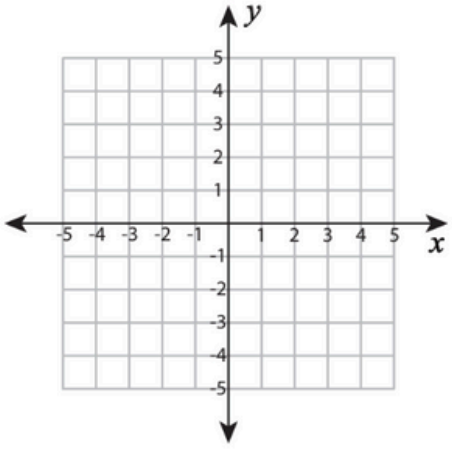
Shape: _____

4) (-4, 1), (-1, 3), (4, 1), (3, -3), (-1, -3)



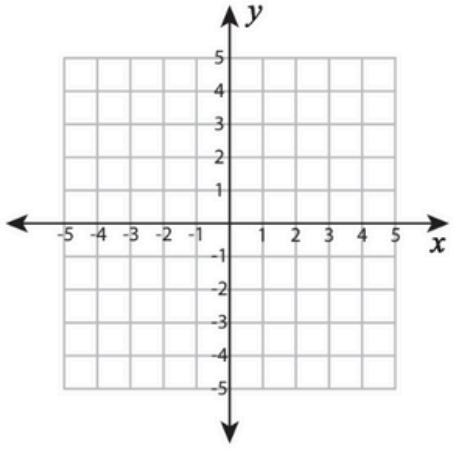
Shape: _____

5) (-2, -4), (1, 1), (4, -4)



Shape: _____

6) (-1, 2), (2, 5), (2, -5), (-1, -2)



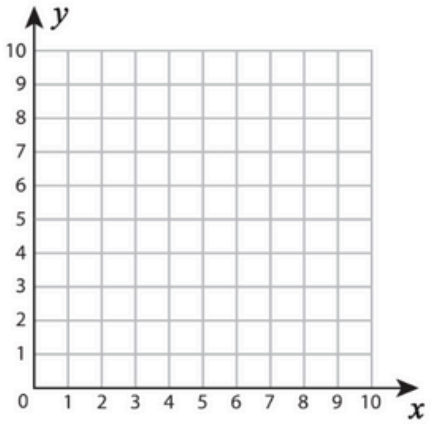
Shape: _____

CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

PLOTTING POINTS - SHAPES

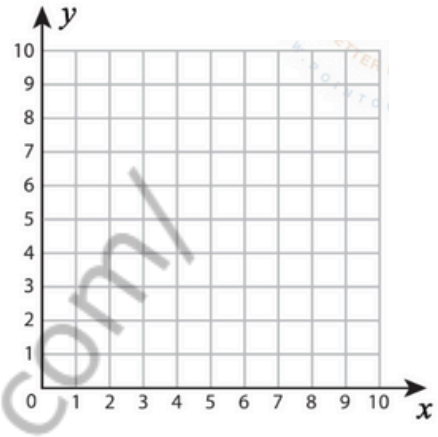
Plot and join the points in the given order. Complete the figure by joining the end points. Identify the shape.

1) (5, 3), (5, 7), (10, 3)



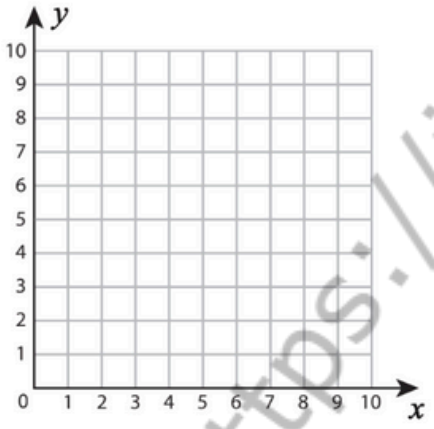
Shape: _____

2) (3, 4), (7, 4), (8, 2), (4, 2)



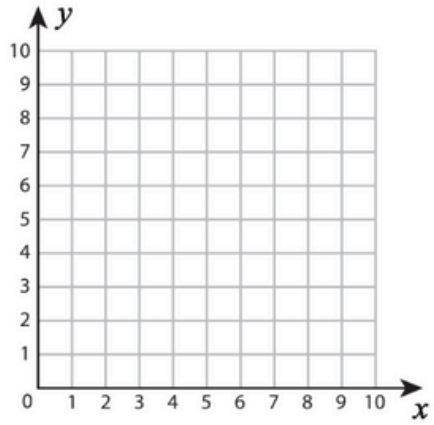
Shape: _____

3) (5, 9), (7, 7), (6, 4), (4, 4), (3, 7)



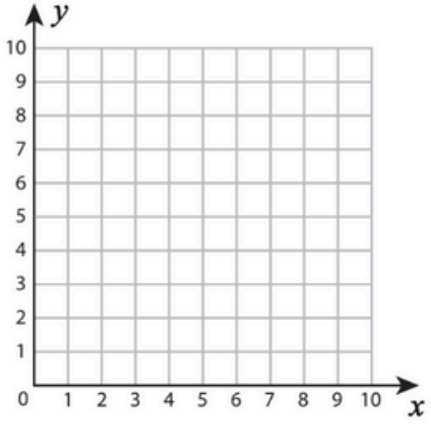
Shape: _____

4) (3, 2), (5, 4), (7, 4), (9, 2)



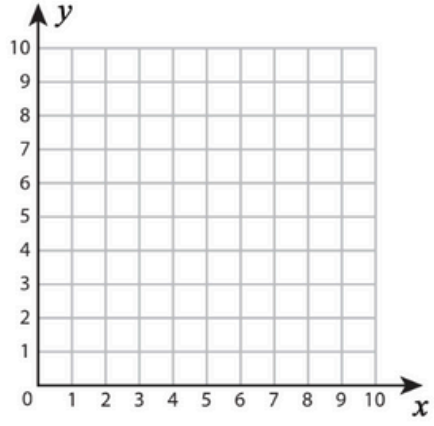
Shape: _____

5) (3, 5), (6, 5), (6, 2), (3, 2)



Shape: _____

6) (2, 7) , (9, 7) , (9, 3) , (2, 3)



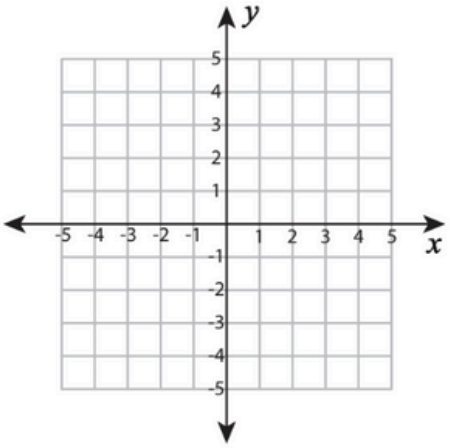
Shape: _____

CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

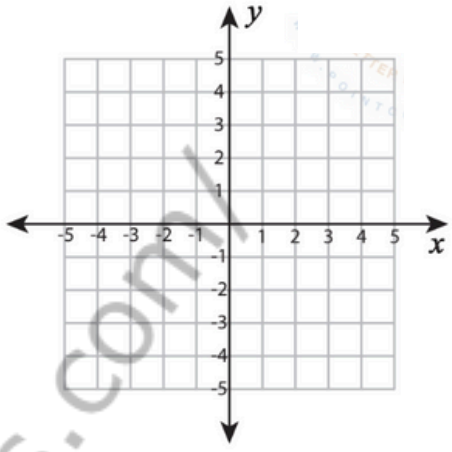
PLOTTING POINTS - SHAPES

Plot and join the points in the given order. Complete the figure by joining the end points. Identify the shape.

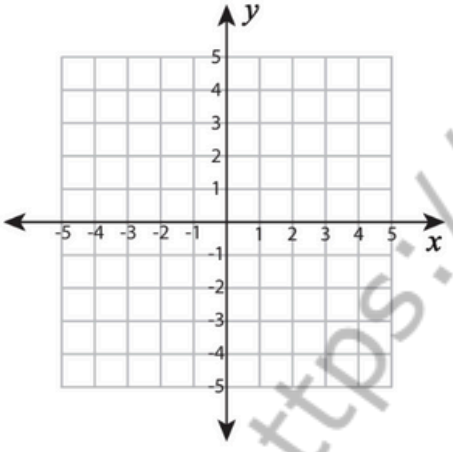
1) (5, 2), (5, -2), (-2, 3), (1, 3)



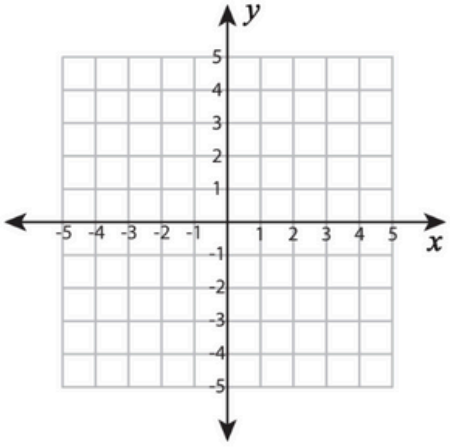
2) (-2, 2), (1, 3), (2, 2), (1, 2), (0, -2), (-2, 0)



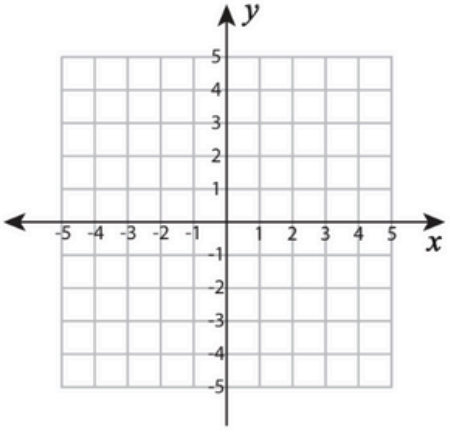
3) (-1, -1), (0, -1), (2, -4), (-3, -4)



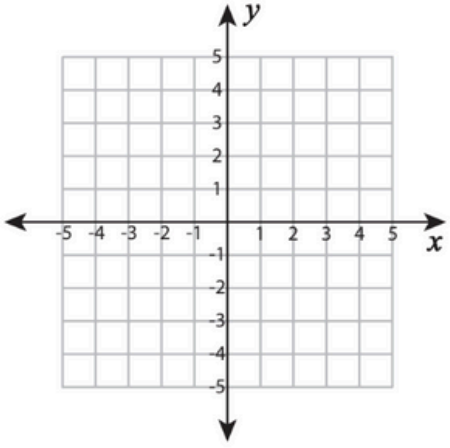
4) (-4,0), (-1, 2), (4, 5), (4, -3), (0, -3)



5) (-5, -4), (1, 0), (2, -4)



6) (-4, 2), (3, 5), (2, -2), (-3, -2)



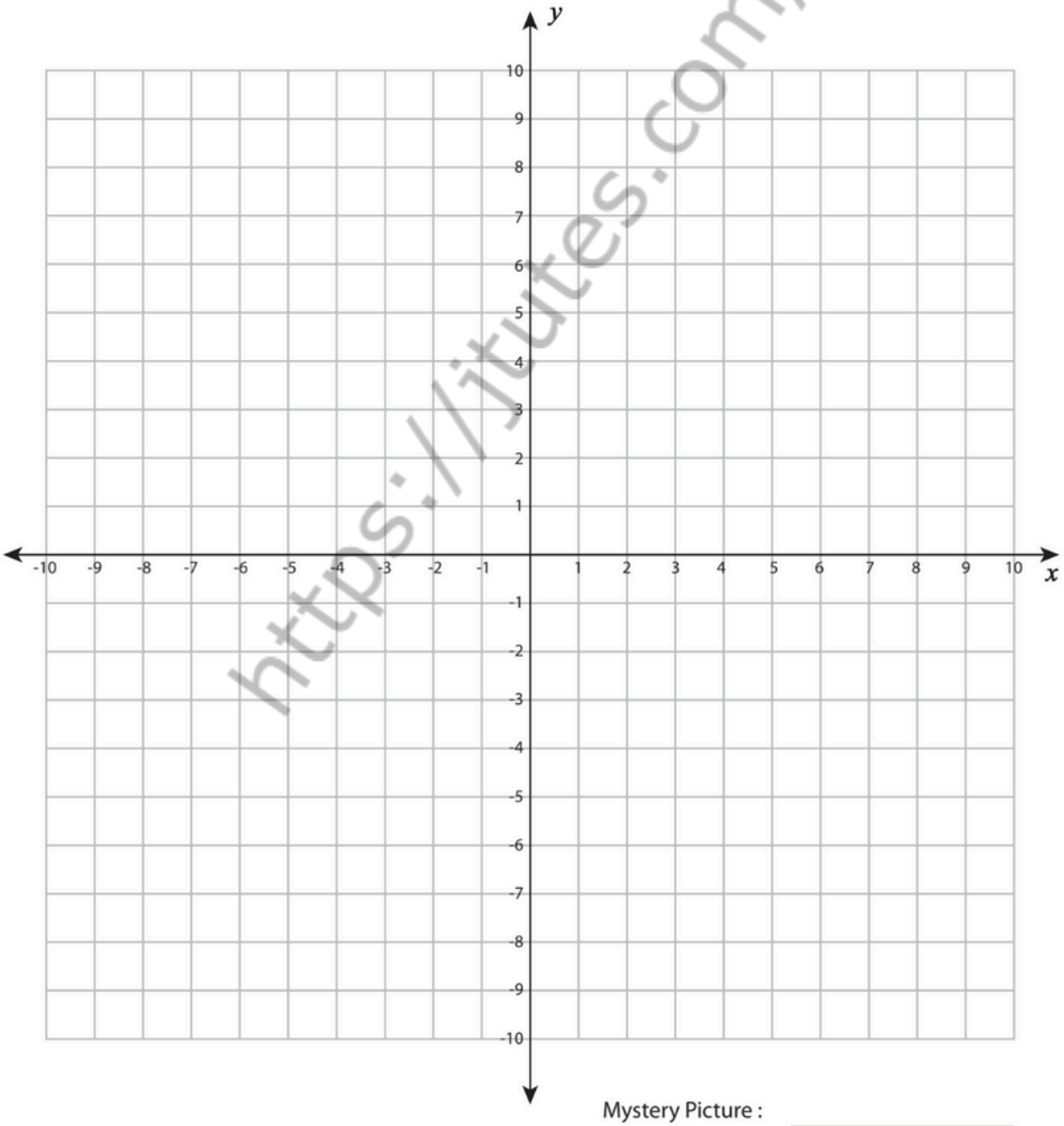
CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

MYSTERY PICTURE

Plot and join the points in the given order. Identify the mystery picture.

Start (-3, 3), (-4, 3), (-6, 0), (-8, 0), (-9, 2), (-7, 5), (-2, 6), (3, 6), (8, 5), (10, 2), (9, 0), (7, 0), (5, 3), End (4, 3)

Start (-3, 3), (-1, 3), (-1, 1), (2, 1), (2, 3), (4, 3), (8, -2), (6, -7), (-5, -7), (-7, -2), End (-3, 3)



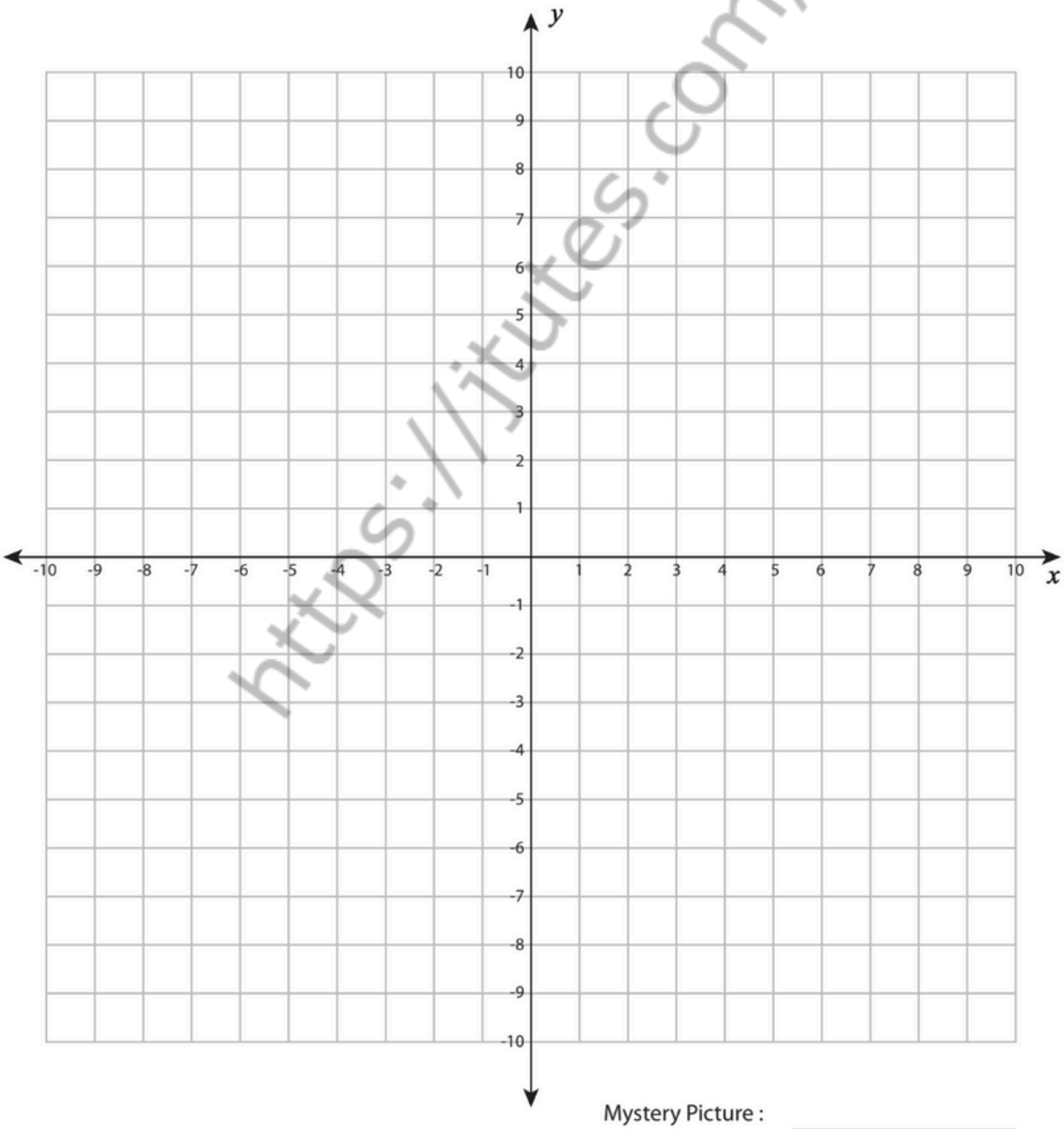
Mystery Picture : _____

CHAPTER 1 - PLOTTING POINTS (CARTESIAN PLANE)

MYSTERY PICTURE

Plot and join the points in the given order. Complete the picture by joining the end points.
Identify the mystery picture.

