

Annual Examination – (2024-25)
CLASS -VIII
Subject- Mathematics
Set - A1 / A2
Solutions

Time: 2 hrs30 min.

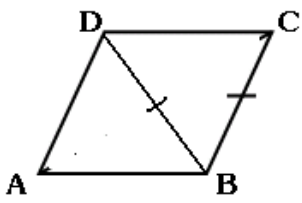
Max. Marks : 60

General Instructions:

1. This question paper consists of 16 questions .All questions are compulsory .
2. Question paper is divided in to 5 sections – Section A, B,C, D and E.
3. In section A – question number 1 has 12 multiple choice questions (MCQs) of 1 mark each.
4. In section B – question number 2 to 7 are of 2 marks each .
5. In section C – question number 8 to 10 are of 3 marks each .
6. In section D - question number 11 to 13 are of 5 marks each .
7. In section E – question number 14 to 16 are source based / case study questions carrying 4 marks each. Internal choice is provided in 2 marks question in each source based/ case question,
8. There is no overall choice. However , an internal choice has been provided in 1 question in section B, 2 questions in section C and 2 questions in section D .

A1	A2	Expected Answers/Value Points	Marks
		Question 1 consists of Multiple Choice Questions (i – xii) of 1 mark each.	
Q1.	Q1.	SECTION - A	
i	xii	The usual form of 2.03×10^{-5} is a) 0.203 b) 0.00203 c) 203000 d) 0.0000203 Sol.(d)	1
ii	xi	SET -A1 If x and y vary inversely . When x = 10 and y = 6 then find y if x = 4 a) 15 b) 10 c) 20 d) 60 Sol. (a) SET – A2 Which of the following is case of direct variation; (i) If the length of radius is increased the circumference will be increased	1

		<p>(ii) If number of students in a hostel are increased then the fixed food provision will last for less days</p> <p>(iii) For fixed duration, more the periods, lesser will be the duration of one period</p> <p>(iv) In case of a cylindrical vessel, lesser the diameter more is the level of water in it.</p> <p>Sol.(a)</p>	
iii	x	<p>The radius of a cylinder whose lateral surface area is 704 cm^2 and height 8 cm, is</p> <p>a) 4 cm b) 8 cm c) 14 cm d) 6 cm</p> <p>Sol.(c)</p>	1
iv	ix	<p>Factors of a^2+3a+2 are:</p> <p>(a) $(a+2)(a-1)$ (b) $(a+2)(a+1)$</p> <p>(c) $(a+3)(1-a)$ (d) $(a-2)(a-2)$</p> <p>Sol.(b)</p>	1
v	viii	<p>Value of $(2^0 - 31^0) + (2^0 + 31^0)$ is</p> <p>a) 1 b) 0 c) 2 d) -2</p> <p>Sol. (c)</p>	1
vi	vii	<p>The product of $\frac{3}{8}xyz \times \left(-\frac{4}{7}yz\right) \times \left(-\frac{7}{11}xz\right)$ is</p> <p>(a) $\frac{5}{22}x^2y^2z^3$ (b) $\frac{3}{22}x^2y^2z^3$ (c) $\frac{3}{22}x^3y^2z^3$ (d) $\frac{3}{22}x^3y^3z^3$</p> <p>Sol.(b)</p>	1
vii	vi	<p>The smallest number by which 81 be multiplied to obtain a perfect cube is</p> <p>a) 3 b) 11 c) 7 d) 9</p> <p>Sol.(d)</p>	1
viii	v	<p>How many natural numbers lie between 20^2 and 21^2 ?</p> <p>(a) 41 (b) 400 (c) 42 (d) 40</p> <p>Sol. (d)</p>	1
ix	iv	<p>If $\frac{x}{0.3} = 3.3$, then $100x =$ _____</p> <p>a) 9.9 b) 99 c) 0.99 d) 33.3</p> <p>Sol.(b)</p>	1
x	iii	<p>Polygons that have no portions of their diagonals in their exteriors are called</p> <p>(a) Squares (b) triangles (c) convex (d) concave</p> <p>Sol. (c)</p>	1
xi	ii	<p>A coin is tossed three times. The number of possible outcomes is</p> <p>(a) 3 (b) 4 (c) 6 (d) 8</p> <p>Sol. (d)</p>	1
xii	i	<p>The rational number which have no reciprocal is</p> <p>a) 1 b) -1 c) 0 d) 2</p>	1

