SAMPLE QUESTIONS PAPER ISSUED BY PSEB

MATHEMATICS – Class 8th (Solved)

Time Allowed : 3 Hours **Maximum Marks : 80**

Important Note :–

1. *Part–A has Questions from No. 1 to 3.*
   - *(i) Question Number 1 has 16 questions of Multiple Choice of one mark each.*
   - *(ii) Question Number 2 has 7 questions of Fill in the Blanks of one mark each.*
   - *(iii) Question Number 3 has 7 questions of True/False of one mark each.*
2. *Part–B has questions from No. 4 to 7 each of two marks.*
3. *Part–C has questions from No. 8 to 13 each of four marks. There is internal choice in any three questions.*
4. *Part–D has questions from No. 14 to 16 each of six marks. There is internal choice in all these questions.*

PART–A

1. Choose the correct option. Each question is of 1 mark. **(1×16=16)**

(i) What is the additive inverse of $\frac{2}{3}$?

(a) 0 (b) $-\frac{2}{3}$

(c) $-\frac{3}{2}$ (d) $\frac{3}{2}$

Ans. (b) $-\frac{2}{3}$

(ii) What is the value of x for the equation $2x+3=x+5$?

(a) 3 (b) 2

(c) –2 (d) 0

Ans. (b) 2

(iii) If adjacent angles of a rhombus are equal then which polygon it will become :

(a) rectangle (b) square

(c) trapezium

(d) parallelogram

Ans. (b) square

(iv) How many natural numbers lie between 6^2 and 7^2 ?

(a) 6 (b) 8

(c) 13 (d) 12

Ans. (d) 12

(v) What smallest number must be subtracted from 106 to make it a perfect square ?

(a) 1 (b) 3

(c) 6 (d) 12

Ans. (c) 6

(vi) What is the cube root of 1000 ?

(a) 10 (b) 12

(c) 13 (d) 31

Ans. (a) 10

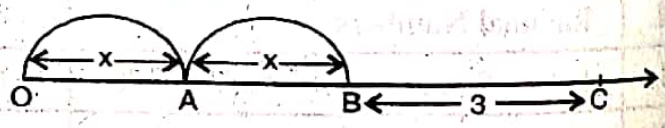
(vii) Which of the following, lists the transactions carried out in the account?

(a) Deposit slip (b) Passbook

(c) Withdrawl slip (d) Cheque

Ans. (b) Passbook

(viii) What does the given diagram represent?



(a) x+3 (b) 2x+3

(c) 2x–3 (d) x^2+3

Ans. (b) 2x+3

(ix) If edge of cube is doubled then what will happen to its volume ?

(a) Double (b) 4 times

(c) 8 times (d) 6 times

Ans. (c) 8 times

(x) What is the area of a rhombus whose diagonals are 4 cm and 6 cm ?

(a) 24 cm (b) 12 cm^2

(c) 10 cm^2 (d) 24 cm^2

Ans. (b) 12 cm^2

(xi) What is the value of $(3^2+4^2)^0$?

(a) 2 (b) 25

(c) 1 (d) 7

Ans. (c) 1

(xii) Which of the following is equal to 3.03×10^6 ?

(a) 303000 (b) 30300000

(c) 3030000 (d) 300000

Ans. (c) 3030000

(xiii) $\frac{4x^2-8x}{-4x^2}$ is equal to which of the following ?

(a) $-1+2x$ (b) $\frac{2}{x}$

(c) $-1+\frac{2}{x}$ (d) $2x$

Ans. (c) $-1+\frac{2}{x}$

(xiv) What is the common factor of $5a^2b$ and $9xy^2$?

(a) 1 (b) 0

(c) abxy (d) ax

Ans. (a) 1

(xv) Which of the following points is on x-axis ?

(a) (0, 2) (b) (1, 2)

(c) (2, 3) (d) (4, 0)

Ans. (d) (4, 0)

(xvi) Which of the following is commutative property for addition ?

(a) $xy = yx$ (b) $x + y = y + x$

(c) $(x + y) + z = x + (y + z)$

(d) $x - y = y - x$

Ans. (b) $x + y = y + x$

2. Fill in the blanks. Each question is of 1 mark. (1×7=7)

(i) If the length of one diagonal of a rectangle is 6 cm, then the length of the other diagonal of the rectangle will be _____.