(-8, 1), (-8, 2), (-6, 2), (-7, 5), (-6, 5), (-4, 2), (1, 1), (2, 5), (3, 4), (3, 1), (8, -1), (9, -3), (7, -4), (4, -3), (1, -2), (-4, -4), (-5, -3), (-1, -1), (-3, 0), (-5, 1)



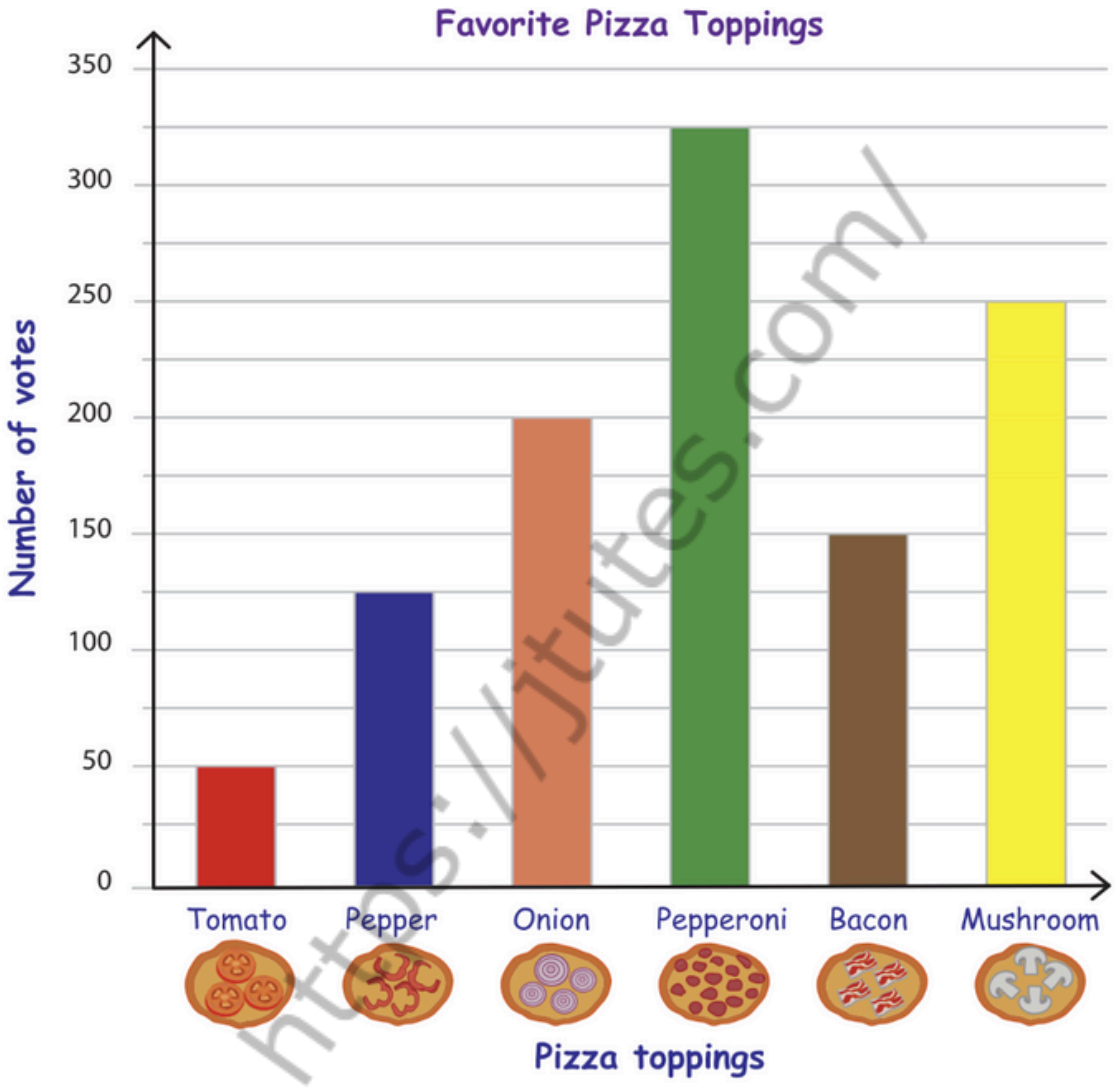
Mystery Picture : _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - PIZZA TOPPINGS

Good Time Pizza Makers are best in making pizzas with six different toppings. They took a survey about customers' favorite toppings and recorded the results in a bar graph. Use the bar graph to answer the questions.



1) Which is the most popular topping? _____

2) How many customers have chosen either tomato or pepper toppings? _____

3) If 75 more customers prefer bacon, which one will top the chart, bacon or onion? _____

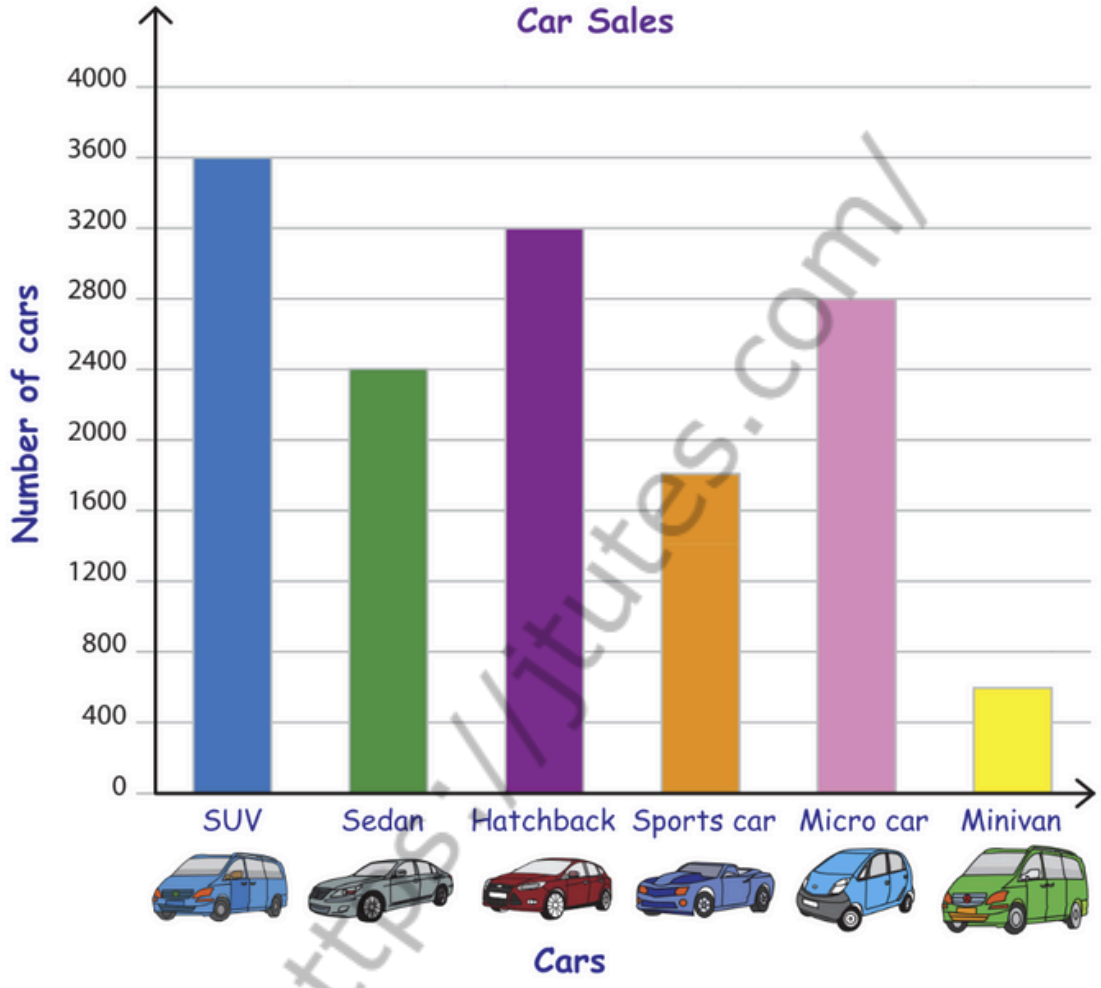
4) Which topping has 250 votes? _____

5) List the toppings in order from most popular to least popular.

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - CAR SALES

A survey is conducted on the number of cars sold by Mathew's Cars in 2013. The information is recorded in a bar graph. Use the graph to answer the questions.



1) Which type of car was sold the most? _____

2) How many fewer sports cars were sold than hatchbacks? _____

3) How many more SUV cars were sold than Sedans? _____

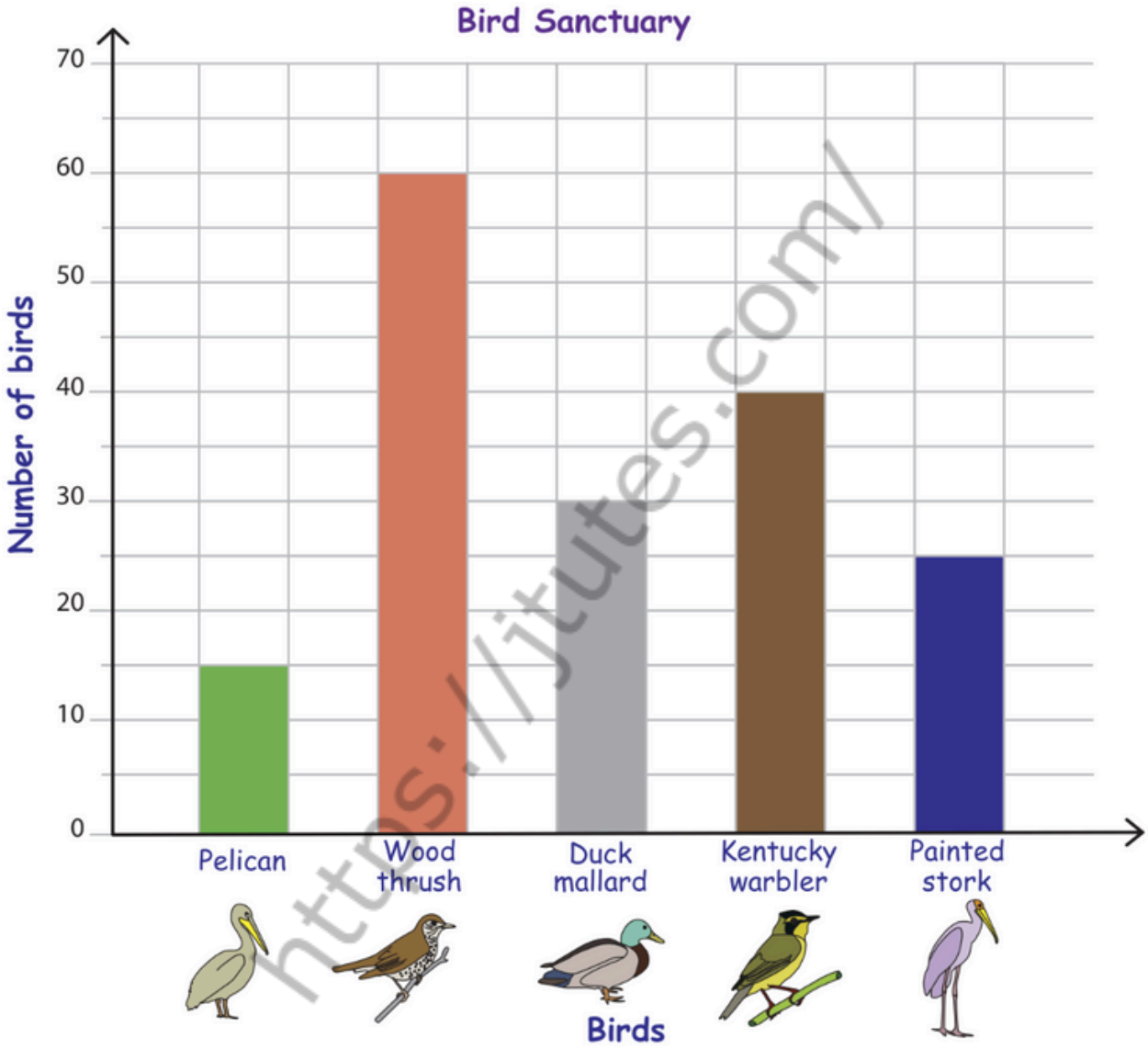
4) The sales of sports cars and minivans putting together equals the sales of _____

5) Find the number of cars sold in all. _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - BIRD SANCTUARY

Mr. Brandon, a staff of Exotic Bird Sanctuary, tracks the number of birds migrating to the sanctuary during Spring. He records the information in a bar graph. Use the graph to answer the questions.



1) Write a number at the end of each bar to display the number of birds of each kind.

2) What is represented along the x-axis of the graph? _____

3) Which bird counts between 10 and 20? _____

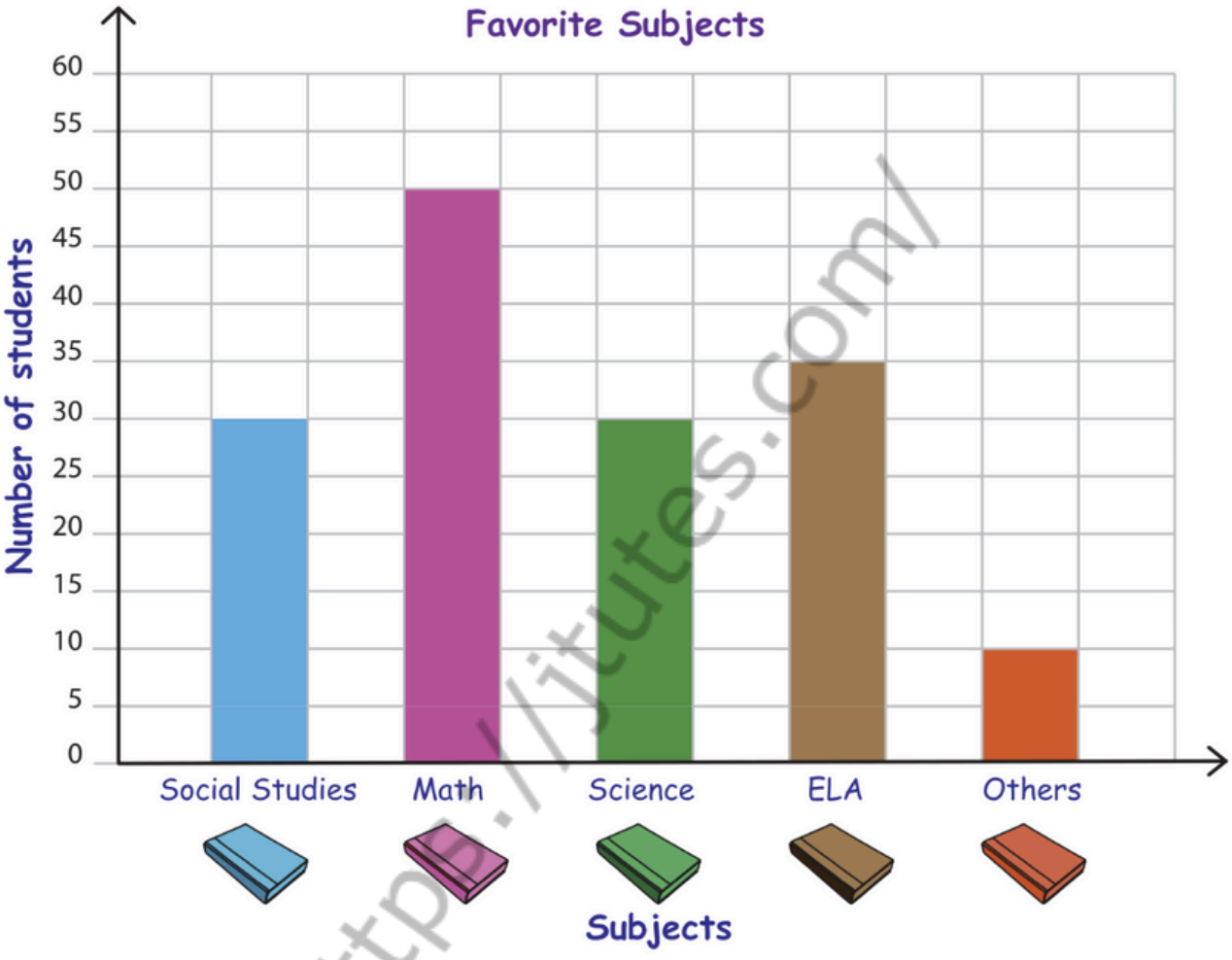
4) Which is more, Wood thrush or Kentucky warbler? _____

5) If six Painted stork flew away, how many Painted stork would have left? _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - FAVOURITE SUBJECTS

Miss. Sarah, a teacher of Edwards Elementary School, recorded the favorite subjects of her students in a bar graph. Use the graph to answer the questions.