		Sol. (c)	
		SECTION - B	
2	7	<p>Simplify using the properties: $\frac{-2}{3} \times \frac{3}{5} - \frac{5}{2} \times \frac{3}{5}$</p> <p>Sol. $\frac{-2}{3} \times \frac{3}{5} - \frac{5}{2} \times \frac{3}{5}$ $= \frac{3}{5} \times \left(\frac{-2}{3} - \frac{5}{2} \right)$ $= \frac{3}{5} \times -\frac{19}{6}$ $= -\frac{19}{10}$ Ans.</p>	1 1
3	6	<p>Solve: $\frac{2x+3}{5} = \frac{4x+9}{11}$</p> <p>Sol. $\frac{2x+3}{5} = \frac{4x+9}{11}$ $= 11(2x+3) = 5(4x+9)$ $22x+33 = 20x+45$ $2x = 12$ $X = 6$ ans.</p>	1 1
4	5	<p>In the fig. given below, diagonal BD of rhombus ABCD is equal to one of its sides BC find the measure of $\angle A$.</p> <div style="text-align: center;">  </div> <p>SOL. All the sides of the rhombus are equal. $AB = BC = CD = DA$ Also, $BD = BC$ (Given) Triangle ABC is an equilateral angle. $\angle A = 60^\circ$ Ans.</p>	1 1
5	4	<p>Find cube root of 10648 by prime factorisation method.</p> <p>Sol. P.F of 10648 = $2 \times 2 \times 2 \times 11 \times 11 \times 11$ $= 2^3 \times 11^3 = 22^3$</p> <p>Cube root of 10648 = 22 Ans. 22</p>	1 1

		<p style="text-align: center;">OR</p> <p>Find the smallest square number that is divisible by each of the numbers 4, 9 and 10.</p> <p style="text-align: center;">Sol.</p> <div style="display: flex; justify-content: center; align-items: center;"> <div style="margin-right: 10px;">1</div> <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; padding: 5px;"> 15129 </div> <div style="margin-left: 10px;">123</div> </div> <div style="display: flex; justify-content: center; align-items: center; margin-top: 5px;"> <div style="margin-right: 10px;">22</div> <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; padding: 5px;"> 1 51 44 </div> </div> <div style="display: flex; justify-content: center; align-items: center; margin-top: 20px;"> <div style="margin-right: 10px;">243</div> <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; padding: 5px;"> 729 729 </div> </div> <p style="margin-top: 20px;">Ans. 123</p> <p style="text-align: center;">OR</p> <p>LCM of 4,9,10 = 180</p> <p>P.F of 180 are $2 \times 2 \times 3 \times 3 \times 5$</p> <p>5 has incomplete pair. So $180 \times 5 = 900$</p> <p>Hence 900 is a smallest squared no. divisible by 4,9 and 10.</p>	<p>1</p> <p>1</p> <p>1</p>
9	9	<p>Danya is painting the walls and ceiling of a cuboidal hall with length, breadth and height of 15 m, 10 m and 7 m respectively. From each can of paint 100 m² of the area is painted. How many cans of paint will she need to paint the room?</p> <p>Solution:</p> <p>Surface area of a cuboidal hall without bottom = Total surface area – Area of base</p> $= 2 [lb + bh + hl] - lb$ $= 2 [15 \times 10 + 10 \times 7 + 7 \times 15] - 15 \times 10$ $= 2[150 + 70 + 105] - 150$ $= 2 [325] - 150$ $= 650 - 150$ $= 500 \text{ m}^2$	<p>1</p> <p>1</p> <p>1</p>

		<p>Area of the paint in one can = 100 m^2 Number of cans required = $500/100 = 5$ cans. OR In a village ,water is pouring in to a cylindrical reservoir at the rate of 60 litre per minute. If the radius and height of the given reservoir is 3m and 7m respectively, find the number of hours it will take to fill the reservoir?</p> <p>Sol. Volume of Reservoir = $\pi r^2 h \text{ m}^3 = (22/7) (3)^2 (7) = 198 \text{ m}^3$ ($1 \text{ m}^3 = 1000$ litres) = 198000 litres If time taken to fill 60 litres = 1 min \therefore time taken to fill 1 litre = $\frac{1}{60}$ \therefore time taken to fill 198000 litres = $\frac{1}{60} \times 198000$ = 3300 min = $\frac{3300}{60}$ hrs = 55 hours</p>	1 1 1
10	8	<p>A machinery plant costing Rs 8, 00,000 depreciates in value by 15% annually. Find its value after 3 years?</p> <p>Sol. Present value of the machine P= 8,00,000, Rate of depreciation r=15%, Number of years n=3 The value of the machine after 'n' years = $P(1-r/100)^n$ \therefore The value of the machine after three years = $800000(1-15/100)^3$ = $800000(85/100)^3$ = $800000 \times 85/100 \times 85/100 \times 85/100$ = Rs.491300 / The value of the machine after three years is Rs.491300 /</p>	1 1 1
		SECTION – D	
11	13	<p>A 5 m 60 cm high vertical pole casts a shadow 3 m 20 cm long. Find at the same time (i) the length of the shadow cast by another pole 10 m 50 cm high, (ii) the height of a pole which casts a shadow 5 m long.</p> <p style="text-align: center;">Or</p> <p>i. In a scout camp, there is food provision for 300 cadets for 42 days. If 50 more persons join the camp, for how many days will the provision last? ii. A car takes 2 hours to reach a destination by traveling at a speed of 60 km/h. How long will it take when the car travels at the speed of 80 km/h?</p>	3 2 3 2

(i) Let the required length of shadow be x m.

