OSDAV Public School, Kaithal

Half yearly Exams (2024-25)

Class :VIII (SET A)

Subject :Mathematics

Time: 3 Hrs . **M.M. : 80**

General Instructions:-

The question paper consists of five sections :

. Section I : Question No. 1 to 20 are of 1 mark each (18 are MCQ Type and 2 are Assertion - reasoning type questions).

. Section II : Question No. 21 to 25 are short answer type - 1 questions of 2 marks each .

. Section III: Question No. 26 to 31 are short answer type - 2 questions of 3 mark each .

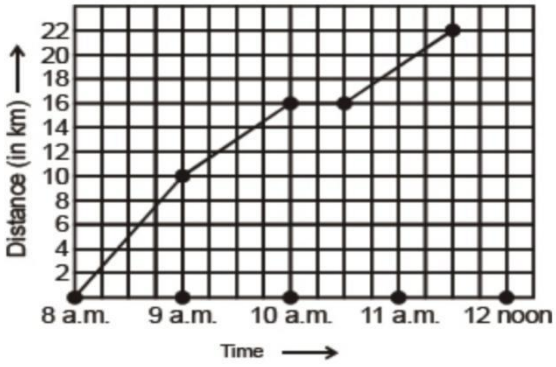
. Section IV : Question No. 32 to 35 are long answer type questions of 5 marks each .

. Section V: Question No. 36 to 38 are of Case based questions . Each case study has 3 case based sub parts two are of 1 mark each and third sub part is a short answer type of 2 marks.

Q.N.	Questions	Marks
	Section - I	
1	The value of $\sqrt{169} + \sqrt{1.69}$ is : (a)14.3 (b) 1.43 (c) 143 (d) 23.3	1
2	A pythagorean triplet is : (a) (3,5,6) (b) (4,5,6) (c) (6, 8 ,10) (d) (6, 5,10)	1
3	The quotient when $-20\sqrt{10}\,x^4$ is divided by $5\sqrt{10}\,x^2$ is : (a)4 x^2 (b) -4x^2 (c) $4\sqrt{10}\,x^2$ (d) 4x	1
4	Value of P for which ($x^2 + 3x + P$) is divisible by (x - 1) is : (a)2 (b) 4 (c) 3 (d) -4	1
5	Value of z if $5^{z-4} = 1$ (a) 4 (b) -4 (c) 5 (d) 1	1
6	$16x - 4x^3$ is same as : (a) $4x^2$ (x-2) (x+2) (b) 4x (2-x)(2+x) (c) 4 (2-x) (2+x) (d) 2x (x+2) (x-2)	1
7	Unit digit of the cube of 109 is : (a) 3 (b) 1 (c) 9 (d) 7	1
8	Non square numbers between 51^2 and 52^2 are : (a) 102 (b) 103 (c) 104 (d) 105	1
9	Ramit purchased a bag for Rs. 200 . He sold it for Rs. 180 . The percentage decrease in the price of bag is : (a) 5% (b) 10% (c) 25% (d) 30%	1
10	Value of x if $14x = (47)^2 - (33)^2$ (a) 14 (b) 80 (c) 20 (d) 30	1
11	Marked price of an article is Rs 80 and selling price is Rs 76 then rate of discount is : (a)5% (b) 10% (c) 95% (d) 11%	1
12	The meeting point of the axis in a cartesian plane : (a)abscissa (b) ordinate (c) co-ordinates (d) origin	1
13	x is inversely proportional to y, then the missing value in the given table is: x | 4 | 3 y | 6 | ? (a)4.5 (b) 12 (c) 18 (d) 8	1
14	If two quantities x and y are vary directly with each other , then which of these is true : (a) $\frac{x}{y}$ remains constant (b) (x-y) remains constant (c) (x+y) remains constant (d) (xy) remains constant	1