Ans. 6 cm.

(ii) The sum of all central angles in a pie chart is _____

Ans. 360°

(iii) The number of zeroes in square root of 960400 is _____

Ans. One

(iv) A cube of side 2cm can be formed by joining end to end _____ cubes of side 1 cm.

Ans. 8

(v) There are _____ tax slabs in GST.

Ans. Five

(vi) The standard form of 0.00000021 is _____

Ans. 2.1×10^{-7}

(vii) The abscissa of point (2, 7) is _____

Ans. 2

3. Choose True/False for the following questions. Each question is of 1 mark. (1×7=7)

(i) $2x+3=5y-2$ is not a linear equation in one variable. (True/False)

Ans. True

(ii) The diagonals of a parallelogram are equal. (True/False)

Ans. False

(iii) The probability of getting a red ball from a bag containing 10 blue balls is $\frac{3}{10}$. (True/False)

Ans. False

(iv) $7y-5$ is a binomial. (True/False)

Ans. True

(v) The total surface area of a cylinder is $2\pi r(r+h)$. (True/False)

Ans. True

(vi) If the variables increase (or decrease) together then they are always in inverse proportion. (True/False)

Ans. False

(vii) $(x-3)(x-3)$ are the factors of expression x^2-6x+9. (True/False)

Ans. True

PART–B

Note : Each question is of 2 marks. (2×4=8)

4. Solve $\frac{5}{8}\times\frac{4}{3}$ and write multiplicative inverse.

Sol. $\frac{5}{8}\times\frac{4}{3}=\frac{5\times\cancel{4}^{1}}{\cancel{8}_{2}\times3}=\frac{5}{6}$

Multiplicate inverse of $\frac{5}{8}\times\frac{4}{3}$ = reciprocal of $\frac{5}{6}=\frac{6}{5}$.

5. Find the square root of 3600 using method of prime factorisation.

Sol.

2	3600
2	1800
2	900
2	450
3	225
3	75
5	25
5	5
	1

$3600 = 2\times2\times2\times2\times3\times3\times5\times5$

$\sqrt{3600}=\sqrt{2\times2\times2\times2\times3\times3\times5\times5}$

$= 2\times2\times3\times5 = 60$

6. Find the value of 4^3-3^3.

Sol. $4^3-3^3 = 1+4\times3\times3$

$= 1+36 = 37$

7. Evaluate : $\frac{3^{-1}\times3^3}{3^2}$

Sol. $\frac{3^{-1}\times3^3}{3^2}=\frac{3^{-1+3}}{3^2}=\frac{3^2}{3^2}=3^{2-2}=3^0=1$

PART–C

Note : Each question is of 4 marks. (4×6=24)

8. Jiya is twice as old as Kavya. If six years is subtracted from Kavya's age and four years added to Jiya's age, then Jiya will be four times Kavya's age. Find their present ages.

Sol. Let present age of Kavya be x years.

Then present age of Jiya = 2x years.

Age of Kavya after subtracting 6 years = (x–6) years.

Age of Jiya after adding 4 years = (2x+4) years.

According to the question

$2x+4 = 4(x-6)$

$2x+4 = 4x-24$

$2x-4x = -24-4$

$-2x = -28$

$x = \frac{-28}{-2}$

$x = 14$

Present age of Kavya = x years

= 14 years

Present age of Jiya = 2 x years

= 2(14) years

= 28 years

Or

Solve the following equations :–

$m-\frac{m-1}{2}=1-\frac{m-2}{3}$

$m-\frac{m-1}{2}=1-\frac{m-2}{3}$

Sol. Multiplying both sides by 6 (LCM of denominators 2 and 3 = 6)

$6\times m-6\times\frac{(m-1)}{2}=1\times6-6\times\frac{(m-2)}{3}$

$6m-3(m-1) = 6-2(m-2)$

$6m-3m+3 = 6-2m+4$

$3m+3 = 10-2m$

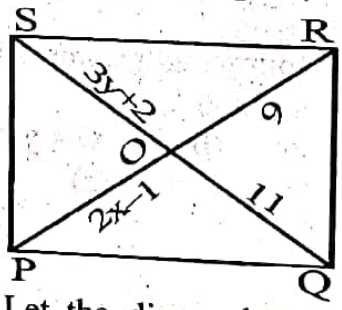
$3m+2m = 10-3$

$5m = 7$

$m = \frac{7}{5}$

9. Find x & y in figure, if PQRS is a rhombus.

Sol.