\therefore

Height of Pole	Length of Shadow
5 m 60 cm	3 m 20 cm
10 m 50 cm	x m

Since the two quantities are directly proportional.

$$\therefore \frac{5 \text{ m } 60 \text{ cm}}{10 \text{ m } 50 \text{ cm}} = \frac{3 \text{ m } 20 \text{ cm}}{x \text{ m}}$$

$$\frac{5.60}{10.50} = \frac{3.20}{x}$$

$$\Rightarrow 5.60 \times x = 3.20 \times 10.50$$

$$\Rightarrow x = \frac{3.20 \times 10.50}{5.60}$$

$$= \frac{320 \times 1050}{560} \times \frac{1}{100}$$

$$= 6 \text{ m.}$$

Hence the required length = 6 m.

(ii)

Height of Pole	Length of Shadow
5.60	3.20
y	5

Since the two quantities are directly proportional.

$$\therefore \frac{5.60}{y} = \frac{3.20}{5}$$

$$\Rightarrow 3.20 \times y = 5.60 \times 5$$

$$\Rightarrow y = \frac{5.60 \times 5}{3.20} = \frac{35}{4} \text{ m}$$

$$= 8 \text{ m } 75 \text{ cm}$$

Hence, the required length

$$= 8 \text{ m } 75 \text{ cm.}$$

i. OR

More the persons, the sooner would be the provision exhausted.

So, this is a case of inverse proportion.

13

11

SET – A1

Draw the graphs for the following table of values, with suitable scales on the axes.

Distance travelled by car.

Time (in hours)	6 am	7 am	8 am	9 am
Distance (in km)	40	80	120	160

(i) How much distance did the car cover during the period 7:30 am to 8 am?

(ii) What was the time when the car had covered a distance of 100 km since its start?

SET – A2

Draw the graphs for the following tables of values, with suitable scales on the axes.

Interest on deposits for a year.

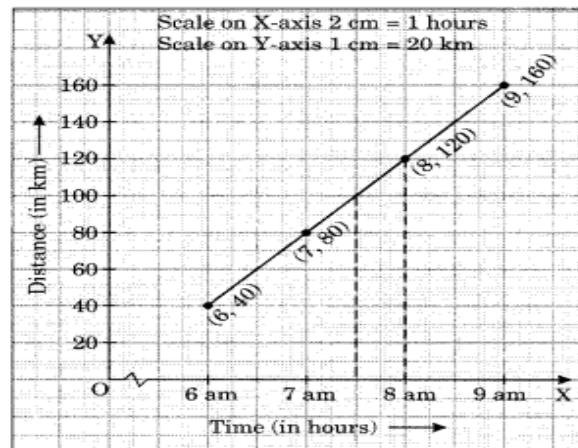
Deposits (in ₹)	1000	2000	3000	4000	5000
Simple interest (in ₹)	80	160	240	320	400

(i) Does the graph pass through the origin?

(ii) Use the graph to find the interest on Rs. 2500 for a year.

(iii) To get an interest of Rs. 280 per year, how much money should be deposited?