15	Value of $\sqrt{10+\sqrt{25+\sqrt{108+\sqrt{169}}}}$ (a) 2 (b) 3 (c) 4 (d) 5	1
16	Distance between coordinates (7,3) and (7,5) is : (a)2units (b) 3 units (c) 7 units (d) 4 units	1
17	If selling price of an item is twice the cost price ,the profit per cent is : (a)50% (b) 100% (c) 150% (d) 200%	1
18	Value of $\sqrt{81} \div \sqrt{0.09}$ is : (a)3 (b)30 (c)10 (d) 0.3	1
	Direction : A statement of assertion (A) is followed by a statement of reason (R) in (Q no. 19 , 20) Choose the correct option out of the following : a) Both assertion(A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A) c) Assertion (A) is true but reason (R) is false d) Assertion (A) is false but reason (R) is true.	
19	**Assertion :** $(2^0 + 4^{-1}) \times 2^2 = 6$ **Reason :** The power of a number says how many times to use the number in a multiplication .	1
20	**Assertion :** Degree of polynomial $4x^3 + 3x^2 - 2x + 5$ is 3 . **Reason** : The highest power of x in the polynomial p(x) is the degree of the polynomial .	1
	Section - II	
21	Find the cube root of 59319 through estimation .	2
22	Find the number that should be subtracted from 1373 to get a perfect square number.	2
23	Find the value of $\sqrt[3]{128} \div \sqrt[3]{108}$.	2
24	Find the value of $64^{\frac{1}{2}} (64^{\frac{1}{2}} + 1)$	2
25	If 15 men can do a work in 12 days , how many men will do the same work in 6 days ?	2
	Section - III	
26	If $x^2 + \frac{1}{x^2} = 18$, find the value of $(x + \frac{1}{x})$ and $(x - \frac{1}{x})$	3
27	A train 360m long is running at a speed of 45 km / hr . What time will it take to cross a 140 m long bridge ?	3
28	Using factor method , divide $(x^2 - 3x - 40)$ by $(x - 8)$.	3
29	Find the smallest number which when multiplied with 3600 will make the product a perfect cube . Further ,find the cube root of the product .	3
30	Ram purchased 120 oranges at the rate of Rs. 2 per orange . He sold 60% of the oranges at the rate of Rs. 2.50 per orange and the remaining oranges at the rate of Rs. 2 per orange . Find his profit percent .	3
31	Plot the points (2 , 2) , (4 , 4) , (6 , 6) . Join these in pairs . Do they lie on the line passing through the origin ?	3
	Section – IV	
32	Divide $-6x^4 + 5x^2 + 1 + 11x$ by $2x^2 + 1$ and write down the quotient and remainder . Also verify your answer .	5

33	Simplify : $\frac{(81)^{\frac{3}{4}} \times (216)^{\frac{-2}{3}} \times (125)^{\frac{1}{3}}}{(64)^{\frac{1}{6}} \times (243)^{\frac{-2}{5}} \times (343)^{\frac{1}{3}}}$	5
34	Factorise : $(81x^2 - 126xy + 49y^2) - 25z^2$ Expand : $(6p - 5q + 4r)^2$	5
35	The number of pairs of shoes sold from an outlet of a company in a particular week are given below : Day | 1 | 2 | 3 | 4 | 5 | 6 | 7 No. of pairs sold | 20 | 24 | 18 | 16 | 17 | 22 | 12 Draw a graph for the above data .	5
	Section – V	
36	Baluchari Sari is a type of sari ,a garment worn by women in Bangladesh and Indian states of West Bengal . In this wedding season shopkeepers are giving a big discount on the marked price of this saree . Rehana went to a mall to purchase this sari whose marked price was Rs. 15000 . Shopkeeper offered a discount of 20 % on it .  Based on the above information , answer the following questions : (i) Find the value of discount given by the shopkeeper to Rehana , and selling price of the sari . (ii) If after allowing a discount of 20% , the shopkeeper still earns a profit of 20%,then find the cost price of the sari to the shopkeeper . (iii) Rehana spent 5% of the selling price on purchasing a beautiful bag to keep this sari , now find the total amout that she has to pay to the shopkeeper .	(1) (2) (1)
37	Rachit' s grandmother is suffering from fever for many days . He wants to meet her and starts journey to his home town by a car , he drives the car at a speed of 30 km / hr.   Based on the above information , answer the following questions : (i) Find the time taken , and distance covered by him if he starts journey at 9 a.m and reaches the place at 1 p.m.	(1)

	(i) What should be the speed if he desired to reach that place by 12 noon . (ii) Find the difference between the old and new speed .	(2) (1)
38	A courier - person cycles from a town to a neighbouring area to deliever a parcel to a merchant .His distance from the town at different times is shown by the following graph .  : Based on the above information give answer of the following questions : (i) What is the scale taken for the time axis ? (ii) How much time did the person take for the travel and how far is the place of the merchant from the town ? (iii) During which period did he ride fastest ?	 (1) (2) (1)

OSDAV Public School, Kaithal
Half yearly Exams (2024-25)
Class :VIII
Subject :Mathematics

SET-B

Time: 3 Hrs . **M.M. : 80**

General Instructions:-

The question paper consists of five sections :

. Section I : Question No. 1 to 20 are of 1 mark each (18 are MCQ Type and 2 are Assertion - reasoning type questions).

. Section II : Question No. 21 to 25 are short answer type - 1 questions of 2 marks each .

. Section III: Question No. 26 to 31 are short answer type - 2 questions of 3 mark each .

. Section IV : Question No. 32 to 35 are long answer type questions of 5 marks each .

. Section V: Question No. 36 to 38 are of Case based questions . Each case study has 3 Case based sub parts, two are of 1 mark each and third sub part is a short answer type of 2 marks.