Let the diagonals PR and QS of rhombus PQRS intersect at O.

The diagonals of a rhombus bisect each other.

$\therefore$ OP = OR and OQ = OS

$\therefore$ OP = OR

$\therefore$ $2x-1 = 9$

$2x = 9+1$

$2x = 10$

$x = \frac{10}{2}$

$x = 5$

$\because$ OQ = OS

$\therefore$ $11 = 3y+2$

or $3y + 2 = 11$

$3y = 11 - 2$

$3y = 9$

$y = \frac{9}{3}$

$y = 3$

Ans. $x = 5, y = 3$

10. Subtract the sum of $x(2x+7)-2$ and $3x(x-2)+7$ from $7x-1$.

Sol. $x(2x+7)-2 = 2x^2+7x-2$ ..... (1)

$3x(x-2)+7 = 3x^2-6x+7$ ..... (2)

Adding (1) and (2)

$2x^2 + 7x - 2$

$3x^2 - 6x + 7$

$5x^2 + x + 5$

Subtract $5x^2+x+5$ from $7x-1$

$7x - 1$

$\pm 5x^2 \pm x \pm 5$

$-5x^2 + 6x - 6$

11. A 15 metres high pole casts a shadow of 10 metres. Find the height of a tree that casts a shadow of 15 metres under similar conditions.

Sol. Let the height of the tree be x metres.

Height of the object (in metres)	15	x
Length of the shadow (in metres)	10	15

More the height of an object, the more would be the length of the shadow of the object.

This is a case of direct variation.

$\therefore \frac{15}{10} = \frac{x}{15}$

$10 \times x = 15 \times 15$

$10x = 225$

$x = \frac{225}{10}$

$x = 22.5$ metres.

$\therefore$ Height of the tree = x metres = 22.5 metres.

Or

If 15 men can build a wall in 24 hours, how many men will be required to do the same work in 30 hours ?

Sol. Let the number of men required be a.

Number of men	15	a
Number of hours	24	30

More the number of hours, less the number of men required to build the wall.

This is a case of inverse proportion.

$15 \times 24 = a \times 30$

or $a \times 30 = 15 \times 24$

$a = \frac{15 \times 24}{30}$

$a = 12$

Number of men required = a = 12

12. Factorise : x^2-5x+6

Sol. $x^2-5x+6 = x^2-(3+2)x + 6$

$= x^2-3x-2x + 6$

$= x(x-3) -2(x-3)$

$= (x-3)(x-2)$

Or

Match the columns :

(i) x^2-2^2	(a) $(x+2)(x+2)$
(ii) $(x+2)^2$	(b) $4x(x^2+4)$
(iii) $4x^2-4x$	(c) $(x-2)(x+2)$
(iv) $4x^3+16x$	(d) $4x(x-1)$

Sol.