1) What unit of scale is used to display the popularity of subjects among the students? _____

2) Which subject is the second most popular? _____

3) Which subject is less popular, science or ELA? _____

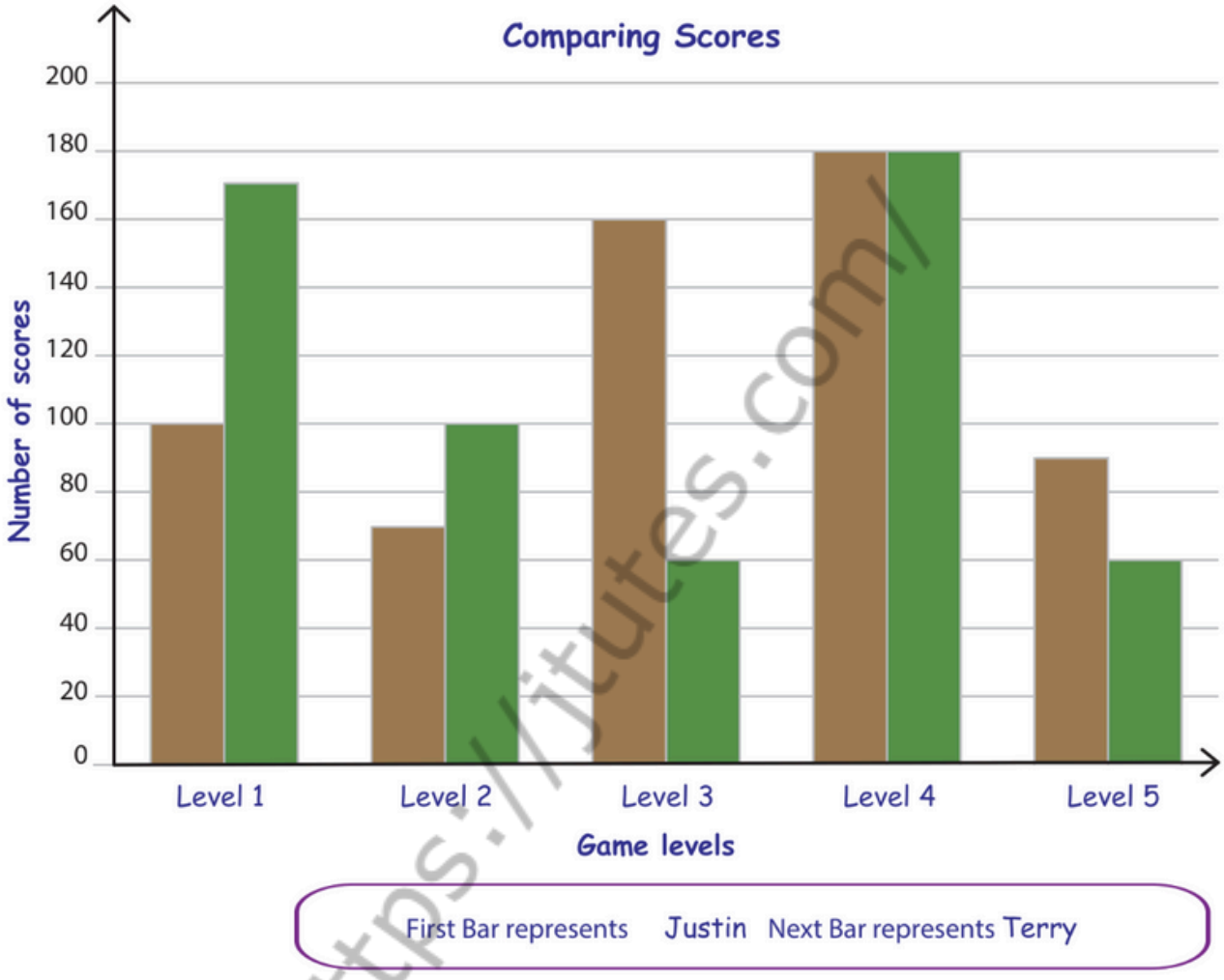
4) Which subject is favorite for 50 students? _____

5) Which subjects have the same number of votes? _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - GAME SCORES

Justin and Terry played video games. They recorded their scores in a bar graph. Use the bar graph to answer the questions.



1) What is the least score of Justin? _____

2) Which level Terry beat Justin by more than 50 scores? _____

3) Which level Justin and Terry got same scores? _____

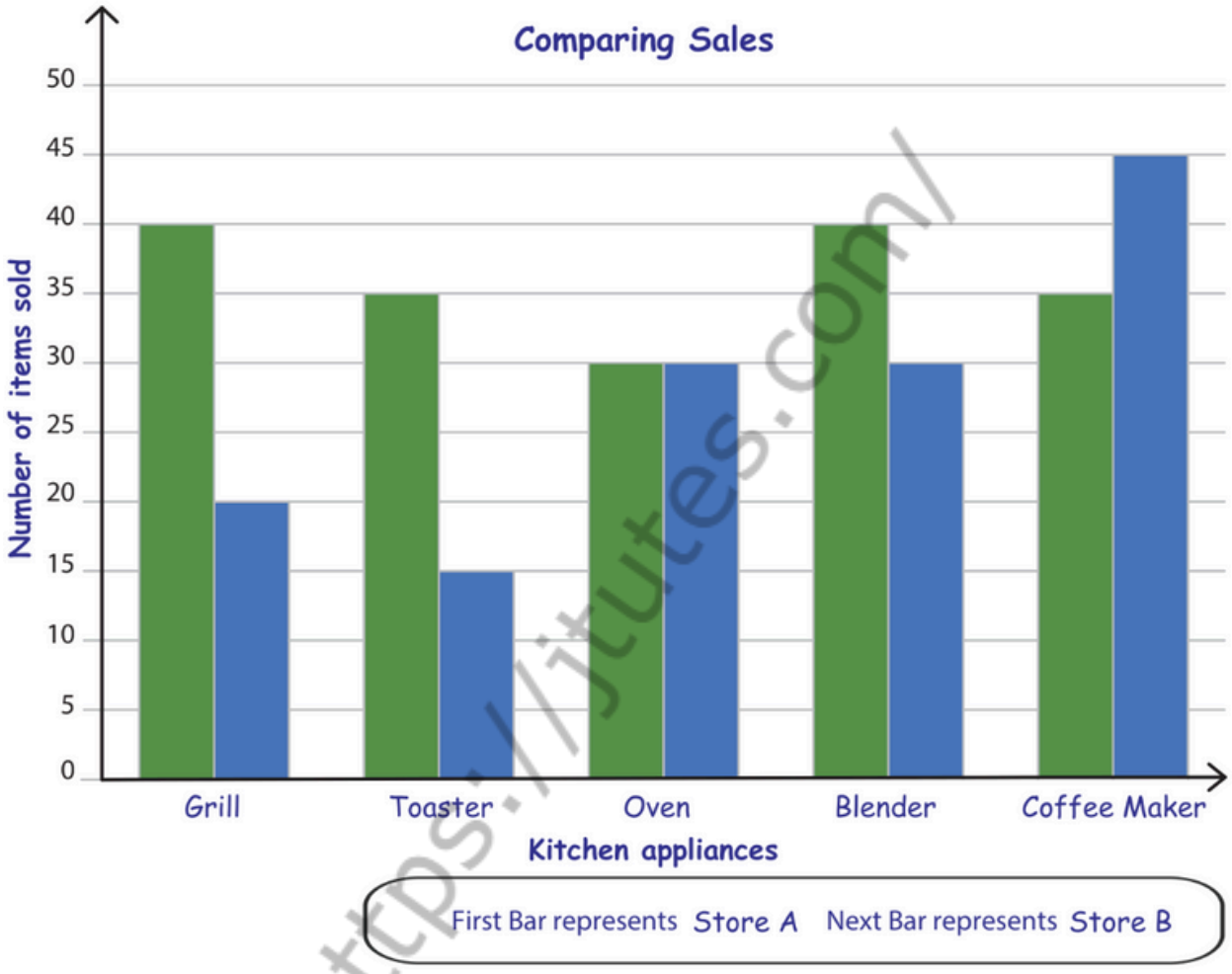
4) Who is the top scorer of level 5? _____

5) In level 2, how many more points does Justin need to tie the game? _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - COMPARING SALES

Mr. Peter owns two kitchen appliance stores. He compares the sales of two stores and recorded the information in a bar graph. Use the bar graph to answer the questions.



1) Which item sold the most in Store B? _____

2) Which store sold the least number of toasters? _____

3) The number of grills sold by Store A is twice of Store B. Is it correct? _____

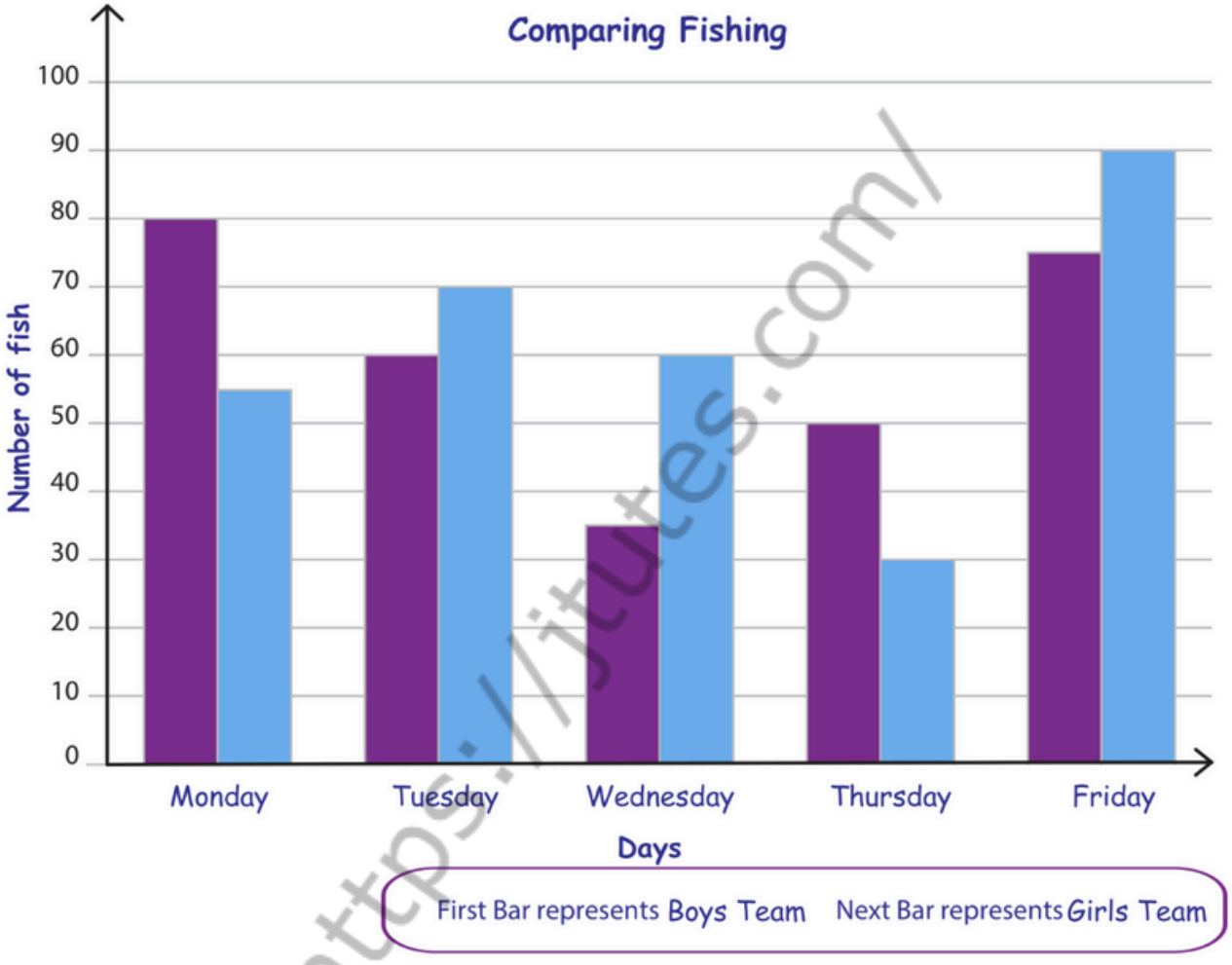
4) What is the difference on sales of blenders between Store A and Store B? _____

5) How many total appliances were sold by Store A? _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - GONE FISHING

In a camp activity, a group of girls and boys go fishing everyday from Monday through Friday.
They made a bar graph to show the number of fish they caught each day. Use the bar graph to answer the questions.



1) How many fish were caught on Tuesday by both the teams? _____

2) Write the days on which the boys team catches more fish than the girls team. _____

3) Which team caught more fish on Friday? _____

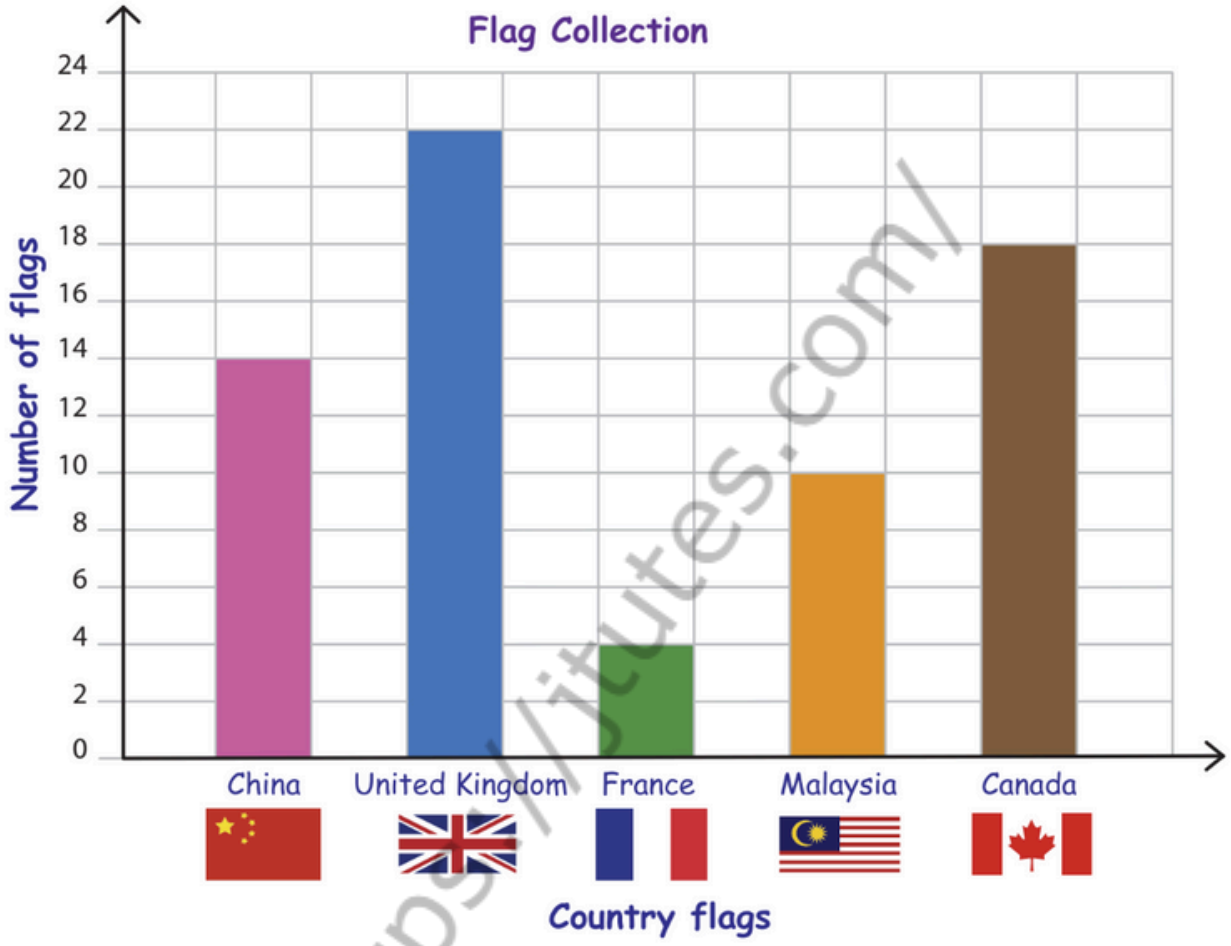
4) How many fish were caught by both teams in all? _____

5) Which team caught fewer fish in all? _____

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - FLAG COLLECTION

John has a hobby of collecting flags of different countries. The bar graph displays the number of flags collected by him. Use the graph to answer the questions.