Q.N.	Questions	Marks
	Section - I	
1	The value of $\sqrt{196} + \sqrt{1.96}$ is : (a)14.4 (b) 15.43 (c) 15.4 (d) 1.54	1
2	Unit digit of the cube of 128 is : (a) 4 (b) 2 (c) 8 (d) 6	1
3	The quotient when $-20\sqrt{5}\,x^4$ is divided by $5\sqrt{5}\,x^2$ is : (a)$4x^2$ (b) $-4x^2$ (c) $4\sqrt{10}\,x^2$ (d) 4x	1
4	Value of t if $6^{t-1} = 1$ (a)2 (b) 6 (c) 1 (d) -1	1
5	Value of $\sqrt{44 + \sqrt{14 + \sqrt{121}}}$ (a) 7 (b) 15 (c) 14 (d) 11	1
6	Value of P for which (x^2 - 3x + P) is divisible by (x - 1) is : (a)2 (b) 4 (c) 3 (d) -4	1
7	$32x - 2x^3$ is same as : (a)$2x^2$ (x-4) (x+4) (b)2x (4-x)(4+x) (c)4 (2-x) (2+x) (d) 2x (x-4) (x+4)	1
8	A pythagorean triplet is : (a) (3,5,6) (b) (8,15,17) (c) (6, 8 ,9) (d) (6, 5,10)	1
9	Non square numbers between 62^2 and 63^2 are : (a)123 (b) 83 (c) 124 (d) 125	1
10	Ramit purchased a bag for Rs.400 . He sold it for Rs. 380 . The percentage decrease in the price of bag is : (a) 5% (b) 10% (c) 25% (d) 30%	1
11	Value of y if $16\,y = (52)^2 - (36)^2$ is : (a) 16 (b) 68 (c) 72 (d) 88	1
12	The coordinates of a point that lies on y axis is : (a) (4,0) (b) (1,2) (c) (5,4) (d) (0,4)	1
13	Marked price of an article is Rs 50 and selling price is Rs 46 then rate of discount is : (a)5 % (b) 10 % (c) 8 % (d) 11 %	1
14	x is inversely proportional to y, then the missing value in the given table is: x 6 ? y 4 3 (a)4.5 (b) 12 (c) 18 (d) 8	1

15	If two quantities x and y are vary inversely with each other , then which of these is true : (a) $\frac{x}{y}$ remains constant (b) (x-y) remains constant (c) (x+y) remains constant (d) (xy) remains constant	1
16	Distance between the coordinates (6,2) and (6, 4) is : (a) 2 units (b) 3 units (c) 4 units (d) 5 units	1
17	Value of $\sqrt{64} \div \sqrt{0.04}$ is : (a) 40 (b) 20 (c) 10 (d) 0.4	1
18	If selling price of an item is half of the cost price ,the loss per cent is : (a)50% (b) 100% (c) 150% (d) 200%	1
	Direction : A statement of assertion (A) is followed by a statement of reason (R) in (Q no. 19 , 20) Choose the correct option out of the following : a) Both assertion(A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A) c) Assertion (A) is true but reason (R) is false d) Assertion (A) is false but reason (R) is true.	
19	**Assertion :** $(2^0 + 4^{-1}) \times 2^2 = 5$ **Reason** : The power of a number says how many times to use the number in a multiplication .	1
20	**Assertion :** Degree of polynomial $4x^3 + 3x^2 - 2x + 5$ is 4 . **Reason :** The highest power of x in the polynomial p(x) is the degree of the polynomial .	1
	Section - II	
21	Find the smallest number that should be subtracted from 2231 to get a perfect square number .	2
22	Find the cube root of 226981 through estimation .	2
23	Find the value of $\sqrt[3]{250} \times \sqrt[3]{108}$.	2
24	Find the value of $49^{\frac{1}{2}} (49^{\frac{1}{2}} + 1)$	2
25	If 15 workers can build a wall in 48 hours , how many workers will be required to do the same work in 30 hours ?	2
	Section - III	
26	If $x^2 + \frac{1}{x^2} = 66$, find the value of $(x + \frac{1}{x})$ and $(x - \frac{1}{x})$	3
27	Find the smallest number which when mutiplied with 7200 will make the product a perfect cube .Further ,find the cube root of the product .	3
28	Using factor method , divide $(x^2 - 14x - 51)$ by $(x - 17)$.	3
29	A train 140 m long is running at a speed of 60 km / hr .How much time will it take to completely pass a platform 260 m long .	3
30	Ram purchased 120 oranges at the rate of Rs. 2 per orange . He sold 80% of the oranges at the rate of Rs. 2.50 per orange and the remaining oranges at the rate of Rs. 2 per orange . Find his profit percent .	3
31	Plot the points (1 , 1) , (2 , 2) , (3 , 3) . Join these in pairs . Do they lie on the line passing through the origin ?	3
	Section – IV	
32	Factorise :$(25x^2 - 90xy + 81y^2) - 9z^2$ Expand : $(3a - 2b + 4c)^2$	5

33	Simplify : $\frac{(64)^{\frac{-1}{6}} \times (216)^{\frac{-1}{3}} \times (81)^{\frac{1}{4}}}{(512)^{\frac{-1}{3}} \times (16)^{\frac{1}{4}} \times (9)^{\frac{-1}{2}}}$	5
34	Divide $12x^3 + x - 2x^2 + 1$ by $3x + 1$ and write down the quotient and remainder. Also verify your answer .	5
35	The number of pairs of shoes sold from an outlet of a company in a particular week are given below :	5

Day	1	2	3	4	5	6	7
No. of pairs sold	24	16	20	18	22	12	17

Draw a graph for the above .