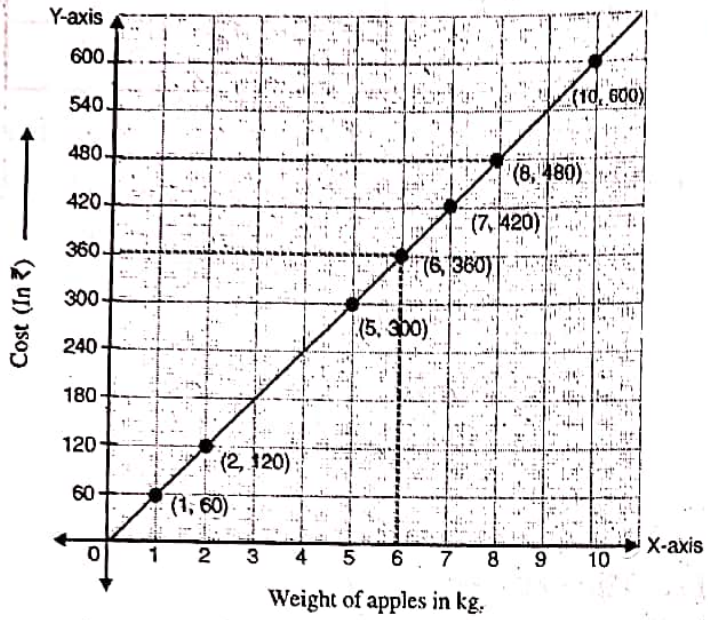
(i) x^2-2^2	(c) $(x-2)(x+2)$
(ii) $(x+2)^2$	(a) $(x+2)(x+2)$
(iii) $4x^2-4x$	(d) $4x(x-1)$
(iv) $4x^3+16x$	(b) $4x(x^2+4)$

13. Draw the graph for the following table.

Weight of apples (in kg)	Cost (in Rs)
1	60
2	120
5	300
7	420
10	600

From the graph find the cost of 6 kg and 8 kg apples.

Sol.

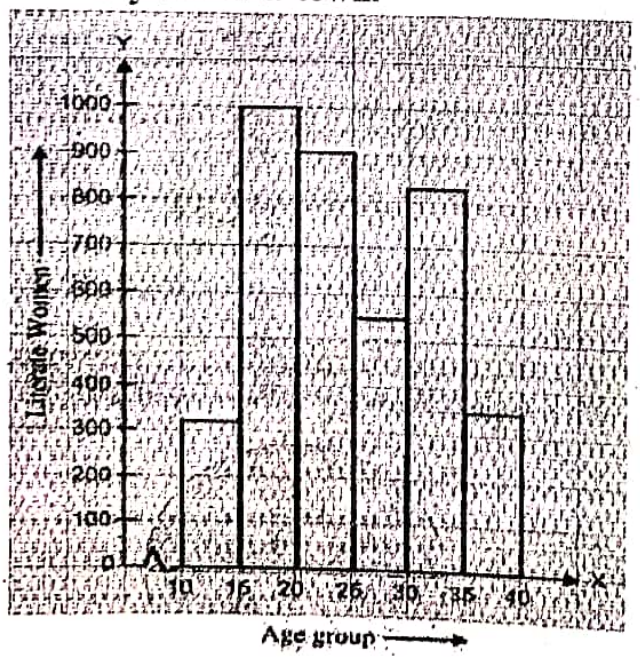


(i) Let us take suitable scale on both the axis.
(ii) Mark weight of apples along x-axis.
(iii) Mark cost of apples along y-axis
(iv) Plot the points (1, 60); (2, 20); (5, 300), (7, 420); (10, 600)
(v) Join the Points we find that graph is a line. From graph we can see that cost of 6 kg of apples is Rs. 360 and cost of 8 kg of apples is Rs. 480.

PART–D

Note : Each question is of 6 marks. (3×6=18)

14. The following histogram shows the number of literate females in the age group of 10 to 40 years in a town.



(i) Write the age group in which the number of literate females is the highest.
(ii) What is the class width ?
(iii) What is the lowest frequency ?
(iv) In which group literate females are least?
(v) What is the number of literate females in group 35–40 ?
(vi) What information does this histogram represent ?

Sol. (i) The number of literatre females is the highest in group 15–20.
(ii) Class width of all class intervals is 5.
(iii) The lowest frequency is 310.
(iv) The number of literate females is the least in group 10–15.
(v) The number of literate females in the group 35–40 is 350.
(vi) The histogram represents the number of literate females in the age group of 10 to 40 years in a town.

Or

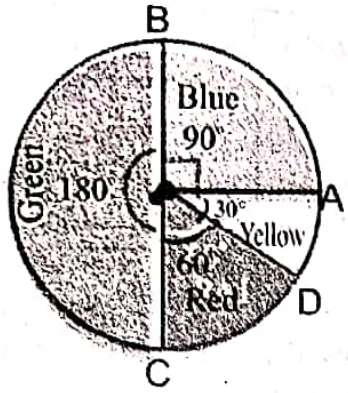
Draw a pie chart showing the following information. The table shows the colour preferred by a group of people.