1) How many fewer China flags does John have than United Kingdom flags? _____

2) Which country flag does John have fewer than 5? _____

3) How many more Malaysian flags should John need to have the same count as Canadian flags? _____

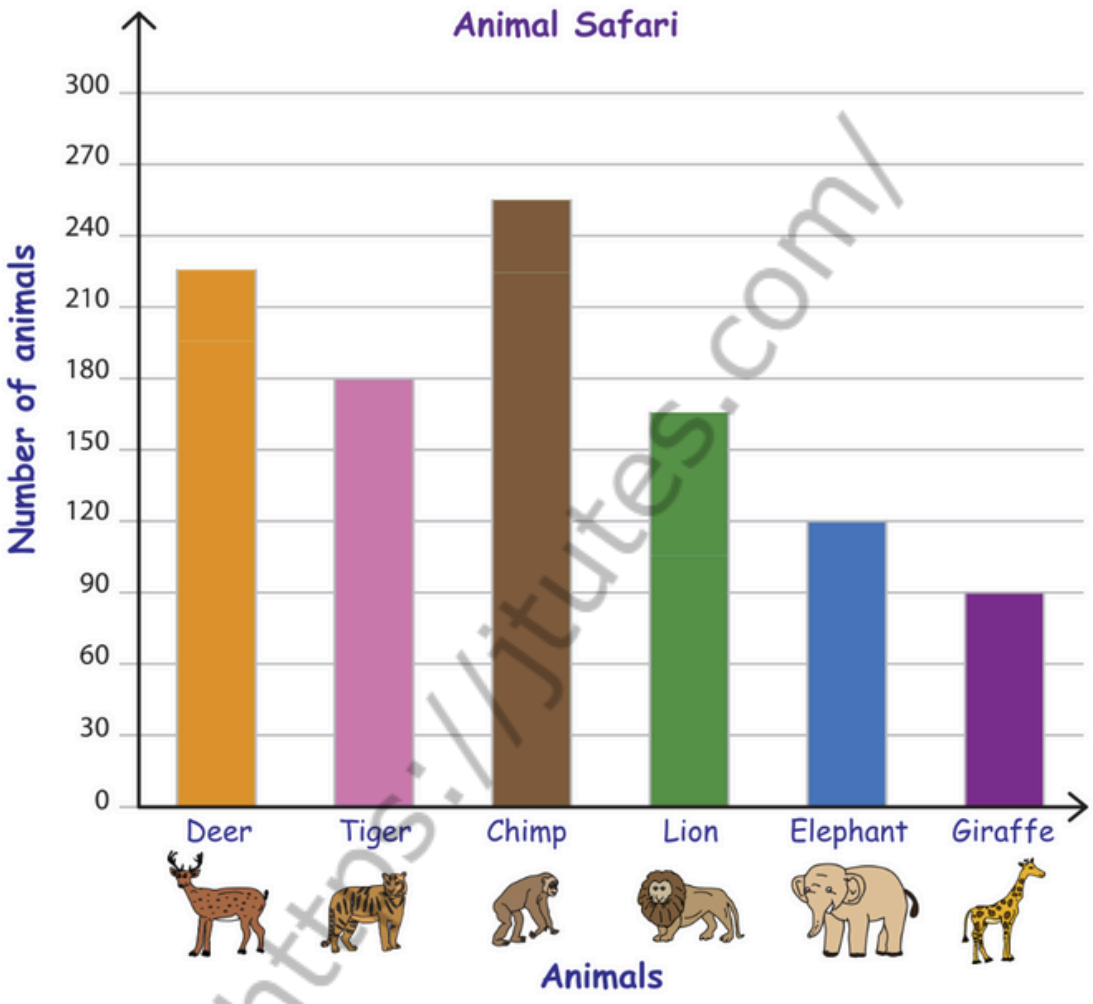
4) How many flags does John have altogether? _____

5) Write the countries in order from fewest flags to most flags.

CHAPTER 2 - READING GRAPHS (BAR GRAPHS)

BAR GRAPH - ANIMAL SAFARI

Henry Ford Zoo, a drive-through safari invites visitors to spend the day with six types of animals, including various activities like feeding, bathing and more. The graph shows the number of animals in each kind. Use the graph to answer the questions.



1) Write a number at the end of each bar to display the number of animals of each kind.

2) Are there more Chimps or Deer? _____

3) Which animal is double the count of Giraffe? _____

4) How many more elephants are required to have an equal number of elephants and lions? _____

5) Henry Ford's zoo made an exchange deal with Saint Peter's zoo. They exchanged 10 tigers, 5 lions and 15 chimps for 9 elephants, 15 deer and 5 giraffes. What would be the new count of animals in each kind?

Deer: _____; Tiger: _____; Chimp: _____; Lion: _____; Elephant: _____; Giraffe: _____

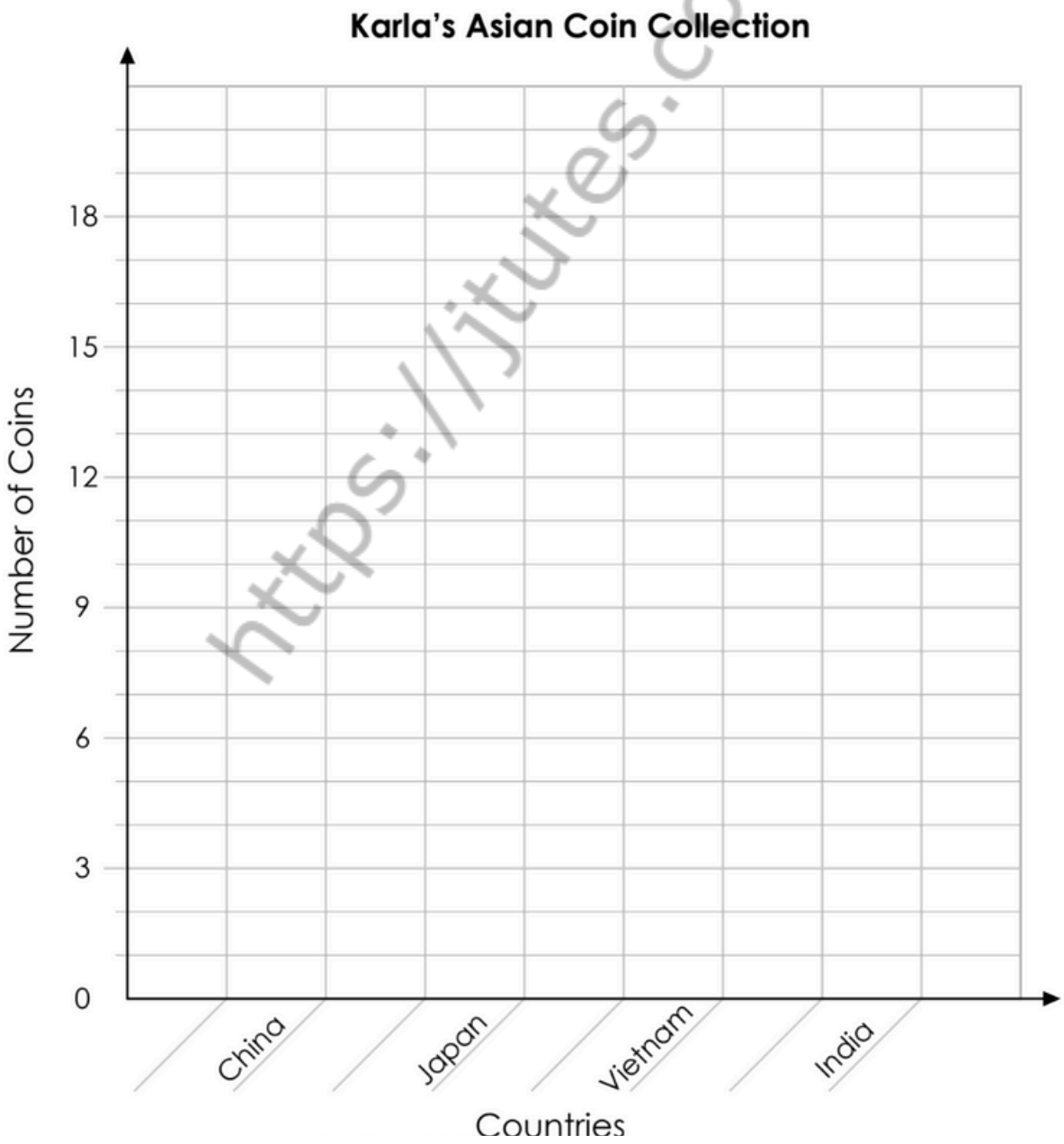
CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

BAR GRAPH OF COINS

Karla collects coins from Asian countries. The table below shows how many coins she has collected from four different countries. Use the information in the table to complete the graph.

China	13
Japan	15
Vietnam	4
India	10



CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

BAR GRAPH OF COINS

Use the bar graph you made to answer the questions.

1. How many more coins does Karla have from China than Vietnam? 1. _____

2. How many fewer coins does Karla have from India than Japan? 2. _____

3. How many total coins does Karla have from these four countries? 3. _____

4. What is on the x-axis of this graph? 4. _____

5. What is on the y-axis of this graph? 5. _____

6. Karla's grandmother sends her seven more coins from China. How many Chinese coins does she have now? 6. _____

7. Karla's older sister sent her 23 more coins from Vietnam. How many Vietnamese coins does she have now? 7. _____

8. Karla traded coins with her friend Patty. She gave Patty three of her Indian coins and Patty gave Karla two more Japanese coins. 8. _____

   How many Indian coins does Karla have now? _____

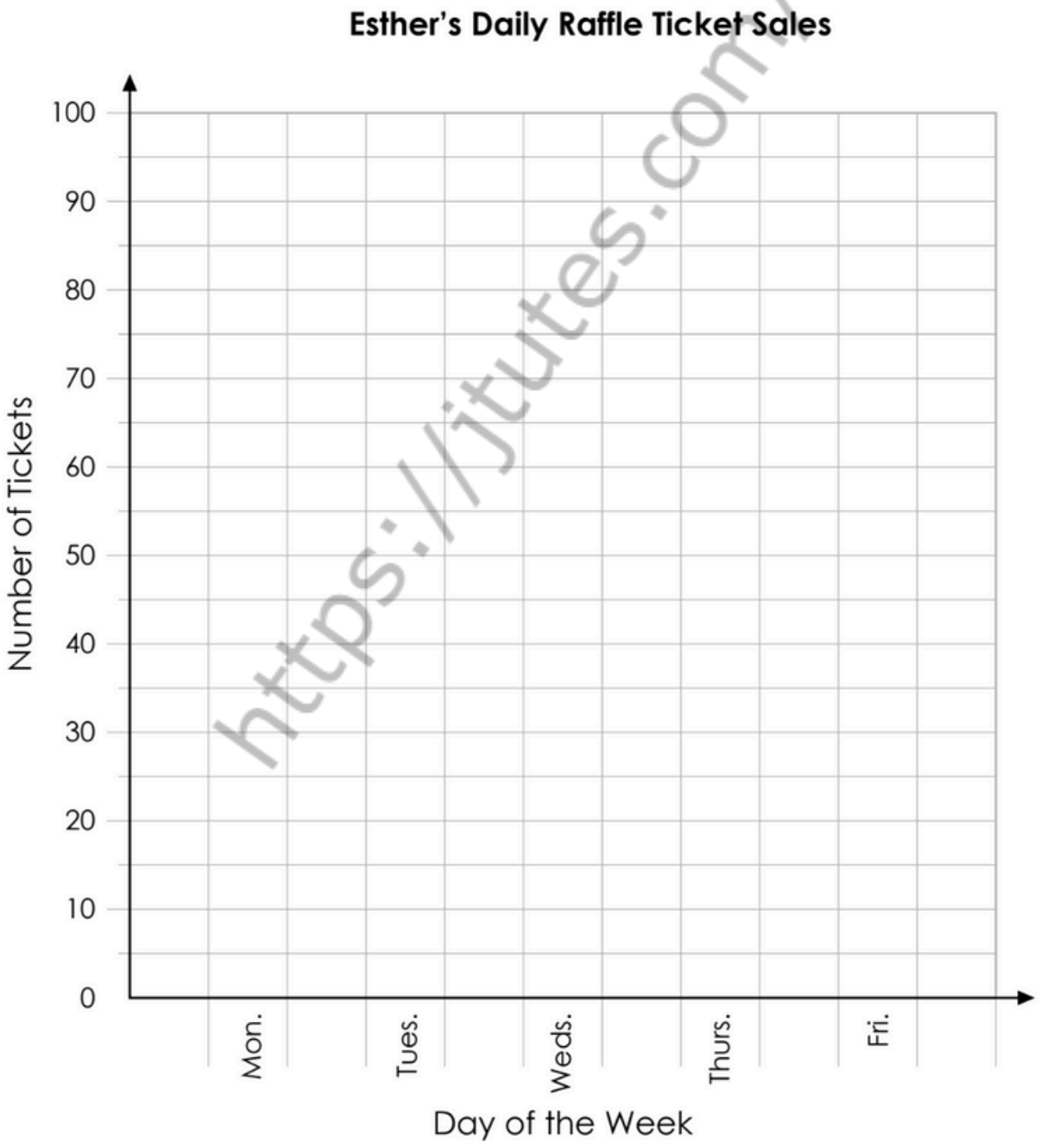
   How many Japanese coins does Karla have now?

CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

BAR GRAPH OF TICKET SALES

Esther's school sold raffle tickets last week. The table below shows the number of tickets sold each day. Use the information in the table to complete the graph.

Mon.	Tues.	Weds.	Thurs.	Fri.
55	40	25	35	80



CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

BAR GRAPH OF TICKET SALES

Use the bar graph you made to answer the questions.

1. How many tickets were sold on Monday? 1. _____
2. How many tickets were sold on Thursday? 2. _____
3. On which day were the most tickets sold? 3. _____
4. On which day were the fewest tickets sold? 4. _____
5. What is on the y-axis of this graph? 5. _____
6. What is on the x-axis of this graph? 6. _____
7. How many tickets were sold after Tuesday? 7. _____
8. How many tickets were sold before Thursday? 8. _____
9. During which two day period were 115 tickets sold? 9. _____
10. How many fewer tickets were sold on Wednesday than Thursday? 10. _____

CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

POPCORN SALES PICTOGRAPH

Four Boy Scouts sold popcorn for one month. The list below shows how much money was collected by each Boy Scout.

John - $75 **Logan - $30**

Carter - $60 **Andrew - $45**

Use the information from the list to complete the pictograph below and answer the questions.

Name	Money Collected
John	
Carter	
Logan	
Andrew	

KEY
Each ($) = 5 dollars

1. How much money did the boys collect in all? 1. _____

2. How much more money did Carter collect than Andrew? 2. _____

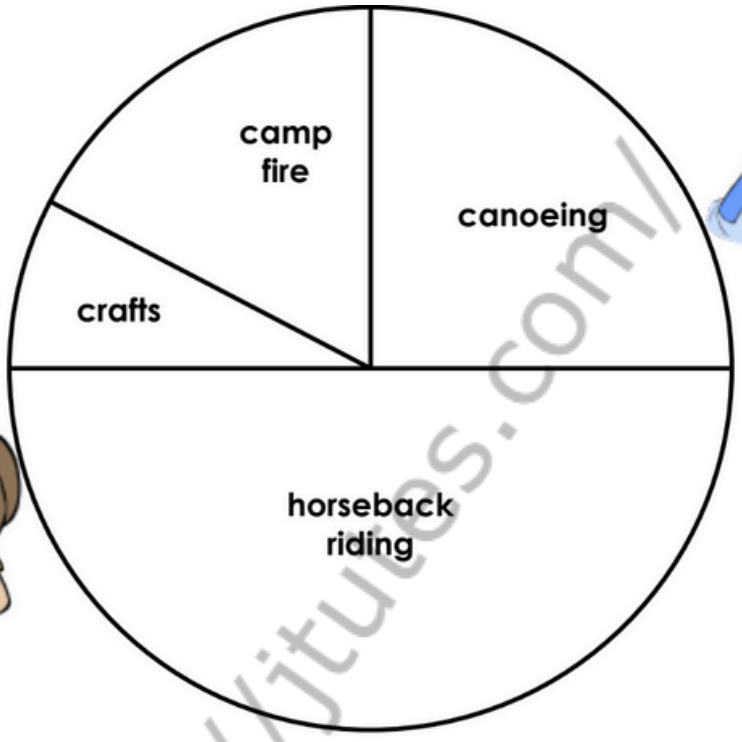
3. Which two boys sold a total of $120 of popcorn? 3. _____

4. Who sold more popcorn than Logan, but less than Carter? 4. _____

CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

SUMMER CAMP ACTIVITES

A group of kids spent a week at Big Tree Summer Camp. At the end of the week, the counselors asked campers what their favorite part of camp was. The pie graph shows their responses.