Section – V

36

Uppada sari is a type of sari ,a garment worn by women ,originated from the east Godavari district in Andhra pradesh . In this wedding season shopkeepers are giving a big discount on the marked price of this saree . Sohana went to a mall to purchase this sari whose marked price was Rs. 12000 . Shopkeeper offered a discount of 20 % on it .

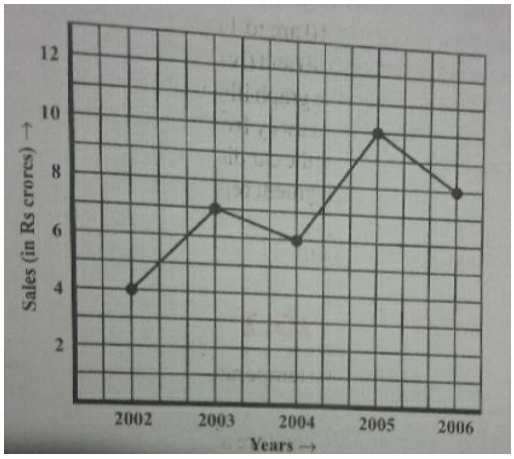
Based on the above information , answer the following questions :

(i) Find the value of discount given by the shopkeeper to Sohana , and selling price of the sari . (1)

(ii) If after allowing a discount of 20% , the shopkeeper still earns a profit of 20%,then find the cost price of the sari to the shopkeeper . (2)

(iii) Sohana spent 5% of the selling price on purchasing a beautiful bag to keep this sari , now find the total amout that she has to pay to the shopkeeper . (1)

37 Rachit, s grandfather is suffering from fever for many days . He wants to meet her and starts journey to his home town by a car , he drives the car at a speed of 30 km / hr.

	(i) Find the time taken , and distance covered by him if he starts journey at 9 a.m and reaches the place at 2 p.m. (ii) What should be the speed if he desired to reach that place by 12 noon . (iii) Find the difference between the old and new speed .	(1) (2) (1)
38	Now a days India is having so many manufacturing companies to be a part of bussines development in our counntry . one of these company is showing yearly sales figure through the following graph .  Based on the above information give answer of the following questions : (i) What were the sales in 2002 and 2006 ? (ii) What was the total sale in all for these years , difference between maximum and minimum sale . (iii) What % is the sale of the year 2006 out of the total sale ?	(1) (2) (1)