sol. scale on y-axis : 1 unit = 20km



i. 20km

ii. At 7:30 AM the car had covered a distance of 100km

3

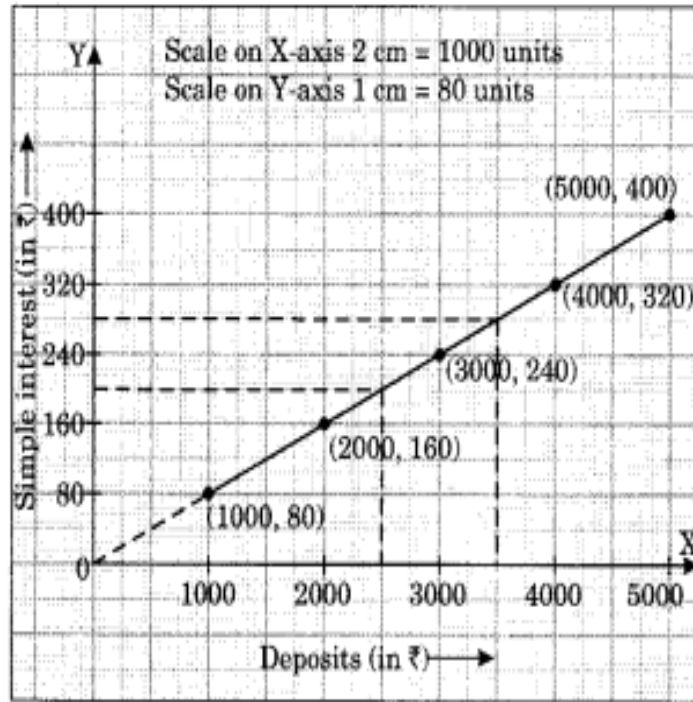
1

1

SET – A2

- (i) Yes, the graph passes through the origin,
- (ii) The interest on ₹ 2500 is ₹ 200 for 1 year.
- (iii) ₹ 3500 should be invested to earn the interest of ₹ 280.

½
½
1
3



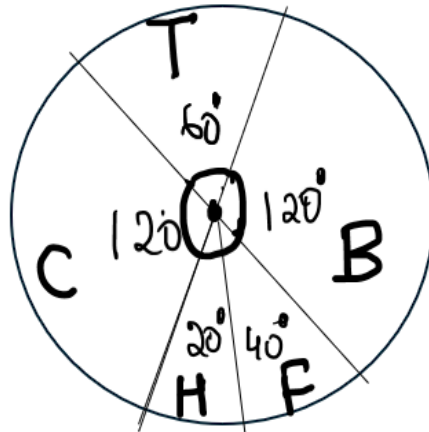
SECTION – E

Question 14 to 16 are case based questions .(Part i and ii are of 1 mark each and part iii is of 2 marks)

14

16

The given pie chart shows the games played by 1800 students of a school. Each student plays only one game. Also, the school management allocated a total budget of 3,60,000 for different sports in the same ratio as per pie chart. .



T – Tennis
 C - Cricket
 H – Hockey
 F – Football
 B – Badminton

Based on the above information ,answer the following questions:

- i . Find the number of students playing badminton.
- ii. What is the budget allocated for the students playing football?
- iii. (a) Find the total number of students playing cricket and football

OR

- iii.(b) Find the difference in budget allocated for the students of Tennis and Hockey.

Sol.

- i. 600
- ii. Rs, 40000/
- iii. 800

OR

Rs. 40000/

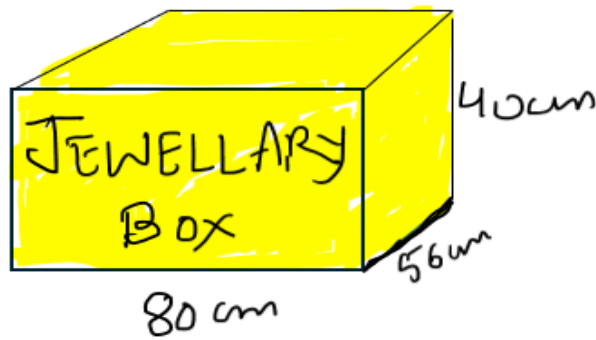
1
1
2

15

15

Case Study

Rahul went to the market and purchased a beautiful box for jewellery. The external dimensions of a closed box are 80 cm by 56 cm by 40 cm. The wood is 2.5 cm thick all around.



On basis of this information given in passage answer following questions.

- i. Find the external volume of box.
- ii. Find the internal length, breadth and height of the box.
- iii. (a) The volume of the wood used in making the box.

OR

- iii. (b) Find the length of ribbon required to cover all its edges.

Sol. i. $L = 80\text{cm}$

$$B = 56\text{cm}$$

$$H = 40\text{cm}$$

$$\text{External volume} = 80 \times 56 \times 40 = 179200 \text{ cm}^3$$

$$\text{ii. } L = 80 - 2(2.5) = 75\text{cm}$$

$$H = 40 - 2(2.5) = 35\text{cm}$$

- iii. (a) Volume of wood used

$$= \text{External volume} - \text{Internal volume}$$

$$= 179200 - 133875 = 45325 \text{ cm}^3$$

OR

- iii. (b) There are $4l$, $4b$, $4h$ as edges

Therefore, length of ribbon required to cover all its

edges

$$= 4l + 4b + 4h = 4(l + b + h)$$

$$= 4(80 + 56 + 40) = 4 \times 176 = 704 \text{ cm}$$

1

1

2

16

14

Case study

In a small town, there is a group of students from Creative Minds school. The Mathematics teacher, Mr. Sharma, has given students a challenge to find the total area of two gardens A and B. To complete this challenge, the students need to apply their knowledge of algebraic expressions and their skills of addition, subtraction, multiplication, and simplification. The sides of each garden is represented as follows: Garden A is a squared garden with side $(x+3)$ meters and garden B has length and breadth $2x$ and $(x^2 + 2x)$ metres respectively. Based on the above information, answer the following questions:

