SUCCESS KEY TEST SERIES

First Term Exam (Sample Paper)[MODEL ANSWER]

Std: VIII (E.M)	**Subject: Mathematics**	**Time: 2Hrs**
Date :	**Chapter No. 1 to 8**	**Max Marks: 40**

Q.1 (A) Choose the correct alternative answers for each of the following questions: **4**

(1) Ans. (b) 12

(2) Ans. (d) B

(3) Ans. (b) 10 cm

(4) Ans. (c)

(B) Solve the following sub questions: **3**

(1) Ans. $(x + 3)(x - 4)$

(2) Ans. Inverse variation

(3) Ans. $40 < 141$

$\therefore 40/29 < 141/29$

Q.2 Solve the following sub questions: **10**

(1) Ans. $(58)^3 = (60 - 2)^3$

$= (60)^2 - 3(60)^2(2) + 3(60)(2)^2 - (2)^3$

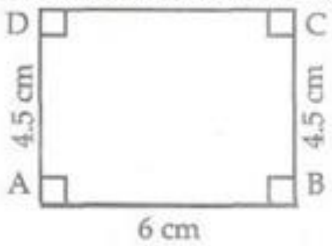
$= 216000 - 21600 + 720 - 8$

$= 195112$

(2) Ans. Opposite sides of a rectangle are congruent.

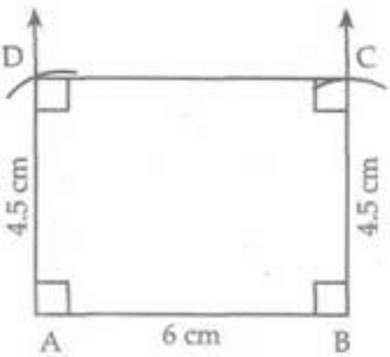
$\therefore l(BC) = l(AD) = 4.5$ cm

The measure of each angles of a rectangle is 90°



Rough figure

$\therefore m\angle A = m\angle B = 90°$



(3) Ans. (1) $5832 = 2 \times 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$

$= 2^3 \times 3^3 \times 3^3$

$5832 = (2 \times 3 \times 3)^3 = 18^3$

$\therefore \sqrt[3]{5832} = \left(18^3\right)^{1/3} = 18$

$\therefore \boxed{\sqrt[3]{5832} = 18}$

(2) $4096 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$

$= 2^3 \times 2^3 \times 2^3 \times 2^3$

$= (2 \times 2 \times 2 \times 2)^3$

$= 16^3$

$\therefore \sqrt[3]{4096} = \left(16^3\right)^{1/3} = 16$

$\therefore \boxed{\sqrt[3]{4096} = 16}$

(4) Ans. $(0.02)^3 = 0.02 \times 0.02 \times 0.02$

$= 0.000008$

(5) Ans. $m^2 - n^2 - (m+n)(m-n)$ ...(I)

[Using the formula $a^2 - b^2 = (a+b)(a-b)$]

$m^3 - n^3 = (m-n)(m^2 + mn + n^2)$ ...(II)

[Using the formula $a^3 - b^3 = (a-b)(a^2 + ab + b^2)$]

$$\frac{m^2 - n^2}{(m+n)^2} \times \frac{m^2 + mn + n^2}{m^3 - n^3}$$

$$= \frac{(m+n)(m-n)}{(m+n)(m+n)} \times \frac{m^2 + mn + n^2}{(m-n)(m^2 + mn + n^2)}$$ [From I, II]

$$= \frac{1}{m+n}$$

$$\therefore \boxed{\frac{m^2 - n^2}{(m+n)^2} \times \frac{m^2 + mn + n^2}{m^3 - n^3} = \frac{1}{m+n}}$$

Q.3 Solve any four of the following sub questions: 15

(1) Ans. Construction on the number line.

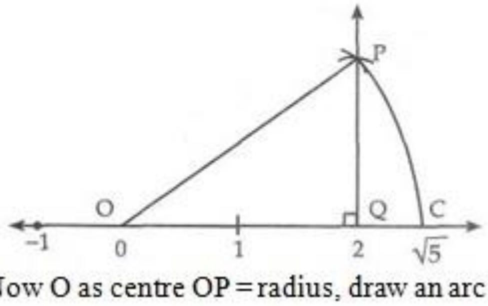
$OQ = 2$, $QO \perp OP$ Take $PQ = 1$

By Pythagoras theorem ΔPOQ

$OP^2 = OQ^2 + QP^2 = (2)^2 + (1)^2 = 4 + 1$

$OP^2 = 5$

$\therefore OP = \sqrt{5}$



Now O as centre OP = radius, draw an arc with centre O and radius OP.