OSDAV Public School, Kaithal

Half yearly Exams (2024-25) **Set A**

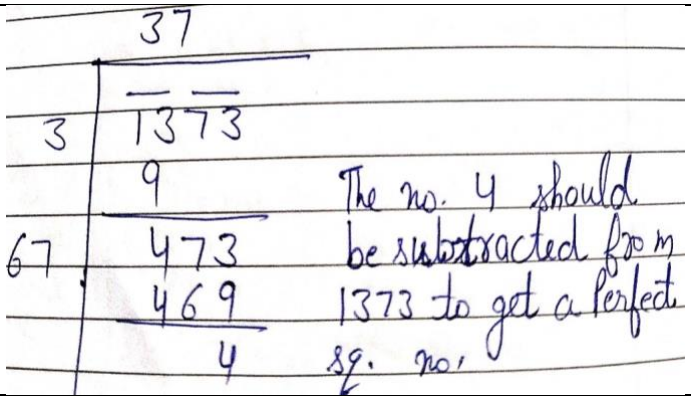
Class :VIII

Subject :Mathematics

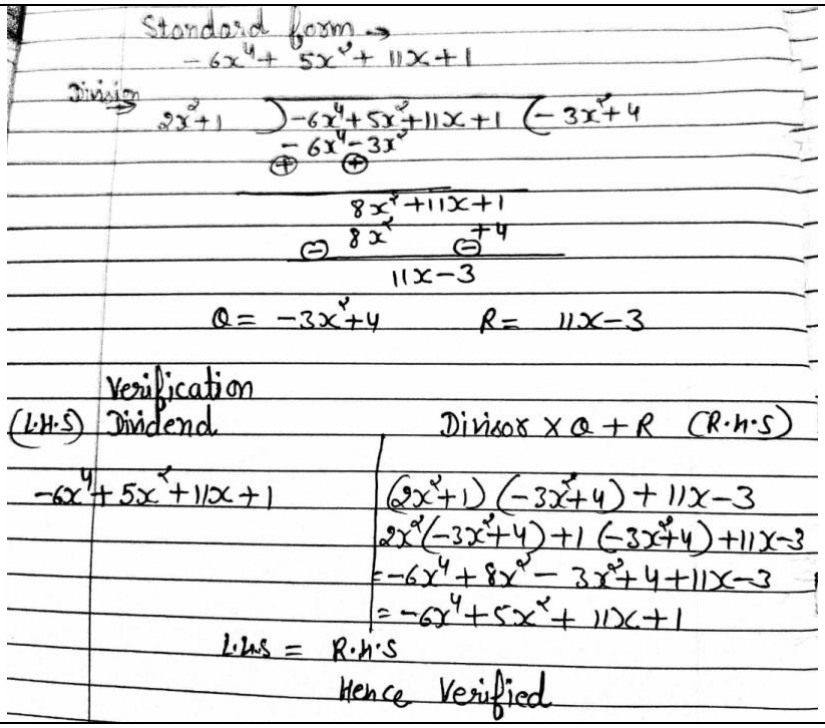
Answer Key **M.M. 80**

General instruction : Any other relevant method (other then key) will be suitably awarded.

Q.N.	Questions	Marks	
	Section - I		
1	(a) 14.3	1	
2	(c) (6 , 8 ,10)	1	
3	(b) $-4x^2$	1	
4	(d) -4	1	
5	(a) 4	1	
6	(b) 4x (2-x)(2+x)	1	
7	(c) 9	1	
8	(a) 102	1	
9	(b) 10%	1	
10	(b) 80	1	
11	(a) 5 %	1	
12	(d) origin	1	
13	(d)8	1	
14	(a) $\frac{x}{y}$ remains constant	1	
15	(c) 4	1	
16	(a) 2 units	1	
17	(b) 100%	1	
18	(b) 30	1	
19	d)	1	
20	a)	1	
	Section - II		
21	Group 2 Group 1 59 319 27 < 59 < 64 $3^3 < 59 < 4^3$ 9x9x9 = 729 smaller number between 3,4 is 3 digit at the tens place of estimated cube root is 3 digit at the ones place of estimated cube root is 9 Ans. 39	1/2 1 ½	2

22		**1/2 for grouping** **1/2for each step** **1/2 for ans.**	2
23	$= \sqrt[3]{128 \times 108}$ $= \sqrt[3]{2\times2\times2\times2\times2\times2\times2\times2\times2\times3\times3\times3}$ $= \sqrt[3]{2\times2\times2\times2\times2\times2\times2\times2\times2\times3\times3\times3}$ = ---------- ---------- ---------- ---------- $= 2\times2\times2\times3 = 24$ **Ans. 24**	**1** $\frac{1}{2}$ $\frac{1}{2}$	2
24	$= (8^2)^{1/2}\ (\ (8^2)^{1/2} + 1\ )$ $= 8\ (\ 8 + 1\ )$ $= 8 \times 9$ $= 72$	**1** $\frac{1}{2}$ ½	2
25	**Let the number of men = P** **No. of men | 15 | P** **No. of days | 12 | 6** **Decreasing days, increase in men , Inverse variation case** **= 15 x 12 = P x 6** **= P = 30** **Ans. 30 men**	**1/2** **1/2** **1/2** **1/2**	2
	Section - III		
26	$(x + \frac{1}{x})^2 = x^2 + \frac{1}{x^2} + 2.x.\frac{1}{x}$ $= (x + \frac{1}{x})^2 = 18 + 2$ $= 20$ $= (x + \frac{1}{x}) = \sqrt{20}$ **Ans.** $= (x - \frac{1}{x})^2 = x^2 + \frac{1}{x^2} - 2.x.\frac{1}{x}$ $= 18 - 2$ $= 16$ $(x - \frac{1}{x}) = \sqrt{16}$ $= 4$ **Ans.**	½ **1/2** **1/2** ½ **1/2** ½	3
27	**Total distance to be covered = 360 + 140 = 500 m**	**1/2**	

	Speed = 45 km /hr **= 45 x $\frac{5}{18} = \frac{25}{2}$ m / sec** **Let the time taken = t sec** **Distance (in m) | $\frac{25}{2}$ | 500** **Time in (sec) | 1 | t** **Case of direct variation** **$= \frac{25}{2} \div 1 = \frac{500}{t}$** **= t = 40 sec** **Ans 40 sec**	**1/2** **½** **½** **½** **½**	3
28	**$= x^2 - 8x + 5x - 40$** **= x (x- 8) + 5 (x – 8)** **= (x-8) (x + 5)** **Divide :** **$\frac{(x-8)(x+5)}{(x-8)}$** **= (x+5) Ans.**	**1** **½** **½** **½** **½**	3
29	2 | 3600 2 | 1800 2 | 900 2 | 450 3 | 225 3 | 75 5 | 25 5 | 5 1 **Prime factors of 3600 are 2x2x2x2x3x3x5x5** **---------** **The numbers 2 , 3x3 and 5x5 are not in complete triplets. So required no .to be multiply by 3600 is 2x2x3x5 = 60** **New perfect sq no = 3600 x 60 = 216000** **Factors of 216000 = 2x2x2x2x2x2x3x3x3x5x5x5** **--------- --------- --------- ---------** **Cube root of 216000 = 2x2x3x5 = 60** **Ans 60 , 60**	**1** **1/2** **1** **1/2**	3
30	**CP of 1 orange = Rs. 2** **CP of 120 oranges = 120x 2 = Rs. 240** **60% of 120 oranges = 72 oranges** **SP of 72 oranges = 72x 2.50 = Rs. 180** **Remainig oranges 120 - 72 = 48** **SP of 48 oranges = 48x2 = Rs. 96** **Total SP of 120 oranges = 180+96 = Rs. 276**	**1/2** **1/2** **1**	

