

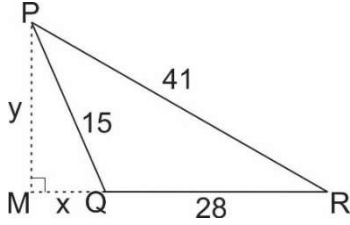
GANIT PRABHUTWA EXAMINATION (Level -1)

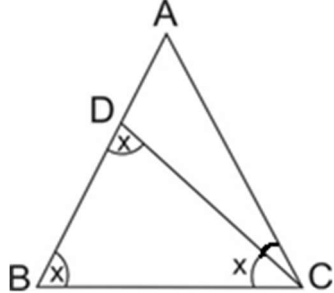
Date: 14-12-2025

Std. VIII

Model Answers and Scheme of Marking

Q.1	A]	1) A , 6:4:3 2) B , 3.96 3) C , 1260 4) B , Rs. 18 5) A , 50° 6) A , 4.7 7) B , -1 8) D , $a^2 - b^2 + 2bc - c^2$ 9) A , Trapezium 10) C , 30 cm
Q.1	B]	1) 45 km/hr 2) $16\frac{2}{3}\%$ 3) $x = 2$ 4) 1440^0 5) 18
Q.2	1)	According to Mukta's calculations Total marks = $65 \times 6 = 390$ Two marks 53 and 37 were wrongly taken as 35 and 73 \therefore Actual marks = $390 - (35 + 73) + (53 + 37)$ $= 390 - (108) + (90) = 282 + 90 = 372$ \therefore Correct average = $372 \div 6 = 62$
	2)	$ \begin{array}{r} 2x - 3 \\ 2x + 1 \overline{) 4x^2 - 4x - 5} \\ \underline{- 4x^2 + 2x} \\ - 6x - 5 \\ \underline{- - 6x - 3} \\ - 2 \end{array} $ Quotient = $2x - 3$ Remainder = $- 2$
	3)	$ \begin{aligned} &729 a^7 b - ab^7 \\ &= ab [(729)a^6 - b^6] \\ &= ab [(27a^3)^2 - (b^3)^2] \\ &= ab [(27a^3 + b^3) (27a^3 - b^3)] \\ &= ab (3a + b) (9a^2 - 3ab + b^2) (3a - b) (9a^2 + 3ab + b^2) \end{aligned} $ OR $ \begin{aligned} &= ab (729a^6 - b^6) = ab [(9a^2)^3 - (b^2)^3] \\ &= ab(9a^2 - b^2)(81a^4 + 9a^2b^2 + b^4) \\ &= (ab)(3a + b)(3a - b)[81a^4 + 18a^2b^2 + b^4 - 9a^2b^2] \\ &= (ab)(3a + b)(3a - b)[(9a^2 + b^2)^2 - (3ab)^2] \\ &= (ab)(3a + b)(3a - b)(9a^2 + 3ab + b^2)(9a^2 - 3ab + b^2) \end{aligned} $

<p>Q.3</p>	<p>1) Let seg $PM \perp$ line QR Let $MQ = x$ Let $PM = y$ PQM, PRM are right angled triangles. $\therefore PM^2 = (41)^2 - (28+x)^2 = [(15)^2 - x^2]$ $\therefore y^2 = 1681 - 784 - 56x - x^2 = 225 - x^2$ $672 = 56x$ $12 = x$ $\therefore y^2 = (15)^2 - (12)^2 = 225 - 144 = 81$ $\therefore PM = 9$ units</p> <p>OR</p> <p>For ΔPQR, Perimeter = $41+15+28 = 84$ \therefore Half perimeter, $S = 42$ $A^2 = (42)(42 - 28)(42 - 15)(42 - 41)$ $= 42 \times 14 \times 27 \times 1 = 3 \times 14 \times 14 \times 3 \times 9$ $\therefore A = 14 \times 3 \times 3 = 126 \quad \dots\dots (I)$ But, $\therefore A = \frac{1}{2} \times 28 \times y = 14y \quad \dots\dots (II)$ From (I) and (II), $14y = 126 \quad \therefore y = 9$</p>	
	<p>2) Total voters 15000 Invalid votes 15%, so valid votes 85% \therefore Total valid votes = $15000 \times \frac{85}{100} = 12750$ One candidate, 60% of the valid votes $= \frac{60}{100} \times \frac{12750}{1} = 7650$ \therefore The other candidate got $12750 - 7650 = 5100$ votes</p>	
	<p>3) $x^3 + y^3 = (x + y)^3 - 3xy(x + y)$ $\therefore -91 = (-1)^3 - 3xy(-1)$ $\therefore -91 = -1 + 3xy$ $-90 = 3xy$ $\therefore -30 = xy$ $x^2 + y^2 = (x+y)^2 - 2xy$ $= (-1)^2 - 2(-30) = 1 + 60 = 61$</p>	