1. What activity did campers enjoy the most? 1. _____

2. What fraction of the campers chose canoeing as their favorite activity? 2. _____

3. What fraction of the campers chose horseback riding as their favorite activity? 3. _____

4. Did more campers choose camp fires or crafts as their favorite activity? 4. _____

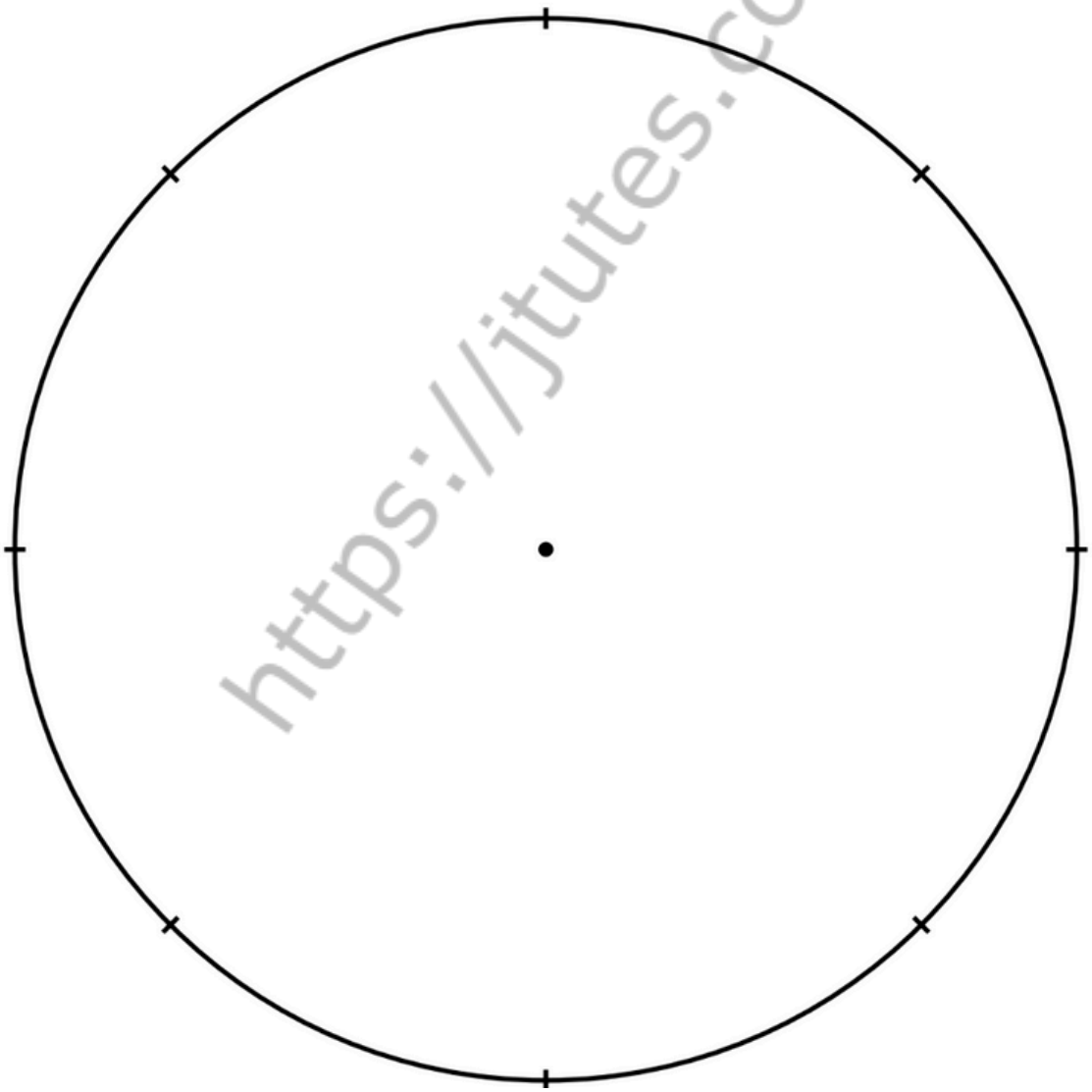
5. Was camp fire or canoeing more popular with the campers? 5. _____

CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

FAVORITE SPORTS GRAPH

Patty surveyed her friends to find out their favorite sports. The table shows the results. Make a circle graph using the information in the table.

football	𝍸 𝍸
baseball	𝍸
tennis	𝍸
basketball	𝍸 𝍸 𝍸 𝍸
hockey	𝍸



CHAPTER 3 - READING GRAPHS (BAR & PIE GRAPH)

FAVORITE SPORTS GRAPH

Use the circle graph you made to answer the questions.

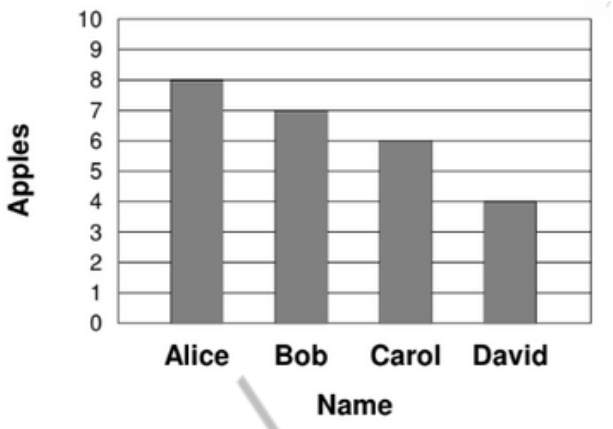
1. What fraction of Patty's friends said football was their favorite sport? 1. _____
2. What fraction said hockey was their favorite sport? 2. _____
3. How many more people chose basketball than tennis? 3. _____
4. About one half of Patty's friends chose which sport? 4. _____
5. About one quarter of Patty's friends chose which sport? 5. _____
6. What fraction of Patty's friends chose baseball or tennis? 6. _____
7. What fraction of Patty's friends chose football or basketball? 7. _____

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right shows the number of apples picked by students visiting a farm.



Use the information in the graph to answer the following questions:

1) How many fewer apples were picked by Bob than Alice?

2) How many fewer apples were picked by David than Bob?

3) How many apples were picked by Carol and Alice combined?

4) How many more apples were picked by Bob than Carol?

5) How many apples were picked by David and Carol combined?

6) How many apples were picked by Carol and David combined?

7) How many fewer apples were picked by Carol than Alice?

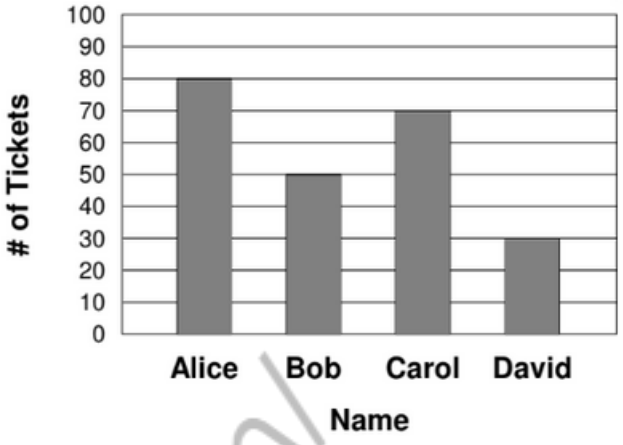
8) How many apples were picked by Bob and Alice combined?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right shows the number of tickets sold by students in the drama club.

Use the information in the graph to answer the following questions:



1) How many tickets were sold by David and Bob combined?

2) How many more tickets were sold by Bob than David?

3) How many fewer tickets were sold by Bob than Alice?

4) How many more tickets were sold by Carol than Bob?

5) How many tickets were sold by Bob and David combined?

6) How many fewer tickets were sold by David than Bob?

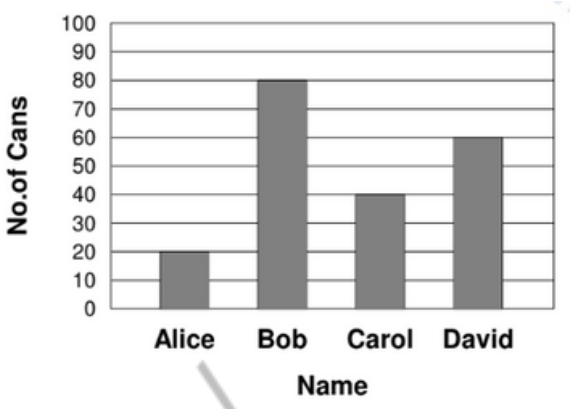
7) How many fewer tickets were sold by David than Carol?

8) How many fewer tickets were sold by Carol than Alice?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right shows the number of cans collected by children for a recycling project.



Use the information in the graph to answer the following questions:

1) How many fewer cans were collected by Alice than David?

2) How many fewer cans were collected by Alice than Bob?

3) How many cans were collected by Alice and Bob combined?

4) How many more cans were collected by David than Carol?

5) How many cans were collected by David and Alice combined?

6) How many more cans were collected by David than Alice?

7) How many more cans were collected by Bob than Alice?

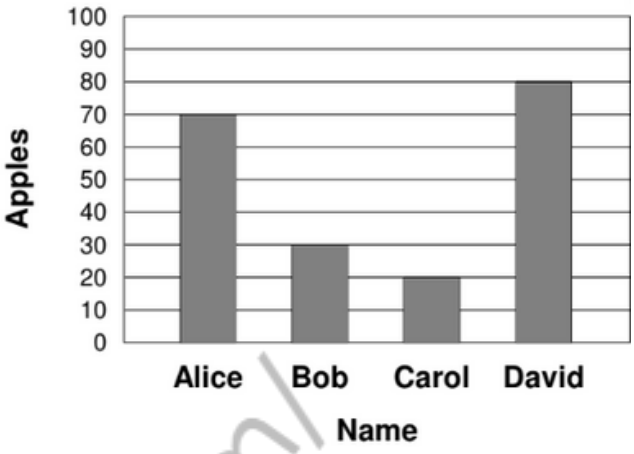
8) How many fewer cans were collected by Carol than David?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right shows the number of apples picked by students visiting a farm.

Use the information in the graph to answer the following questions:



1) How many apples were picked by David and Bob combined?

2) How many apples were picked by Carol and Alice combined?

3) How many fewer apples were picked by Alice than David?

4) How many more apples were picked by Bob than Carol?

5) How many fewer apples were picked by Carol than David?

6) How many fewer apples were picked by Bob than David?

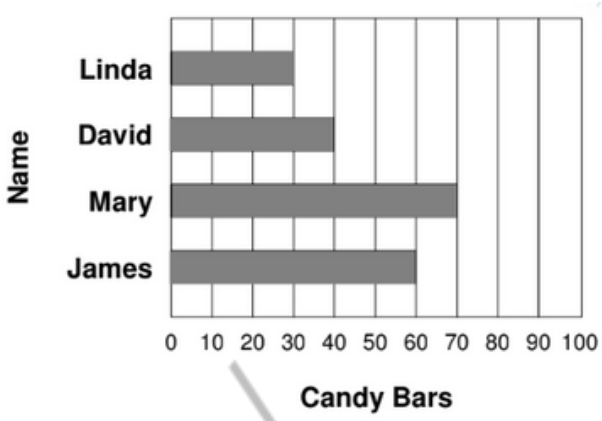
7) How many fewer apples were picked by Bob than Alice?

8) How many more apples were picked by David than Carol?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right shows the number of candy bars sold for a fund-raiser.



Use the information in the graph to answer the following questions:

1) How many more candy bars were sold by Mary than David?

2) How many candy bars were sold by David and James combined?

3) How many fewer candy bars were sold by James than Mary?

4) How many candy bars were sold by James and David combined?

5) How many fewer candy bars were sold by Linda than David?

6) How many candy bars were sold by Mary and David combined?

7) How many fewer candy bars were sold by Linda than Mary?

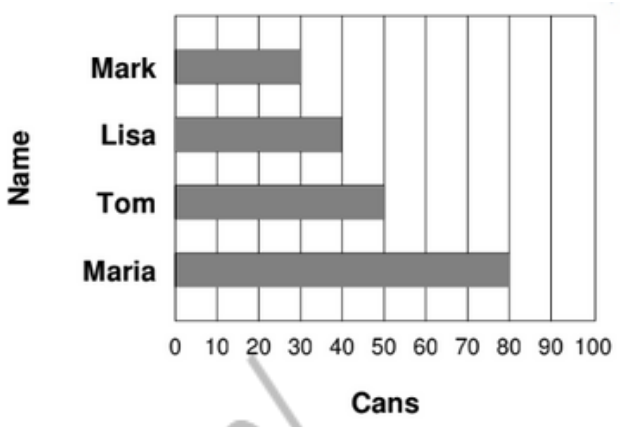
8) How many more candy bars were sold by David than Linda?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right shows the number of cans of food collected for a fund-raiser.

Use the information in the graph to answer the following questions:



1) How many fewer cans of food were collected by Lisa than Maria?

2) How many fewer cans of food were collected by Lisa than Tom?

3) How many cans of food were collected by Lisa and Mark combined?

4) How many more cans of food were collected by Lisa than Mark?

5) How many cans of food were collected by Maria and Mark combined?

6) How many cans of food were collected by Tom and Lisa combined?

7) How many cans of food were collected by Mark and Tom combined?

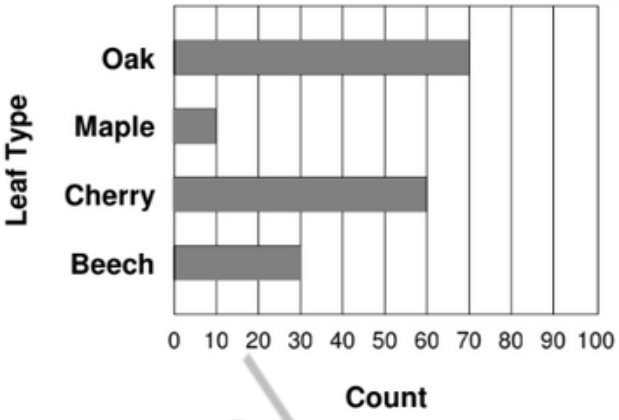
8) How many fewer cans of food were collected by Mark than Maria?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right lists different kinds of leaves collected by students in Mrs. Smith's class.

Use the information in the graph to answer the following questions:



1) How many maple and beech leaves were collected in all?

2) How many fewer beech leaves were collected than cherry leaves?

3) How many cherry and beech leaves were collected in all?

4) How many beech and maple leaves were collected in all?

5) How many more cherry leaves were collected than maple leaves?

6) How many fewer maple leaves were collected than cherry leaves?

7) How many cherry and maple leaves were collected in all?

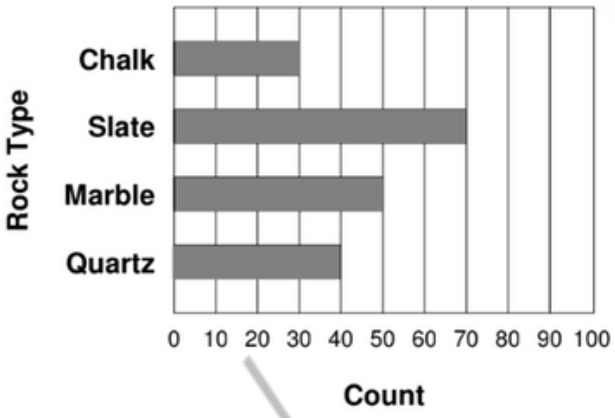
8) How many more cherry leaves were collected than beech leaves?

CHAPTER 4 - READING GRAPHS (BAR GRAPH)

GRAPHS

The graph to the right lists different kinds of rocks collected for a class rock collection.

Use the information in the graph to answer the following questions:



1) How many fewer quartz rocks were collected than marble rocks?

2) How many fewer chalk rocks were collected than marble rocks?

3) How many chalk and slate rocks were collected in all?

4) How many more marble rocks were collected than quartz rocks?

5) How many quartz and slate rocks were collected in all?

6) How many more marble rocks were collected than chalk rocks?

7) How many slate and chalk rocks were collected in all?

8) How many more slate rocks were collected than marble rocks?

CHAPTER 5 - NAPLAN

MATERIAL FOR THIS WEEK WILL BE
PROVIDED BY YOUR TUTOR IN CLASS

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

BIRDWATCHING PICTOGRAPH

Pat, Jim, Linda, and Paul went on a bird watching walk.
The pictograph below shows how many birds each person saw.

Birdwatching Trip

Name	Number of Birds Seen
Pat	6
Jim	3½
Linda	5½
Paul	8

Each 🐦 represents 2 birds

1. How many birds did Pat see? 1. _____

2. How many birds did Jim see? 2. _____

3. How many birds did Paul see? 3. _____

4. How many more birds did Paul see than Linda? 4. _____

5. How many birds did Jim and Pat see together? 5. _____

6. Did Jim see an odd or even number of birds? 6. _____

7. Who saw eleven birds? 7. _____

8. If Jim had seen three more birds, how many symbols would be next to his name on the pictograph? 8. _____

9. Who saw fewer birds: Jim or Paul? 9. _____

10. Did Linda see more or less than a dozen birds? 10. _____

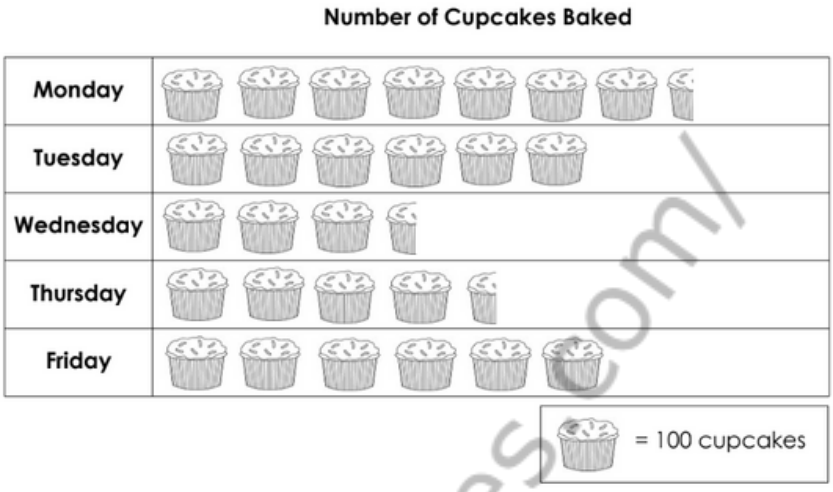
11. Tell how you would show 4 birds on the pictograph? 11. _____

12. What is the total number of birds seen by the 4 people? 12. _____

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

THE CUPCAKE BAKERY

The Cupcake Bakery makes cupcakes and ships them off to supermarkets across the country. The pictograph below shows how many cupcakes they bake each day. Use the information from the graph to answer the questions.