	Profit = SP - CP **276 -240 = Rs. 36** **P% =(P / CP) x 100** **= (36/240) x100** **= 15 %** **Ans. 15 %**	**1/2** **½**	3
31	**½ x 3 for ploting , ½ for scale , ½ for joining , ½ for yes .**	**3**	
	Section – IV		
32		**1/2 for standard form** **1 for Q and R** **2.5 (1+1+0.5)for divide steps** **1 for verify**	5
33	$= \frac{(3^4)^{\frac{3}{4}} \times (6^3)^{\frac{-2}{3}} \times (5^3)^{\frac{1}{3}}}{(2^6)^{\frac{1}{6}} \times (3^5)^{\frac{-2}{5}} \times (7^3)^{\frac{1}{3}}}$ $= \frac{3^3 \times 6^{-2} \times 5}{2 \times 3^{-2} \times 7}$ $= \frac{3^3 \times 3^2 \times 5}{2 \times 6^2 \times 7}$ $= \frac{27 \times 9 \times 5}{2 \times 36 \times 7}$ $= \frac{135}{56}$ **Ans.**	**½ ×6 = 3** **½** **½** **1**	5
34	**(i)($(9x)^2 - 2 \times 9x \times 7y + (7y)^2 - (5z)^2$ Identity: $(a-b)^2 = a^2 + b^2 - 2ab$** **= ($9x - 7y)^2 - (5z)^2$ Identity: $a^2 - b^2 = (a-b)(a+b)$** **= (9x – 7y + 5z) (9x - 7y -5z) Ans.** **(ii) Identity used : $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$** **= $(6p)^2 + (-5q)^2 + (4r)^2 + 2 \times 6p \times -5q + 2 \times -5q \times 4r + 2 \times 4r \times 6p$** **= $36p^2 + 25q^2 + 16r^2 - 60pq - 40qr + 48rp$ Ans.**	**1 + 1/2** **½ + ½** **½** **1** **1**	5
35	**1/2 for scale , 3.5 for plotting, 1 for joining**		5

	Section – V		
36	**(i) Value of discount : 15000 x $\frac{20}{100}$ = Rs. 3000** **Selling price of the sari : 15000 - 3000 = Rs. 12000** **(ii) SP = Rs 12000** **Profit = 20%** **CP = $\frac{SP \times 100}{(100+P\%)}$** **= = $\frac{12000 \times 100}{(100+20)}$** **= Rs 10000** **(iii) SP = Rs. 12000** **Cost of bag = 5 % of 12000** **= Rs. 600** **Money given to the shopkeeper = Rs 12000 + 600 = Rs 12600**	**1/2** **1/2** **1** **1** **1/2** **1/2**	1 2 1
37	**(i) Time taken by Rachit is 4 hrs ,** **Distance = Speed x Time** **30 x 4 = 120 km** **(ii)** **Let the new speed is P km/ hr.** **Case of Inverse variation (decrease in time, increase in speed)** **= 30 x 4 = P x 3** **= P = 40** **Speed = 40 Km/hr** **iii)** **New speed = 40 Km/hr Old speed = 30 Km/hr** **Difference = 40 - 30 = 10 Km / hr**	**1/2** **1/2** **1** **1** **1/2** **1/2**	1 2 1
38	**(i) 4 units = 1 hour** **(ii) 3.5 hours , 22 km** **(ii) 8 a. m to 9 a. m**	**1** **1+1** **1**	1 2 1