Make the point of intersection of the line and the arc as C. The point C shows the number $\sqrt{5}$.

(2) Ans. $= p^3 + 3p^2q + 3pq^2 + q^3 + p^3 - 3p^2q + 3pq^2 - q^3$

$= 2p^3 + 6pq^2$

(3) Ans. $m \propto n$ [given]

$\therefore m = kn$ [k is constant of variation]

Substituting m = 154 and n = 7 we get,

$154 = k \times 7$

$\therefore \frac{154}{7} = k \quad \therefore k = 22$

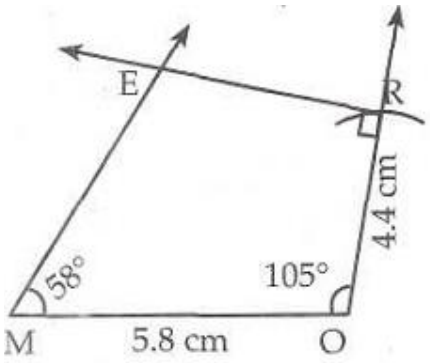
$\therefore$ The equation of variation is m = 22n

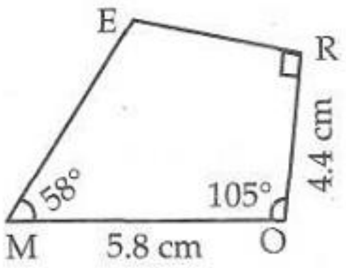
Substituting n = 14 in equation of variation.

$\therefore m = 22 \times 14$

$\therefore \boxed{m = 308}$

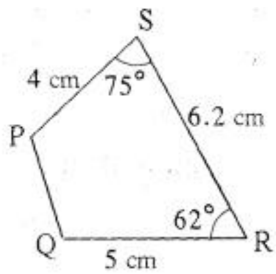
(4) Ans.





Rough Figure

(5) Ans. Let us draw a rough figure, show the given information in that figure. From the figure we see that after drawing seg QR, if seg RS is drawn making an angle of 62° at the point R, we can get points Q, R and S of the quadrilateral.



We will get point P on ray SP at a distance of 4 cm from S, which makes an angle of 75° at point S. We get □ PQRS of given measure after joining points P and Q. Now you can do this construction .

Q.4 Solve the following sub questions: **8**

(1) Ans.

$3x^2 - x - 2$

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

$= 3x(x-1) + 2(x-1)$

$= (x-1)(3x+2)$ (I)

$3x^2 - 7x - 6$

$= 3x^2 - 9x + 2x - 6$

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

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

$x^2 - 7x + 12$

$= x^2 - 4x - 3x - 12$

$= x(x-4) - 3(x-4)$

$= (x-4)(x-3)$ (III)

$x^2 - 4$

$= (x)^2 - (2)^2$

Using the formula

$a^2 - b^2 = (a+b)(a-b)$

$= (x+2)(x-2)$ (IV)

$$\frac{3x^2 - x - 2}{x^2 - 7x + 12} \div \frac{3x^2 - 7x - 6}{x^2 - 4}$$

$$= \frac{(x-1)(3x+2)}{(x-4)(x-3)} \div \frac{(x-3)(3x+2)}{(x+2)(x-2)} \quad \text{[from I, II, III, IV]}$$

$$= \frac{(x-1)(3x+2)}{(x-4)(x-3)} \times \frac{(x+2)(x-2)}{(x-3)(3x+2)}$$

$$= \frac{(x-1)(x+2)(x-2)}{(x-4)(x-3)^2}$$

$$\therefore \boxed{\frac{3x^2 - x - 2}{x^2 - 7x + 12} \div \frac{3x^2 - 7x - 6}{x^2 - 4} = \frac{(x-1)(x+2)(x-2)}{(x-4)(x-3)^2}}$$

(2) Ans. Let the speed to the car be s and time required to cover some distance be t.

There is an inverse variation between speed and time.

$\therefore\ s \propto \frac{1}{t}$

$\therefore\ s \times t = k$ [k is constant of variation]

Substituting s = 60 and t = 480 [1 hour = 60 minutes]

$\therefore 60 \times 480 = k$

$\therefore k = 28800$

$\therefore$ The equation of variation is $s \times t = 28800$

Substituting $t = (7 \times 60 + 30) = 450$ minutes in equation of variation

$\therefore s \times 450 = 28800$

$\therefore s = \frac{28800}{450}$

$\therefore s = 64$

Hence, if speed of car is 64 km/hr then the same distance can be covered in $7\frac{1}{2}$ hours.

$\therefore$ Increase in speed = 64 – 60 = 4 km/hrs.

$\therefore$ Speed of the car should be increased by 4 km/hr.