Q.4	<p>1) $x^2 - 12x + 27$ $= x^2 - 9x - 3x + 27$ $= x(x - 9) - 3(x - 9)$ $= (x - 9)(x - 3)$ $\therefore \frac{x^2 - 12x + 27}{x^2 - 7x - 18} = \frac{(x-9)(x-3)}{(x-9)(x+2)} = \frac{x-3}{x+2}$</p>	<p>$x^2 - 7x - 18$ $= x^2 - 9x + 2x - 18$ $= x(x - 9) + 2(x - 9)$ $= (x - 9)(x + 2)$</p>										
	<p>2) Sum of the digits of a two digit number is 11. Let one digit be x. So, the ten's place digit is (11 - x)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Original number</p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">Tens</td> <td style="text-align: center;">Units</td> </tr> <tr> <td style="text-align: center;">(11 - x)</td> <td style="text-align: center;">x</td> </tr> </table> <p>\therefore Number $= 10(11 - x) + x$ $= 110 - 9x$</p> </td> <td style="width: 50%; vertical-align: top;"> <p>Number obtained by interchanging the digit</p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">Tens</td> <td style="text-align: center;">Units</td> </tr> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">(11 - x)</td> </tr> </table> <p>\therefore Number $= 10x + (11 - x)$ $= 11 + 9x$</p> </td> </tr> </table> <p>\therefore According to the given conditions $(11 + 9x) - (110 - 9x) = 27$ $\therefore 18x - 99 = 27 \quad \therefore 18x = 27 + 99$ $\therefore 18x = 126 \quad \therefore x = 7$ \therefore Original number is 47</p>		<p>Original number</p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">Tens</td> <td style="text-align: center;">Units</td> </tr> <tr> <td style="text-align: center;">(11 - x)</td> <td style="text-align: center;">x</td> </tr> </table> <p>\therefore Number $= 10(11 - x) + x$ $= 110 - 9x$</p>	Tens	Units	(11 - x)	x	<p>Number obtained by interchanging the digit</p> <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">Tens</td> <td style="text-align: center;">Units</td> </tr> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">(11 - x)</td> </tr> </table> <p>\therefore Number $= 10x + (11 - x)$ $= 11 + 9x$</p>	Tens	Units	x	(11 - x)
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	<p>3) In $\triangle ABC$, $AB = AC$ $\therefore \angle ABC = \angle ACB = x$ say In $\triangle BCD$, $BC = CD$ $\therefore \angle DBC = \angle CDB = x$ Now in $\triangle ABC$ and $\triangle CBD$ $\angle ABC = \angle CDB$ and $\angle ACB = \angle CBD$ $\therefore \triangle ABC \sim \triangle CBD$ by A-A test</p>											
Q.5	<p>1) Rambhau invested Rs. 20,000 for 3 years, 10 p.c.p.a.</p> <p>Interest = $\frac{PNR}{100} = 20,000 \times \frac{3}{1} \times \frac{10}{100} = \text{Rs. } 6,000$</p> <p>His friend $\rightarrow P = 20,000$ R = 10 p.c.p.a. N = 3 year</p> <p>Compound Interest = $A - P = 20,000 \left(1 + \frac{10}{100}\right)^3 - 20,000$ $= 20,000 \left(\frac{1331}{1000}\right) - 20,000 = 26,620 - 20,000 = 6,620$</p> <p>$\therefore$ Friend's interest is more. He got $6,620 - 6,000 = \text{Rs. } 620$ more.</p>											

OR

$$\text{For Rambhau, Interest} = \frac{PNR}{100} = 20,000 \times \frac{3}{1} \times \frac{10}{100} = \text{Rs. } 6,000$$

His friend \rightarrow interest for first year = Rs. 2,000

Principal for second year = Rs 22,000 \therefore interest = Rs 2,200

Principal for third year = Rs 24200 \therefore interest = Rs 2,420

$$\therefore \text{ Total interest} = 2,000 + 2,200 + 2,420 = \text{Rs } 6,620$$

$$\therefore \text{ Friend got } (6,620 - 6,000) = \text{Rs. } 620 \text{ more.}$$

2) Draw seg PQ, 4.5 cm

Draw $\angle PQR = 120^\circ$, ray QT

Fix point R on ray QT such that PR = 5.8cm

Then fix up point S, complete parallelogram PQRS

3) Two trains are running on parallel tracks. So speeds are added

$$\therefore \text{ speed} = 54 + 36 = 90 \text{ km/hr}$$

Total length of two trains = 300 + 200 = 500 mts.