Speed (in Km / hr)	30	P
Time (in hrs)	4	3

OSDAV Public School, Kaithal

Half yearly Exams (2024-25) **set -B**

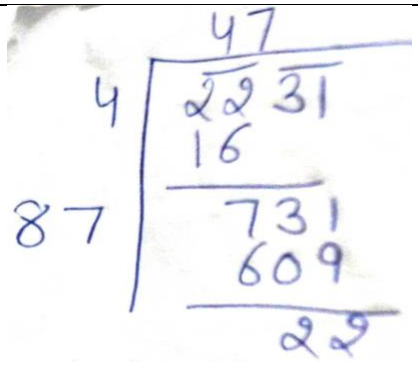
Class :VIII

Subject :Mathematics

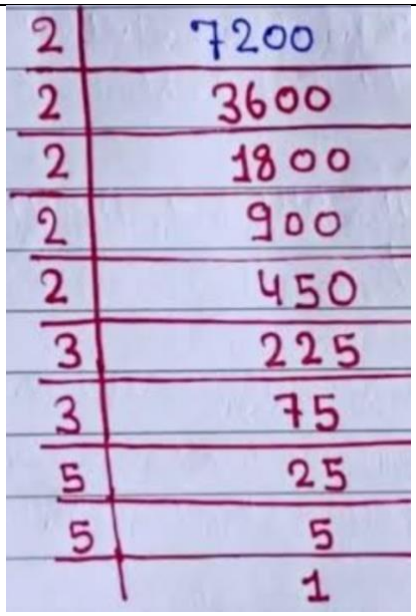
Ans key **M. M 80**

General instruction:

Any other relevant method (other then key) will be suitably accepted.

Q.N.	Questions	Marks	
	Section - I		
1	(c) 15.4	1	
2	(b) 2	1	
3	(b) $-4x^2$	1	
4	(c) 1	1	
5	(a) 7	1	
6	(a)2	1	
7	(b)2x (4-x)(4+x)	1	
8	(b) (8,15,17)	1	
9	(c) 124	1	
10	(a) 5%	1	
11	(d) 88	1	
12	(d) (0,4)	1	
13	(c) 8 %	1	
14	(d) 8	1	
15	(d) (xy) remains constant	1	
16	(a) 2 units	1	
17	(a) 40	1	
18	(a) 50%	1	
19	(b)	1	
20	(d)	1	
	Section - II		
21	 Required no to be subtracted = 22	1/2 for group 1/2 for each step 1/2	2
22	Group 2 226 $216 < 226 < 343$ $6^3 < 59 < 7^3$ Group 1 981 1x1x1 = 1	½	

	smaller number between 6,7 is 6 **digit at the tens place of estimated cube root is 6** **digit at the ones place of estimated cube root is 1** **Ans. 61**	**1** **1/2**	2
23	$= \sqrt[3]{2 \times 5 \times 5 \times 5 \times 2 \times 2 \times 3 \times 3 \times 3}$ $= = \sqrt[3]{2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 3 \times 3 \times 3}$ ---------- ---------- ---------- **= 2×5×3 = 30** **Ans. 30**	**1** **½** **1/2**	2
24	$(7^{2})^{1/2}\,((7^{2})^{1/2} + 1)$ **= 7(7+1)** **=7x8** **= 56**	**1** **½** **1/2**	2
25	**Let the required number of workers = P** **No.of workers | 15 | P** **Time (in hrs) | 48 | 30** **Less no. of days , more no. of workers Inverse variation case** **= 15 x 48 = P x 30** **= P = 24** **Ans . 24 workers**	**½** **½** **½** **½**	2
	Section - III		
26	$= (x + \frac{1}{x})^2 = x^2 + \frac{1}{x^2} + 2 .x. \frac{1}{x}$ $= (x + \frac{1}{x})^2 = 66 + 2$ **= 68** $(x + \frac{1}{x}) = \sqrt{68}$ **Ans.** $= (x - \frac{1}{x})^2 = x^2 + \frac{1}{x^2} - 2 .x. \frac{1}{x}$ **= 66- 2** $= (x- \frac{1}{x})^2 = 64$ $= (x- \frac{1}{x}) = \sqrt{64}$ **= 8 Ans.**	**½** **½** **½** **½** **½** **½**	3
27		**1.5**	

	 2 | 7200 2 | 3600 2 | 1800 2 | 900 2 | 450 3 | 225 3 | 75 5 | 25 5 | 5 1 **Prime factors of 7200 are : 2x2x2x2x2x3x3x5x5** **--------** **2x2 , 3x3, 5x5 are not in complete triplets** **So the required no. to be multiply is 2x3x5 = 30** **7200x30 = 2x2x2x2x2x2x3x3x3x5x5x5** **--------- --------- ---------- ----------** **216000 = 2x2x2x2x2x2x3x3x3x5x5x5** **Cube root of 216000 = 2 x 3 x 5 = 30 Ans.** **= 2x2x3x5 = 60**	**1** **1/2**	3
28	**= x^2 – 17 x + 3x -51** **= x(x- 17) + 3 (x – 17)** **= (x – 17) (x + 3)** **Divide :** $\frac{(X-17)(X+3)}{(X-17)}$ **= (x + 3) Ans.**	**1** ½ ½ ½ ½	3
29	**Total distance to be covered = 260 + 140 = 400 m** **Speed = 60 km /hr** **= 60 x 5/18 = 50/3 m / sec** **Let the time taken = t sec** **Distance (in m) | 50/3 | 400** **Time (in sec) | 1 | t** **Case of direct variation** **= 50/3 ÷ 1 = 400 / t** **= t = 24sec** **Ans 24 sec**	½ ½ ½ ½ ½ ½	3
30	**CP of 1 orange = Rs. 2** **CP of 120 oranges = 120x 2 = Rs. 240** **80% of 120 oranges = 96 oranges**	½ ½	