1. How many cupcakes were baked on Monday? 1. _____

2. Were more cupcakes baked on Monday or Friday? 2. _____

3. On which day were the fewest cupcakes baked? 3. _____

4. How many cupcakes were baked on Tuesday and Wednesday combined? 4. _____

5. How many more cupcakes were baked on Tuesday than Thursday? 5. _____

6. How many more cupcakes were baked on Friday than Wednesday? 6. _____

7. The Cupcake Bakery only makes two kinds of cupcakes: chocolate and white. On Friday, they baked 200 white cupcakes. How many chocolate cupcakes did they bake? 7. _____

8. On Wednesday, the bakery made 100 chocolate cupcakes. How many white cupcakes did they make? 8. _____

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

FISHING TRIP PICTOGRAPH

Michael, Emily, Jose, Jennifer, and Kevin went on a fishing trip.
The pictograph below shows how many fish each caught.
Use the pictograph to answer the questions.

Number of Fish Caught

Michael	
Emily	
Jose	
Jennifer	
Kevin	

 = 6 fish

1. How many fish did Michael catch? **1.** _____

2. How many fish did Emily catch? **2.** _____

3. How many fish did Kevin catch? **3.** _____

4. How many more fish did Emily catch than Jose? **4.** _____

5. How many fish did the girls catch? **5.** _____

6. How many fish did boys catch? **6.** _____

7. How many more fish did the girls catch than the boys? **7.** _____

8. How many fish did Jose and Kevin catch? **8.** _____

9. Find the sum of the fish caught by all five people? **9.** _____

10. Who caught fewer fish, Jennifer or Emily? **10.** _____

11. Did Jennifer catch an odd or even number of fish? **11.** _____

12. Jose said, "I caught a dozen fish!" Is he correct? Explain. **12.** _____

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

LEMONADE STAND PICTURE GRAPH

Doreen was having a lemonade stand in her front yard.
The picture graph below shows how much she earned.

Lemonade Stand Profits

Day	*Money Earned*
Friday	$ $ $ $ $
Saturday	$ $ $ $ $ $ $
Sunday	$ $ $
Monday	$ $

$ = five dollars

1. How much money did Doreen earn on Friday? 1. _____

2. How much did she earn on Sunday? 2. _____

3. How much money did she earn on Saturday and Sunday? 3. _____

4. How much more did Doreen earn on Saturday than Friday? 4. _____

5. On which day did Doreen earn the least money? 5. _____

6. Which day did Doreen earn the most money? 6. _____

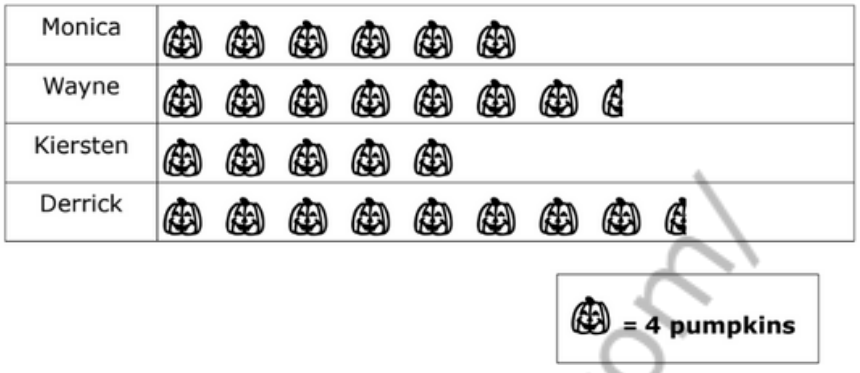
7. How much more did Doreen earn on Saturday than Monday? 7. _____

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

THE PUMPKIN CARVING CONTEST

Monica, Wayne, Kiersten, and Derrick were in a pumpkin carving contest. There was a prize for the person who carved the most pumpkins.

Number of Pumpkins Carved



1. How many pumpkins did Monica carve? 1. _____

2. How many pumpkins did Monica carve? 2. _____

3. How many pumpkins did Kiersten carve? 3. _____

4. How many pumpkins did Derrick carve? 4. _____

5. How many more pumpkins did Derrick carve than Kiersten? 5. _____

6. How many pumpkins did Monica and Wayne carve in all? 6. _____

7. Which person carved the greatest number of pumpkins? 7. _____

8. Which person carved the least number of pumpkins? 8. _____

9. If Kiersten carved 4 more pumpkins, how many pumpkins would she have carved in all? 9. _____

10. If Monica had carved 6 fewer pumpkins, how many would she have carved? 10. _____

11. How many more pumpkins did Wayne carve than Monica? 11. _____

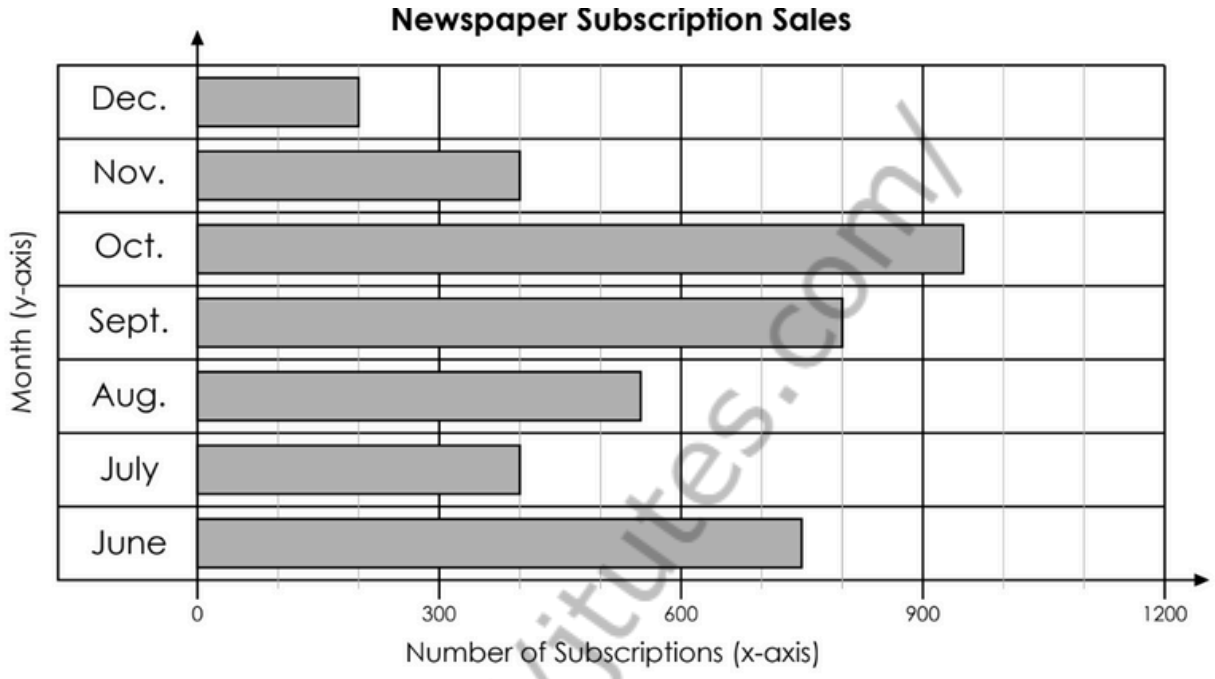
12. How many pumpkins did the 4 contestants carve altogether? 12. _____

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

NEWSPAPER BAR GRAPH

The local newspaper keeps track of how many subscriptions are sold each month.

Use the graph below to answer the questions.



1. How many newspaper subscriptions were sold in October? 1. _____

2. How many more newspaper subscriptions were sold in November than December? 2. _____
(Show your work in the space below.)

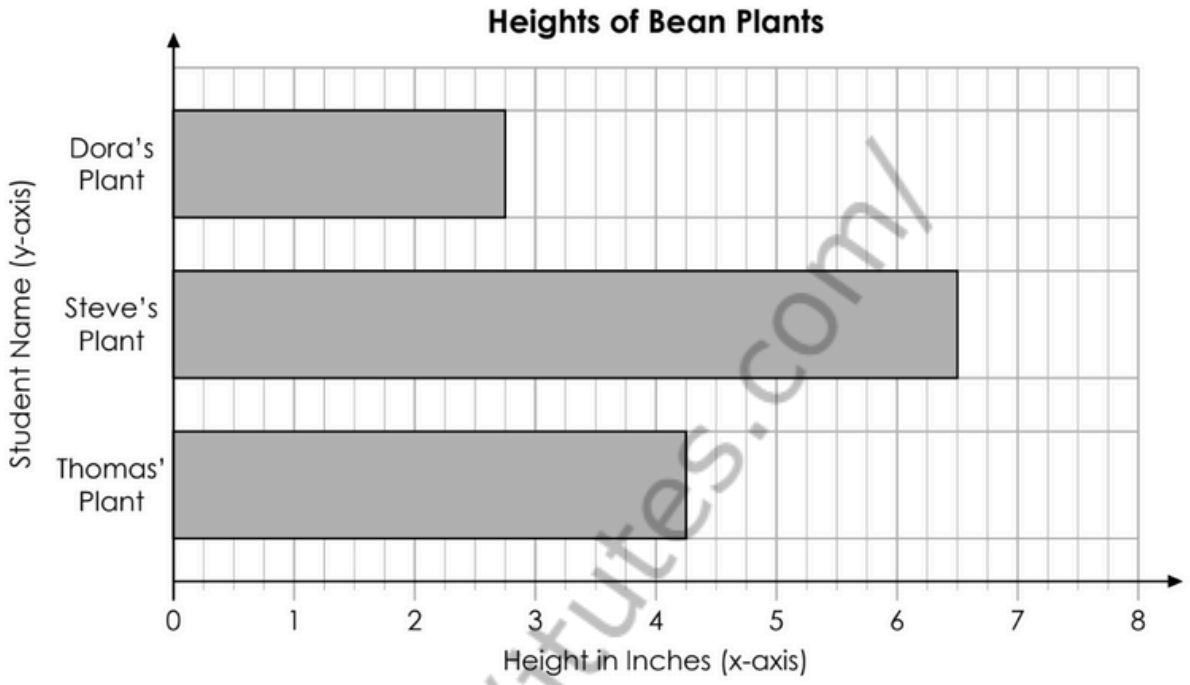
3. Were more newspaper subscriptions sold in October, November, and December, or in July, August, and September? 3. _____
(Show your work in the space below.)

4. In April, the newspaper sold 100 fewer subscriptions than they did in June. How many supscriptions did they sell in April? 4. _____

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

BEAN PLANT BAR GRAPH

The students in Mr. Suess' class planted lima bean seeds. After two weeks, the students measured the height of their bean plants and graphed the results.



1. Write the height of each student's plant at the end of each bar.

2. How much taller did Thomas' plant grow than Dora's? 2. _____

3. How much shorter is Thomas' plant than Steve's? 3. _____

4. If Steve's plant had only grown half as tall, what would its height be? 4. _____

5. Thomas said to Dora, "My plant is twice as tall as yours." Is he correct? 5. _____
   Explain.

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

Example 11 Describing chance

Classify each of the following statements as either true or false.

a It is likely that children will go to school next year.

b It is an even chance for a fair coin to display tails.

c Rolling a 3 on a 6-sided die and getting heads on a coin are equally likely.

d It is certain that two randomly chosen odd numbers will add to an even number.

SOLUTION	EXPLANATION
a true	Although there is perhaps a small chance that the laws might change, it is (very) likely that children will go to school next year.
b true	There is a 50-50, or an even chance, of a fair coin displaying tails. It will happen, on average, half of the time.
c false	These events are not equally likely. It is more likely to flip heads on a coin than to roll a 3 on a 6-sided die.
d true	No matter what odd numbers are chosen, they will always add to an even number.

Exercise 8G

1, 2 | 1 | —

UNDERSTANDING

1 Match each of the events a to d with a description of how likely they are to occur (A to D).

a A tossed coin landing heads up.	A unlikely
b Selecting an ace first try from a fair deck of 52 playing cards.	B likely
c Obtaining a number other than 6 if a fair 6-sided die is rolled.	C impossible
d Obtaining a number greater than 8 if a fair 6-sided die is rolled.	D even chance

2 Fill in the blanks, using the appropriate terminology.

a If an event is guaranteed to occur, we say it is _____.

b An event that is equally likely to occur or not occur has an _____ _____.

c A rare event is considered _____.

d An event that will never occur is called _____.

CHAPTER 6 - PICTO-GRAPH (PROBABILITY)

3 Consider a fair 6-sided die with the numbers 1 to 6 on it. Answer true or false to each of the following.

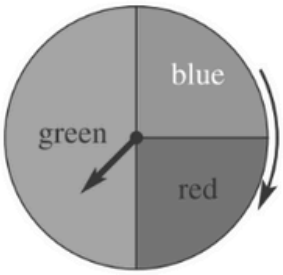
- **a** Rolling a 3 is unlikely.
- **b** Rolling a 5 is likely.
- **c** Rolling a 4 and rolling a 5 are equally likely events.
- **d** Rolling an even number is likely.
- **e** There is an even chance of rolling an odd number.
- **f** There is an even chance of rolling a multiple of 3.

4 Match up each of the events **a** to **d** with an equally likely event **A** to **D**.

- **a** Rolling a 2 on a 6-sided die
- **b** Selecting a heart card from a fair deck of 52 playing cards
- **c** Flipping a coin and tails landing face up
- **d** Rolling a 1 or a 5 on a 6-sided die

- **A** Selecting a black card from a fair deck of 52 playing cards
- **B** Rolling a number bigger than 4 on a 6-sided die
- **C** Selecting a diamond card from a fair deck of 52 playing cards
- **D** Rolling a 6 on a 6-sided die

5 Consider the spinner shown, which is spun and could land with the arrow pointing to any of the three colours. (If it lands on a boundary, it is re-spun until it lands on a colour.)



- **a** State whether each of the following is true or false.
  - **i** There is an even chance that the spinner will point to green.
  - **ii** It is likely that the spinner will point to red.
  - **iii** It is certain that the spinner will point to purple.
  - **iv** It is equally likely that the spinner will point to red or blue.
  - **v** Green is twice as likely to occur as blue.
- **b** Use the spinner to give an example of:
  - **i** an impossible event
  - **ii** a likely event
  - **iii** a certain event
  - **iv** two events that are equally likely

CHAPTER 7 - PROBABILITY

CHAPTER 7 - PROBABILITY

- Discuss the meaning of probability terminology (for example probability, sample space, favourable outcomes, trial, chance events and experiments).
- Construct sample spaces for single-step experiments with equally likely outcomes
- Express probabilities in common and decimal fractional and percentage forms.
- Understand the advantages and limitations of calculating theoretical probabilities.

CHAPTER 7 - PROBABILITY

PROBABILITY

Probability is the chance of something happening.

So many things involve probability.
- Insurance is about probability.
- Weather prediction is about probability.
- Gambling is about probability.
- Even atomic theory is about probability.
- etc., etc., etc.

1 Copy the above probability scale and add each of the following to the scale.

a) The day after Monday will be Tuesday.
b) Next year will have 390 days.
c) We will have a new Maths teacher next week.
d) I will watch TV tonight.
e) I will become the Prime Minister.
f) I will drink some milk today.
g) It will rain tomorrow.
h) I will get my driver's licence before I am 21.
i) When a coin is thrown it will land tails up.
j) I will send a text message today.
k) The next movie I watch will be an action movie.
l) The next person to walk through the door will be a girl.

Recent survey:
1 out of 2 people make up 50% of the population.

2 Brainstorm each of the following:

a) List 3 events in your everyday life that will be certain.
b) List 3 events in your everyday life that will be impossible.
c) List 3 events in your everyday life that will be approximately fifty-fifty.
d) The probability of tossing a coin and getting a head is fifty-fifty, or 0.5 or ½.
If a coin is tossed 100 times, will the number of heads be 50?
e) The probability of rolling a die and getting a 6 is one-sixth, or 0.17, or $^1/_6$.
If a die is rolled 60 times, will the number of 6s be 10?
f) Almost every gambling game involving money is unfair.
g) We have Buckley's chance of winning the match.

Next time you get a chance, find out about Buckley's chance.

CHAPTER 7 - PROBABILITY

SAMPLE SPACE

A Sample Space is a complete list of all possible outcomes.

Tossing a coin:
There are two possibilities: head or Tail.
The Sample Space is: S = {H, T}

a) Write the Sample Space for spinning the spinner.

S = {Green, Blue, Red, Yellow}

b) Calculate the probability of getting blue.

$$\text{Probability of Blue} = \frac{1}{4} = 0.25$$

c) Spin the spinner 40 times. What fraction of the spins are blue?

G	B	R	Y
13	8	9	10

$$\textit{Fraction Blue} = \frac{8}{40} = 0.20$$

d) Is your answer to b) and c) different? Which answer is more reliable?

The answers are different. The Sample Space gives the theoretical answer. The spinner is experimental - the more spins, the more likely the answer will be 0.25.

1 a) Write the Sample Space for tossing a coin.

b) Calculate the probability of getting a tail.

2 a) Write the Sample Space for throwing a die.

b) Calculate the probability of getting a 6.

CHAPTER 7 - PROBABILITY

THEORETICAL PROBABILITY

The probability of an event is the number of favourable outcomes divided by the number of possible outcomes.

$$Theoretical\ \Pr obability = \frac{Number\ of\ \ favourable\ outcomes}{Total\ number\ of\ \ outcomes}$$

The Sample Space is the complete list of all possible outcomes.

Four balls are numbered 1 to 4. What is the probability of selecting a ball that shows:

a) 2? **b)** even? **c)** >1?

Sample space = {1,2,3,4}

a) $P(2) = \frac{1}{4} = 0.25$ {there is one 2}

b) $P(even) = \frac{2}{4} = 0.5$ {2,4 are even}

c) $P(>1) = \frac{3}{4} = 0.75$ {2,3,4 are >1}

A standard 6-sided die is thrown. What is the probability of each of the following happening?

a) 3 **b)** odd **c)** >4

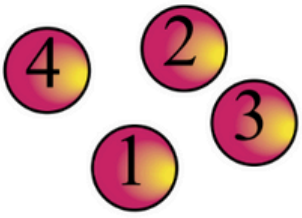
Sample space = {1,2,3,4,5,6}

a) $P(3) = \frac{1}{6} = 0.17$ {there is one 3}

b) $P(odd) = \frac{3}{6} = 0.5$ {1,3,5 are odd}

c) $P(<4) = \frac{3}{6} = 0.5$ {1,2,3 are <4}

1 Four balls are numbered 1 to 4.
What is the probability of selecting a ball that shows:



a) 4? **b)** odd?
c) >2? d) <2?

2 Five balls are numbered 1 to 5. What is the probability of selecting a ball that shows:

a) 4? **b)** even? **c)** >3?

3 A six-sided die is thrown. What is the probability of each of the following:

a) 3? **b)** even?
c) odd? **d)** 5?
e) <3? **f)** >4?
g) >6? **h)** a number divisible by 3?

CHAPTER 7 - PROBABILITY

THEORETICAL PROBABILITY

4 The numbers 1 to 4 are each written on a piece of paper and placed in a bag. If a piece of paper is drawn from the bag, what is the probability that the number on the paper is:

a) 3?
b) even?
c) >3?
d) 5?

5 A class raffle is conducted by writing the numbers from 1 to 26 on a piece of paper and placed in a bag. What is the probability that the drawn number is:

a) 7?
b) 20?
c) odd?
d) even?
e) >20?
f) ≤15?
g) divisible by 3?
h) divisible by 4?
i) divisible by 5?
j) divisible by 6?

6 A letter is randomly chosen from the word CHANCE.
What is the probability that the letter is:

a) a vowel?
b) a consonant?
c) the letter A?

> Vowels are a, e, i, o, u.
> A vowel is a sound made with little restriction of the oral cavity.

7 A letter is randomly chosen from the word PROBABILITY.
What is the probability that the letter is:

a) a vowel?
b) a consonant?
c) the letter A?

> Consonants are non-vowels.
> A consonant is a sound made with complete or partial closure of the oral cavity.

CHAPTER 7 - PROBABILITY

THEORETICAL PROBABILITY

8 A six-sided die is thrown. What is the probability of each of the following?

a) 3	**b)** even	**c)** odd
d) 5	**e)** <3	**f)** >3
g) >7	**h)** a number divisible by 2	

9 A class raffle is conducted by writing the numbers from 1 to 20 on a piece of paper and placed in a bag. What is the probability that the drawn number is:

a) 18?	**b)** 2?
c) odd?	**d)** even?
e) >15?	**f)** <10?
g) divisible by 3?	**h)** divisible by 4?
i) divisible by 5?	**j)** divisible by 6?

10 A letter is randomly chosen from the word LIKELY.
What is the probability that the letter is:

a) a vowel?
b) a consonant?
c) the letter L?

CHAPTER 7 - PROBABILITY

THEORETICAL PROBABILITY

11 A six-sided die is thrown. What is the probability of each of the following?

a) 6 **b)** even **c)** odd
d) 4 **e)** <4 **f)** >4
g) <1 **h)** a number divisible by 3

12 A class raffle is conducted by writing the numbers from 1 to 30 on a piece of paper and placed in a bag. What is the probability that the drawn number is:

a) 28? **b)** 2?
c) odd? **d)** even?
e) >25? **f)** <10?
g) divisible by 3? **h)** divisible by 4?
i) divisible by 5? **j)** divisible by 6?

13 A letter is randomly chosen from the word SPINNER.
What is the probability that the letter is:

a) a vowel?
b) a consonant?
c) the letter S?

CHAPTER 7 - PROBABILITY

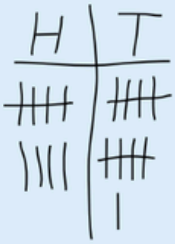
EXPERIMENTAL PROBABILITY

If the experiment is fair then with a large number of trials, the experimental probability and the theoretical probability should be similar.

$$\text{Experimental probability} = \frac{\text{Number of successful trials}}{\text{Total number of trials}}$$

Experimental probability changes from trial to trial.

A coin was tossed 20 times:



Number of heads = 9

Number of tails = 11

$$\text{P(head)} = \frac{\text{Number of heads}}{\text{Total no of tosses}} = \frac{9}{20} = 0.45$$

$$\text{P(tail)} = \frac{\text{Number of tails}}{\text{Total no of tosses}} = \frac{11}{20} = 0.55$$

1 Investigate the experimental probability of heads (and tails) by tossing a coin 50 times. Use a procedure similar to the above example.

2 Increase the number of trials from 50 to 500, using a table similar to this table:

	50 throws	500 throws
P(head)	$= \frac{}{50} = 0.$	$= \frac{}{500} = 0.$
P(tail)	$= \frac{}{50} = 0.$	$= \frac{}{500} = 0.$

3 Combine your results with other members of your class.
As the number of trials increase, does the experimental probability get closer to the theoretical probability?

Theoretical probability of tossing a coin.

S = {head, tail}

$$P(head) = \frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$$

$$P(head) = \frac{1}{2} = 0.5$$

CHAPTER 7 - PROBABILITY

EXPERIMENTAL PROBABILITY

A die was tossed 30 times:

No. of 1s = 4
No. of 2s = 6
No. of 3s = 4
No. of 4s = 4
No. of 5s = 5
No. of 6s = 7
TOTAL = 30

$P(1) = \frac{No\ of\ 1s}{Total\ tosses} = \frac{4}{30} = 0.13$

$P(2) = \frac{No\ of\ 2s}{Total\ tosses} = \frac{6}{30} = 0.20$

$P(3) = \frac{No\ of\ 3s}{Total\ tosses} = \frac{4}{30} = 0.13$

$P(4) = \frac{No\ of\ 4s}{Total\ tosses} = \frac{4}{30} = 0.13$

$P(5) = \frac{No\ of\ 5s}{Total\ tosses} = \frac{5}{30} = 0.17$

$P(6) = \frac{No\ of\ 6s}{Total\ tosses} = \frac{7}{30} = 0.23$

4 Investigate the experimental probability of tossing a die.
Toss a die 60 times. Use a procedure similar to the above example.

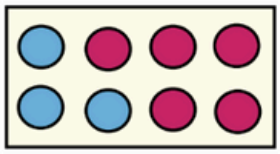
CHAPTER 7 - PROBABILITY

NAPLAN QUESTIONS

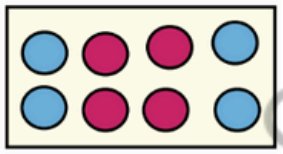
1 If the spinner is spun, on which number is the arrow **least likely** to stop?

2 From which box does Lin have a 75% chance of selecting a red ball?

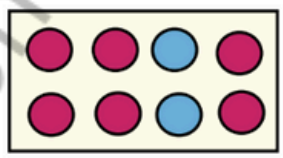
a)



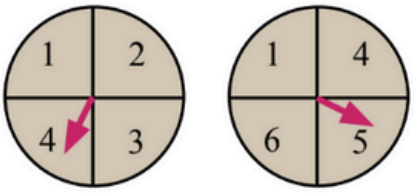
b)



c)



3 The two spinners show a total of 9.
If the spinners are spun again, in how many different ways can a total of 7 be obtained?



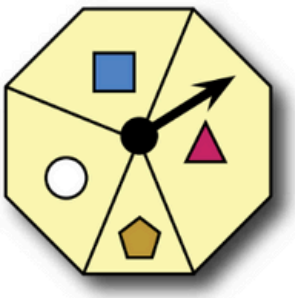
4 A traffic light is amber and red for 30 seconds. The traffic light is green for 20 seconds. What is the probability that the traffic light is green?

5 There are 50 Australian stamps and 30 New Zealand stamps. What is the probability of choosing an Australian stamp?

6 A jar of jelly beans contains jelly beans with the following colours: 30 black, 25 white, 25 red and 20 green. What is the chance of picking a white jelly bean.

7 A bag contains 50 marbles of which 20 are red, the others are yellow.
What is the chance of picking a red marble from the bag?

8 Jo spins the arrow 100 times. Which is the most likely table of results?



a)

Shape	Number
■	25
▲	30
⬟	25
○	20

b)

Shape	Number
■	25
▲	35
⬟	15
○	25

CHAPTER 7 - PROBABILITY

NAPLAN QUESTIONS

CHAPTER 8 - STATISTICS

RANGE

MEDIAN

MEAN

MODE

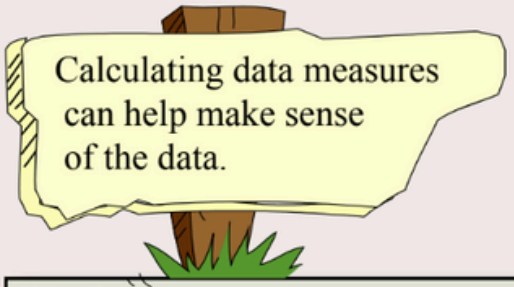
DOT PLOT

CHAPTER 8 - STATISTICS

- Calculate mean, median, mode and range for sets of data.
- Use ordered stem-and-leaf plots to record and display numerical data.
- Use mean and median to compare data sets and explain how outliers may affect the comparison.
- Locate mean, median and range on graphs and connect them to real life.

CHAPTER 8 - STATISTICS

DATA MEASURES



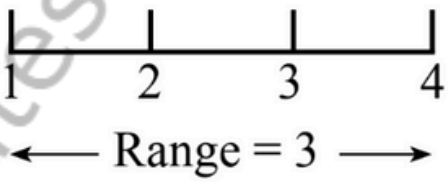
The Range
describes the **spread** of the data.

Range = largest − smallest

Exercise 14.1
Find the range of each of the following set of scores:

1, 2, 3, 4, 4

Range = largest – smallest
Range = 4 – 1
Range = 3



1 4, 7, 15, 23, 31, 43
2 4, 15, 32, 83, 112, 145, 231
3 2, 7, 2, 6, 3, 2, 6, 7
4 1, 3, 3, 5, 1, 2, 7, 4
5 232, 235, 236, 232, 231
6 425, 424, 421, 423, 424, 427

The Mode
describes the **middle** of the data.

The mode is the score that occurs most often.

Exercise 14.2
Find the mode of each of the following set of scores:

5, 3, 3, 4, 3, 5, 3 Mode = 3 {Occurs 4 times}	2, 5, 8, 5, 4, 2, 1, 3 Mode = 2 and 5 {Twice each} This set of scores is bimodal

1 4, 6, 6, 3, 2, 3, 6
2 4, 5, 2, 3, 4, 2, 4, 5
3 2, 5, 2, 1, 6, 1, 1, 5
4 1, 4, 3, 3, 4, 5, 6, 2
5 5, 5, 5, 3, 4, 3, 3, 5
6 1, 2, 3, 2, 1, 2, 4, 1

CHAPTER 8 - STATISTICS

DATA MEASURES

CHAPTER 8 - STATISTICS

DATA MEASURES

The Median
describes the **middle** of the data.

The median is in the middle

Exercise 14.3
Find the median of each of the following set of scores:

5, 7, 3, 4, 3, 5, 3 Put the scores in ascending order 3, 3, 3, 4, 5, 5, 7 Median = 4 {4 is in the middle }	2, 5, 7, 5, 4, 2, 1, 3 Put the scores in ascending order 1, 2, 2, 3, 4, 5, 5, 7 Median = 3.5 {Average of 3 & 4}

1 4, 6, 6, 3, 2, 3, 6
2 4, 5, 2, 3, 4, 2, 4, 5
3 2, 5, 2, 1, 6, 1, 1
4 1, 2, 3, 4, 1, 2, 4, 3
5 32, 98, 36, 32, 31
6 21, 24, 23, 23, 56

CHAPTER 8 - STATISTICS

DATA MEASURES

The Mean
describes the **middle** of the data.

$$mean = \frac{Sum\ of\ scores}{Number\ of\ scores}$$

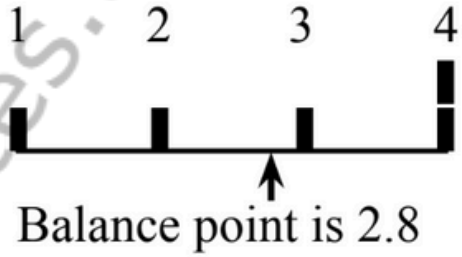
Exercise 14.4
Find the mean of each of the following set of scores:

1, 2, 3, 4, 4

$$mean = \frac{Sum\ of\ scores}{Number\ of\ scores}$$

$$mean = \frac{1+2+3+4+4}{5}$$

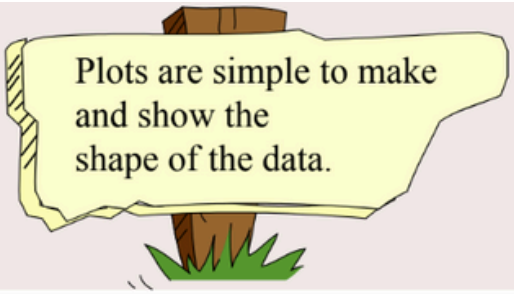
mean = 2.8



1 1, 2, 3, 4, 4, 4
2 1, 2, 3, 4, 4, 80
3 1, 1, 2, 2, 3, 4, 4, 4, 4, 4
4 1, 6, 6, 2, 2, 3
5 31, 36, 36, 32, 32, 33
6 81, 86, 86, 82, 82, 83

CHAPTER 8 - STATISTICS

DOT PLOTS



Dot Plots
show stacked dots on a line.

Exercise 14.5

Use a Dot Plot to show the shape of the following data. Also find the range, mode, median, and mean.

The following list shows the ages of the students in the group

12 12 13 12 12 11 12
11 12 12 11 11 12 13
12 11 12 12 12 12

Range = 13−11 = 2

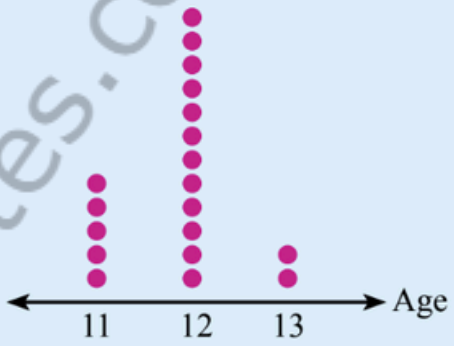
Mode = 12 {13 times}

Median = 12

$$mean = \frac{Sum\ of\ scores}{Number\ of\ scores}$$

$$mean = \frac{237}{20}$$

$$mean = 11.85$$



1 Use a part of the number line.
2 Label the number line (axis).
3 Add the dots.

CHAPTER 8 - STATISTICS

DOT PLOTS

1 The ages of students in the group: 12, 13, 13, 12, 13
13, 12, 14, 13, 13
13, 13

2 The test marks (out of 20): 16, 16, 18, 19, 16
17, 18, 19, 18, 17,
16, 18, 18, 17,

3 Each person was asked how many brothers and sisters they have at this school:

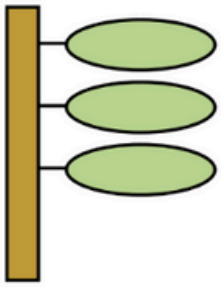
0, 0, 2, 1, 3,
1, 0, 1, 2, 1,
0, 1, 0, 1, 2,
1, 0, 0, 1, 0,
0, 1, 0

4 The minimum temperature each day for the last fortnight:
2, −3, −4, 1, −3, 0, −2, −1, −3, 0, 2, 0, −2, 1

CHAPTER 8 - STATISTICS

STEM AND LEAF PLOTS

Stem and Leaf Plots
show the shape of the data.



Title

Stem	Leaf	Key 3|4 means 34
2	4 6	
3	0 2 4 5 5 8	
4	1	

This number is 35

Exercise 14.6

Use a stem and leaf plot to represent the following data. Also find the range, mean, mode, and median.

Use a stem and leaf plot to represent the ages of 23 employees of a shire council. Also find the range, mode, median, and mean of the ages.