So, to cross each other, trains will cover distance of 500mts = $\frac{1}{2}$ km

$$\text{Time} = \frac{\text{distance}}{\text{speed}} = \frac{\frac{1}{2}}{90} = \frac{1}{180} \text{ hr}$$

$$\therefore \frac{1}{180} \times \frac{3600}{1} = 20 \text{ seconds}$$

4) $\triangle ABC$ is an equilateral triangle. So AC = 7cm.

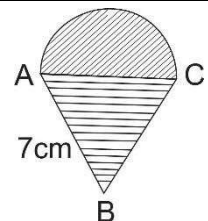
Radius of a semicircle = $\frac{7}{2}$ cm

Area of a semicircle = $\frac{1}{2} \times \pi \times r^2$

$$= \frac{1}{2} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} = \frac{77}{4} = 19.25 \text{ sq. cm.}$$

$$A(\triangle ABC) = \frac{\sqrt{3}}{4} \times (\text{side})^2 = \frac{1.73}{4} \times 49 = 21.1925 \text{ sq. cm.}$$

$$\therefore \text{ Total area} = 21.1925 + 19.25 = 40.4425 \text{ sq cm.}$$



5) Two numbers are in the ratio 4:5 and their LCM is 180

Let their GCD be x .

Since 4 and 5 are coprime numbers, the numbers be $4x$ and $5x$

G.C.D. \times L.C.M. = Product of two numbers

$$\therefore x \times 180 = 4x \times 5x \quad \therefore 180 = 20x$$

$$\therefore 9 = x$$

\therefore Numbers are 9×4 , 9×5 i.e. 36 and 45

<p>Q.6</p>	<p>1) Let Shiva do the work in x days and Bhiva in y days</p> $\therefore \frac{1}{x} + \frac{1}{y} = \frac{1}{10} \quad \dots\dots\dots (I)$ <p>Dina alone can do the work in 15 days</p> $\therefore \frac{1}{x} = \frac{1}{y} + \frac{1}{15} \quad \therefore \frac{1}{x} - \frac{1}{y} = \frac{1}{15} \quad \dots\dots\dots (II)$ <p>Adding (I) and (II) $\frac{2}{x} = \frac{1}{10} + \frac{1}{15} \quad \therefore \frac{2}{x} = \frac{5}{30} = \frac{1}{6} \quad \therefore x = 12$</p> <p>Since, $\frac{1}{x} + \frac{1}{y} = \frac{1}{10} \quad \therefore \frac{1}{y} = \frac{1}{10} - \frac{1}{12} = \frac{1}{60}$</p> <p>$\therefore y = 60$, So Bhiva alone can do the work in 60 days</p>
	<p>2) Let C.P. be Rs. $x \quad \therefore$ S.P. = $\frac{120x}{100} = \frac{6x}{5}$ Rs.</p> <p>Now, new C.P. = $\frac{x \times 80}{100}$ Rs. $\frac{4x}{5}$ And new S.P. = $\left(\frac{6x}{5} - 30\right)$ Rs.</p> <p>\therefore New Profit = $\left(\frac{6x}{5} - 30\right) - \frac{4x}{5} = \left(\frac{2x}{5} - 30\right)$ Rs. $\dots\dots\dots (I)$</p> <p>Still Profit is 20% i.e. $\frac{4x}{5} \times \frac{20}{100} = \frac{4x}{25} \quad \dots\dots\dots (II)$</p> <p>By I and II, $\frac{2x}{5} - 30 = \frac{4x}{25}$</p> <p>$\therefore \frac{2x}{5} - \frac{4x}{25} = 30 \quad \therefore \frac{6x}{25} = 30 \quad \therefore x = 125$</p> <p>$\therefore$ Cost price of the article is Rs. 125</p> <p>OR</p> <p>Let the C.P. of the article be Rs.100</p> <p>\therefore He sold it at 20% profit, i.e. for Rs. 120</p> <p>Had the C.P. 20% less, that is Rs 80,</p> <p>he would have got 20% profit, i.e. Rs 16.</p> <p>\therefore S.P. of the article would be Rs (80+16) = Rs 96.</p> <p>That is the S.P. would have been (120-96) = Rs 24 less.</p> <p>But he would sell it at Rs. 30 less</p> <p>\therefore The C.P. should be $100 \times \frac{30}{24} = 100 \times \frac{5}{4} = 125$.</p> <p>$\therefore$ The C.P. of the article was Rs. 125.</p>