	SP of 96 oranges = 96 x 2.50 = Rs. 240 **Remainig oranges 120 - 96 = 24** **SP of 48 oranges = 24 xx 2 = Rs. 48** **Total SP of 120 oranges = 240+ 48= Rs. 288** **Profit = SP - CP** **288 -240 = Rs. 48** **P% =(P / CP) x 100** **= (48/240) x100** **= 20 %** **Ans. 20 %**	**1** **½** **½**	3
31	**½ x 3 for ploting , ½ for scale , ½ for joining , ½ for yes.**	**3**	
	Section - IV		
32	**(i) $(5x)^2 – 2.5x.9y – (9y)^2) – (3z)^2$ Identity : $(a-b)^2 = a^2+b^2 – 2ab$** **= $(5x – 9y)^2 – (3z)^2$ Identity : $(a)^2 – (b)^2= (a-b)(a+b)$** **= (5x -9y + 3z) (5x – 9y -3z)** **(ii) $(a+b+c)^2 = (a)^2+(b)^2+(c)^2+2ab+2bc+2ca$** **= $(3a -2b+4c)^2 = (3a)^2+(-2b)^2+(4c)^2 +2×3a× -2b+$** **$2×-2b×4c+2×4c×3a$** **= $9a^2+4b^2+16c^2-12ab-16bc+24ca$ Ans.**	**1+ ½** **½+1/2** **½** **½** **½**	5
33	**=** $\frac{(2^6)^{\frac{-1}{6}} \times (6^3)^{\frac{-1}{3}} \times (3^4)^{\frac{1}{4}}}{(8^3)^{\frac{-1}{3}} \times (2^4)^{\frac{1}{4}} \times (3^2)^{-1/2}}$ **=** $\frac{2^{-1} \times 6^{-1} \times 3}{8^{-1} \times 2 \times 3^{-1}}$ **=** $\frac{8 \times 3 \times 3}{2 \times 6 \times 2}$ **= 3 Ans.**	**½** **x6** **=3** **½** **½** **1**	5

34	Standard form → $12x^3-2x^2+x+1$ $3x+1 \overline{)12x^3-2x^2+x+1 \;(\; 4x^2-2x+1}$ $\ominus\ 12x^3 \pm 4x^2$ $-6x^2+x$ $\oplus\ -6x^2 \oplus 2x$ $3x+1$ $\ominus\ 3x \oplus 1$ 0 $Q = 4x^2-2x+1 \qquad R=0$ Verification Dividend $12x^3-2x^2+x+1$ Divisor × Q + R $(4x^2-2x+1)\times(3x+1)+0$ $3x(4x^2-2x+1)+1(4x^2-2x+1)+0$ $12x^3-6x^2+3x+4x^2-2x+1+0$ $12x^3-2x^2+x+1$ L.H.S = R.H.S Hence verified.	**1/2 for standard form (1+1+0.5) for three steps 1 for Q, R 1 for verify**	5
35	**1/2 for scale, 3.5 for plotting, 1 for joining.**		5
	Section – V		
36	**(i) Value of discount : 12000 x (20 /100)= Rs. 2400** **Selling price of the sari : 12000 - 2400 = Rs. 9600** **(ii) SP = Rs 9600** **Profit = 20%** **CP =** $\frac{SP \times 100}{(100+P\%)}$ $= \frac{9600 \times 100}{(100+20)}$ **= Rs 8000** **(iii) SP = Rs. 9600** **Cost of bag = 5 % of 9600** **= Rs. 480** **Money given to the shopkeeper = Rs 9600 + 480 = Rs 10080**	½ ½ **1** ½ ½ ½ ½	1 2 1
37	**Time taken by Rachit is 5 hrs ,** **Distance = Speed x Time** **30 x 5 = 150 km** **Let the new speed is P km/ hr.** **Case of Inverse variation (decrease in time, increase in speed)** **= 30 x 5 = P x 3**	½ ½ **1**	1

Time (in hrs)	5	3
Speed (in km/h)	30	P

	= P = 50 **Speed = 50 Km/hr** **(iii)** **New speed = 50 Km/hr Old speed = 30 Km/hr** **Difference = 50 - 30 = 20 Km / hr**	**1** **½** **½**	2 1
38	**(i) The sales in 2002= 4 crores and in 2006 = 8 crores.** **(ii) The total sale in all for these years = 35 crores** **maximum sale = 10 crores and minimum sale = 4 crores** **Difference = 10-4 = 6 crores** **(iii) Sale of the year 2006 = 8 crores, the total sales = 35 crores** **% of this sale = (8/35)x 100 = 160 / 7 %**	**½+1/2** **1** **½** **½** **½** **½**	1 2 1