19 27 34 37 32 49 42 34 25 28 35 56 43 39 23 51 28 32 49 36 34 42 34

First, put the ages in order:

19 23 25 27 28 28 32 32 34 34 34 34 35 36 37 39 42 43 43 49 49 51 56

Then, use the **first digit as the ste** and the **trailing digit as the leaf**:

Employee Age (1|9 means 19)	
1	9
2	3 5 7 8 8
3	2 2 4 4 4 4 5 6 7 9
4	2 3 3 9 9
5	1 6

Range = 56 − 19 = 37
Mode = 34 {34 occurs 4 times}
Median = 34 {the middle number is 34}

$$Mean = \frac{Sum}{Number} = \frac{830}{23}$$

Mean = 36.09

CHAPTER 8 - STATISTICS

STEM AND LEAF PLOTS

1 Scores on the test (maximum of 20): 14, 16, 16, 13, 12, 13, 16

2 Number of birds visiting the feeder each day: 34, 35, 42, 43, 34, 32, 44, 35

3 Ages of people at the birthday party: 12, 35, 22, 21, 16, 21, 21, 34

4 The weights (kg) of the forward pack: 121, 132, 103, 124, 131, 122, 134, 123

5 The weekly holiday rents ($): 519, 522, 517, 516, 522, 522, 518, 522, 528

6 The weekly house rents ($): 348, 349, 352, 349, 351,
352, 350, 351, 349, 351,
348, 350, 356, 345, 349

7 The daily solar cell voltage readings: 5.2, 6.1, 5.8, 7.2, 4.6,
4.9, 5.8, 7.3, 5.9, 6.8,
6.2, 5.3, 5.2, 5.2

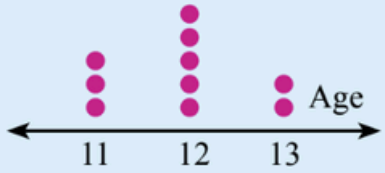
CHAPTER 8 - STATISTICS

DATA MEASURES FROM A PLOT

Outliers are unusual values.
- Are they a mistake?
- Should you delete them?

Exercise 14.8

Given the following plots, find the range, mode, median and mean.



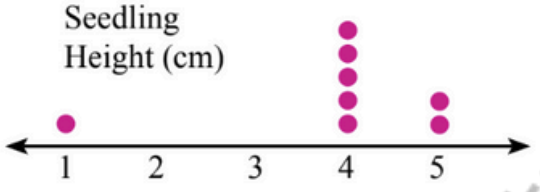
Range = largest − smallest
= 13 − 11
= 2

Mode = most often
= 12

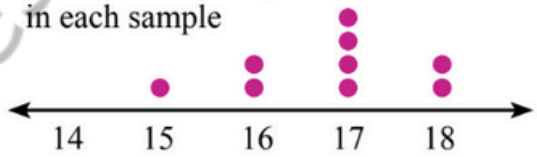
Median = middle number
= 12

Mean = $\frac{sum}{number}$
= $\frac{3\times11+5\times12+2\times13}{10}$
= $\frac{119}{10}$
= 11.9

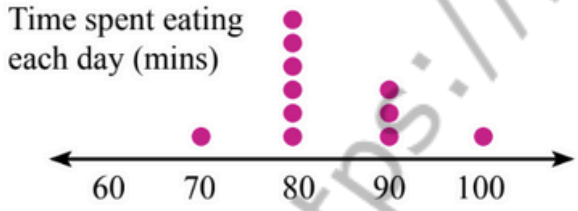
1



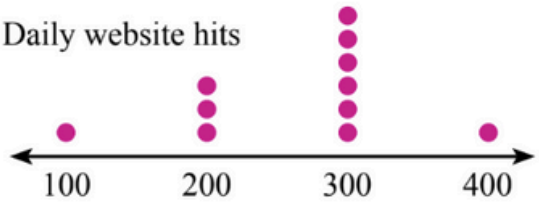
2



3



4



CHAPTER 8 - STATISTICS

DATA MEASURES FROM A PLOT

Test results (6|3 means 63)

6	3
7	0 3 6
8	1 6 6 6 8
9	2 3 5
10	0

Range = largest − smallest
= 100 − 63
= 37

Mode = most often
= 86

Median = middle number
= seventh number
= 86

Mean = $\frac{sum}{number}$
= $\frac{1089}{13}$
= 83.77

5 Arm span (14|8 means 148 cm)

13	1 4
14	0 2 2 2 5 8
15	3 7
16	00
17	
18	5

6 No. of situps (1|7 means 17)

0	6
1	0 1 2 2 7
2	4 6 7 7 7 8
3	3 3 6
4	8

CHAPTER 8 - STATISTICS

NAPLAN QUESTIONS

Exercise 14.12

1 What is the average of 3 and 7?

2 What is halfway between $1\frac{1}{2}$ and $2\frac{1}{2}$?

3 Find the mean (average) exercise time:

Monday	Tuesday	Thursday	Saturday	Sunday
30 minutes	50 minutes	20 minutes	30 minutes	30 minutes

4 Given the scores: 4, 4, 5, 5, 5, 5, 7, 85

a) What is the mean, median, and mode?

b) What is the mean, median, and mode after 85 is removed?

c) Which is affected the most by removing 85, the mean, median, or mode?

5 **a)** Find the mean, median, and mode of the following: 1, 2, 2, 2, 3, 5

b) Is Mean > Median = Mode true?

After four innings, the average number of runs per innings was 15.
After five innings, the average number of runs per innings was 16.
How many runs were scored in the fifth innings?

After 4 innings:

$$\text{average} = \frac{\text{total}}{\text{no innings}}$$

$$15 = \frac{\text{total}}{4}$$

$$\text{Total for 4 innings} = 15 \times 4 = 60$$

After 5 innings:

$$\text{average} = \frac{\text{total}}{\text{no innings}}$$

$$16 = \frac{\text{total}}{5}$$

$$\text{Total for 5 innings} = 16 \times 5 = 80$$

$$\text{No runs in fifth innings} = 80 - 60 = 20$$

CHAPTER 8 - STATISTICS

NAPLAN QUESTIONS

6 After 4 innings, the average number of runs was 20.
After 5 innings, the average number of runs was 25.
How many runs were scored in the fifth innings?

7 What is the median of:

8 The basketball team of fifteen players need to score at least 75 points to be competitive. What is the average score per player needed to be competitive?

9 The basketball team has twelve players with an average player score of 4.5. What total would the team be expected to score?

10 Given the scores: 6, 6, 6, 7, 7, 7, 50. Which central measure is affected the most by removing the 50: the mean, median, or mode?

CHAPTER 8 - STATISTICS

NAPLAN QUESTIONS

CHAPTER 9 - PROPORTIONS

CHAPTER 9 - PROPORTIONS

RATIO & RATE

- Use percentages to solve problems, including those involving mark-ups, discounts, profit and loss and GST. Use ordered stem-and-leaf plots to record and display numerical data.
- Express profit and loss as a percentage of cost or selling price, compare the difference.
- Investigate the methods used in retail stores to express discounts.

CHAPTER 9 - PROPORTIONS

RATIO WARM UP

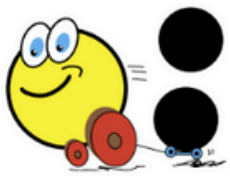
A Ratio is a comparison of two quantities of the same type in the same units.

A ratio can be written as 3: 10, a fraction $\frac{3}{10}$, a decimal 0.3, a percentage 30%

Exercise 11.1

Write the following comparisons as ratios:

The mathematical symbol for ratio is



18 people passed the test and 5 failed.	
a) What is the ratio of pass to fail?	18 : 5
b) What is the ratio of fail to pass?	5 : 18
c) What is the ratio of pass to the total?	18 : 23
d) What is the ratio of fail to the total	5 : 23

1 The Maths class has 9 girls and 14 boys.

a) What is the ratio of girls to boys?

b) What is the ratio of boys to girls?

c) What is the ratio of girls to the total number in the class?

d) What is the ratio of boys to the total number in the class?

CHAPTER 9 - PROPORTIONS

RATIO WARM UP

2 Last month there were 24 sunny days and 7 cloudy days.

a) What is the ratio of sunny to cloudy days?

b) What is the ratio of cloudy to sunny days?

c) What is the ratio of sunny to the total number of days in the month?

d) What is the ratio of cloudy to the total number of days in the month?

CHAPTER 9 - PROPORTIONS

RATIO WARM UP

3 Write each of the following ratios as a fraction, a decimal and a percentage:

	fraction	decimal	percentage
1 : 4	$\frac{1}{4}$	0.25	25%
5 : 2	$\frac{5}{2}$	2.5	250%

Make a percentage by multiplying by 100.

a) 1 : 2 **b)** 1 : 10 **c)** 1 : 4 **d)** 3 : 4
e) 1 : 5 **f)** 2 : 5 **g)** 2 : 10 **h)** 4 : 5

CHAPTER 9 - PROPORTIONS

RATIO WARM UP

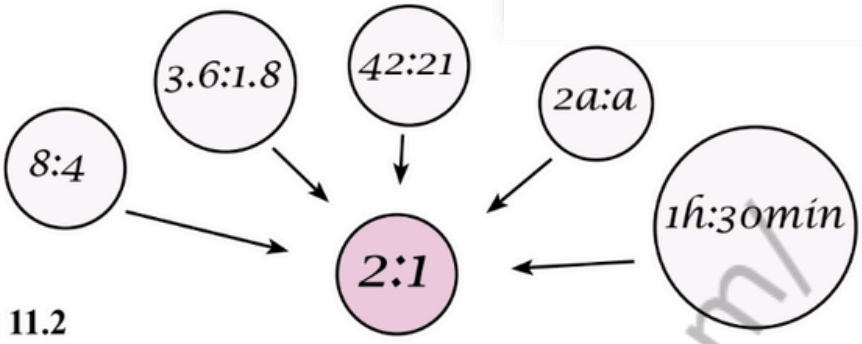
4 Write each of the following fractions as a ratio, a decimal and a percentage:

a) $\frac{1}{2}$ **b)** $\frac{3}{10}$ **c)** $\frac{4}{5}$ **d)** $\frac{1}{4}$

CHAPTER 9 - PROPORTIONS

RATIO

When ratios are large or awkward it sometimes helps to simplify them.



Exercise 11.2

Simplify the following ratios:

15 : 9 $= \frac{15}{9}$ $= \frac{3 \times 5}{3 \times 3}$ $= \frac{5}{3}$ = 5 : 3	4.5 : 5.5 $= \frac{4.5 \times 10}{5.5 \times 10}$ $= \frac{45}{55}$ $= \frac{5 \times 9}{5 \times 11}$ $= \frac{9}{11}$ = 9 : 11	8b : 4b $= \frac{8b}{4b}$ $= \frac{8}{4}$ $= \frac{2}{1}$ = 2 : 1

A calculator is good at simplifying ratios (see Technology 11.1).

1	8 : 4	**2**	3 : 12	**3**	12 : 16
4	3 : 9	**5**	6 : 9	**6**	15 : 5
7	2.5 : 1.5	**8**	2.4 : 1.8	**9**	5 : 1.5

CHAPTER 9 - PROPORTIONS

RATIO

The rose food is mixed with water in the ratio of 1 : 4. How much rose food is needed to make a total mixture of 4 L?	Rose food is 1/5 of the mixture = 1/5×4 L = 0.8 L or 800 mL

1 The rose food is mixed with water in the ratio of 1 : 4. How much rose food is needed to make a mixture of 2 L?

2 The fruit juice is made by mixing juice concentrate and water in the ratio of 1 : 3. How much juice concentrate is needed to make 2 L of fruit juice?

CHAPTER 9 - PROPORTIONS

RATIO

3 The lunch bill for the 7 guests came to $154. If Amelia paid for 3 of the guests and Jack paid for the other 4 guests, how much did each pay?

4 Sophie paid $7 towards the Lottery ticket and Noah paid $3. If the Lottery ticket returned $30, how much should each receive?

CHAPTER 9 - PROPORTIONS

RATIO

5 The concrete is to be made of cement, sand, and gravel in the ratio of 1 : 2 : 3. If the mixer takes 30 shovelfulls, how many shovelfulls of cement is needed?

6 A line 20 cm long is to be divided in the ratio of 1.2 : 1.8, where should the line be divided?

CHAPTER 9 - PROPORTIONS

PERCENTAGES

Percentages are used hundreds of thousands of times every day for comparison and analysis.

Calculations often involve finding a percentage of an amount.

1 Write each of the following percentages as a fraction and as a decimal:

$30\% = \frac{30}{100} = \frac{3}{10}$ $= 0.3$	$112\% = \frac{112}{100}$ $= 1.12$	$4.25\% = \frac{4.25}{100}$ $= 0.0425$

a) 10% **b)** 20% **c)** 30% **d)** 40%
e) 50% **f)** 60% **g)** 70% **h)** 80%
i) 90% **j)** 100% **k)** 3% **l)** 5%

CHAPTER 9 - PROPORTIONS

PERCENTAGES

2 Calculate each of the following:

Find 20% of 80 = 0.2 x 80 = 16	Find 37% of 176 = 0.37 x 176 = 65.12	Find $13\frac{1}{5}$% of 65 = 0.132 x 65 = 8.58

a) 25% of 60 **b)** 10% of 65 **c)** 75% of 24 **d)** 30% of 70

e) 50% of 80 **f)** 40% of 30 **g)** 60% of 250 **h)** 80% of 25

CHAPTER 9 - PROPORTIONS

PERCENTAGES

m) About 70% of a 60 kg person's weight is water. How much of the 60 kg is water ?

n) 40% of a $560 wage is spent on rent. How much is the rent?

o) If 27% of a sale is profit, how much profit in a sale of $4650?

CHAPTER 9 - PROPORTIONS

PERCENTAGES

p) Lenny pays 37% tax on an income of $68 500 pa. How much tax does Lenny pay?

q) The management fund returned 11.5% on an investment of $74 500. How much was returned?

CHAPTER 10 - PERCENTAGES

CHAPTER 10 - PERCENTAGES

PERCENTAGES

Add GST (10%) to an item priced at $37	A discount of 15% is offered on a sub-woofer priced at $230. What is the new price?
= 37 + 10% of 37 = 37 + 0.1 × 37 = $40.70	= 230 − 15% of 230 = 230 − 0.15 × 230 = $195.50

1 Add GST (10%) to the price of each of the following items:

a) A sandwich @ $2.40
b) Cable subscription @ $55
c) A watch @ $50
d) A filing cabinet @ $240
e) A hotel room @ $145
f) Haircut @ $33
g) A telephone bill @ $125
h) Electricity account @ $171

CHAPTER 10 - PERCENTAGES

PERCENTAGES

The GST is a tax of 10% on most supplies of goods and services in Australia from 1 July 2000.

2 Discount each of the following prices by 25%

a) A DVD player @ $224
b) A coffee table @ $119
c) A running shoe @ $105
d) An MP3 player @ $275
e) A bedside clock @ $23
f) A ball gown @ $859
g) A calculator @ $18
h) A DVD @ $27

CHAPTER 10 - PERCENTAGES

PERCENTAGES

3 An insurance premium of $450 is given a 10% discount. What is then the new cost of the premium?

4 A health insurance fee of $160 per month is supported by a Federal Government rebate of 30%. What is the fee after the 30% rebate?

5 A car insurance discount of 7.5% is given to drivers 55 and over. What would a 56 year-old actually pay for a car insurance premium of $350?

CHAPTER 10 - PERCENTAGES

PERCENTAGES

6 A fortnightly wage of $970 is increased by 3.8%. What is the new wage?

7 A fixed deposit of $5430 is increased by an interest payment of 4.2%. How much money is now in the fixed deposit?

CHAPTER 10 - PERCENTAGES

PERCENTAGES

Express profit and loss as a percentage of cost price or selling price.

Mia bought a block of land for $120 000 and because of financial difficulty, quickly sold the block of land for $100 000.		
Find the loss = 120 000 - 100 000 = $20 000	Find the loss as a percentage of the buying price. $= \frac{20000 \times 100}{120000}$ = 16.67%	Find the loss as a percentage of the selling price. $= \frac{20000 \times 100}{100000}$ = 20%

1 Ethan bought a Year 7 maths textbook for $65 and a year later sold it on ebay for $23 (after deducting ebay commission and postage costs).

a) Find the loss.

b) Find the loss as a percentage of the buying price.

c) Find the loss as a percentage of the selling price.

d) Which percentage loss sounds better as far as Ethan is concerned?

CHAPTER 10 - PERCENTAGES

PERCENTAGES

2 Ella bought a 2 bedroom unit 12 years ago for $95 000 and recently sold it for $280 000 (after deducting selling costs).

a) Find the profit.

b) Find the profit as a percentage of the buying price.

c) Find the profit as a percentage of the selling price.

d) Which percentage profit sounds better as far as Ella is concerned?

CHAPTER 10 - PERCENTAGES

PERCENTAGES

3 A cattle buyer bought a pen of steers from a farmer for $12 500 and sold them to a feedlot for $15 000.

a) Find the profit.

b) Find the profit as a percentage of the buying price.

c) Find the profit as a percentage of the selling price.

d) Which percentage profit would the buyer mention to the farmer?

e) Which percentage profit would the buyer mention to their employer?

CHAPTER 10 - PERCENTAGES

PERCENTAGES

4 A phone has a retail price of $85 and a recommended retail price of $105.

a) What is the new price after a discount of 20% off $85?

b) What is the new price after a discount of 30% off $105?

c) Which sounds more impressive? Which is the better deal?

PERCENTAGES

5 Find the discounted price of a CD:

a) A discount of 20% on the marked price of $26.

b) A discount of 30% on the recommended retail price of $32.

c) Which sounds more impressive? Which is the better deal?

PERCENTAGES

6 Find the discounted price of a phone:

a) A discount of 15% on the marked price of $89.

b) A discount of 30% on the recommended retail price of $112.

c) Which sounds more impressive? Which is the better deal?

ICAS

MATERIAL FOR THIS WEEK WILL BE
PROVIDED BY YOUR TUTOR IN CLASS