Colours	Blue	Green	Red	Yellow	Total
No. of People	9	18	6	3	36

Sol. We know that
Central angle of a component =

$$\frac{\text{component's value}}{\text{sum of all the values}} \times 360°$$

Colours	No. of People	Fractions	Central angle
Blue	9	$\frac{9}{36}=\frac{1}{4}$	$\frac{1}{4}\times 360°=90°$
Green	18	$\frac{18}{36}=\frac{1}{2}$	$\frac{1}{2}\times 360°=180°$
Red	6	$\frac{6}{36}=\frac{1}{6}$	$\frac{1}{6}\times 360°=60°$
Yellow	3	$\frac{3}{36}=\frac{1}{12}$	$\frac{1}{12}\times 360°=30°$
Total	**36**		**360°**



15. A person purchased a second hand bike for Rs. 16,000. If its rate depreciates a5 5% per year. What will be its value after 2 years?

Sol. Present value of bike (P) = Rs. 16,000
Rate of depreciation (R) = 5% per annum.
Time (T) = 2 years.

The value of bike after 2 years $= P\left(1-\frac{R}{100}\right)^T$

$$= \text{Rs. } 16000\left(1-\frac{\cancel{5}^{1}}{\cancel{100}_{20}}\right)^2$$

$$= \text{Rs. } 16000\left(\frac{20-1}{20}\right)^2$$

$$= \text{Rs. } 16000\left(\frac{19}{20}\right)^2$$

$$= \text{Rs. } 16000 \times \frac{19}{20} \times \frac{19}{20}$$

$$= \text{Rs. } 14{,}400$$

Or

A shop gives 20% discount on the marked price. What would be selling price of each of the following :

(i) A dress marked at Rs. 300

(ii) A pair of shoes marked at Rs. 750.

Sol. (i) Marked price of dress = Rs 300
Discount = 20% of Rs. 300

$$= \text{Rs}\,\frac{20}{100} \times 300 = \text{Rs. } 60$$

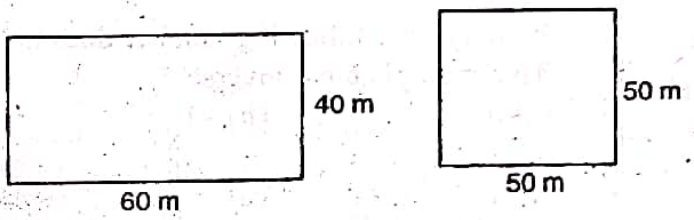
Selling price of dress = Marked price – Discount
= Rs 300 – Rs 60
= Rs 240

(ii) Marked price of pair of shoes = Rs 750
Discount = 20% of Rs. 750

$$= \text{Rs}\,\frac{20}{100} \times 750 = \text{Rs. } 150$$

Selling price of pair of shoes = Marked price – Discount
= Rs 750 – Rs 150
= Rs 600

16. A square and a rectangular field with measurements (as shown in given figures) have the same perimeter. Which field has larger area and how much.



Sol. One side of square field = 50 m
Area of square field = side × side
= 50 × 50 = 2500 m²
Length of rectangular field (l) = 60 m
Breadth of rectangular field (b) = 40 m
Area of rectangular field = l × b
= 60 × 40 = 2400 m²
The area of the square field is larger than the area of rectangular field by (2500–2400) m² i.e. 100 m².

Or

A closed cylindrical tank of radius 7m and height 3m is made from a sheet of a metal. What is the cost of tank if rate of metal sheet is Rs. 20 per m².

Sol. Radius of the cylindrical tank (r) = 7 m
Height of the cylindrical tank (h) = 3m.
Area of metal sheet used for tank =
Total surface are of cylindrical tank

$$= 2\pi r(r+h)$$

$$= 2 \times \frac{22}{7} \times 7 \times (7+3)$$

$$= 2 \times \frac{22}{7} \times 7 \times 10$$

$$= 400 \text{ m}^2$$

Cost of sheet = Rs. 20 per m²
Cost of tank = Rs. 20 × 440 = Rs. 8800.