Class - VIII

Subject - Maths

Section-A

1. $\left(\frac{2}{7}\right)^{y} = 1$

$\left(\frac{2}{7}\right)^{y} = \left(\frac{2}{7}\right)^{0}$ $\left[\because \left(\frac{a}{b}\right)^{0} = 1\right]$

As bases are equal, we equate powers

$y = 0$

1

2. $(x^2+5)(x^2-5)$

$= (x^2)^2 - (5)^2$ $(\because (a+b)(a-b) = a^2 - b^2)$

$= x^4 - 25$

1

Degree of the polynomial $x^4 - 25$ is 4.

3. Age of Arnav's father = 49 yrs

Given: He is nine years older than four times Arnav's age.

let Arnav's age be x

A/q

$4x + 9 = 49$

$4x = 49 - 9$

$4x = 40$

$\boxed{x = \frac{40}{4} = 10}$

1

$\therefore$ Arnav's age is 10 yrs and the reqd. equation is $4x + 9 = 49$

4. When the dice is thrown,

total no. of outcomes $= \{1, 2, 3, 4, 5, 6\} = 6$

No. of favourable outcomes (Getting a composite no.)

$= 2$ (Getting 4 or 6)

~~Proba~~ Required probability $= \frac{2}{6} = \frac{1}{3}$

1

$\therefore$ The reqd. probability is $\frac{1}{3}$.

Section - B

5. $(0.000064)^{5/6} = [(0.2)^6]^{5/6}$

$= (0.2)^{6 \times \frac{5}{6}}$

$= (0.2)^5 = 0.00032$

2

6. $\frac{x^2 - 6x + 8}{x - 2} = \frac{x^2 - 4x - 2x + 8}{(x - 2)}$ (using $(x+a)(x+b) = x^2 + (a+b)x + ab$)

$= \frac{x(x-4) - 2(x-4)}{(x-2)}$

$= \frac{(x-4)\cancel{(x-2)}}{\cancel{(x-2)}} = x - 4$

2

2

7. Equilateral triangle, Square

8. A pythagorean triplet consists of $2m$, m^2+1, m^2-1

$\because$ 8 is ~~one~~ the smallest no.

let 8 be $2m$

$$m = \frac{8}{2} = 4$$

$$m^2 - 1 = (4)^2 - 1 = 16 - 1 = 15$$

$$m^2 + 1 = (4)^2 + 1 = 16 + 1 = 17$$

$\therefore$ The reqd. pythagorean triplet = 8, 15, 17

Check: $(8)^2 + (15)^2 = 64 + 225$

$$= 289 = (17)^2$$ [By Pythagoras Theorem]

$$m^2 + n^2 = q^2$$

2

Hence the pythagorean triplet is verified.

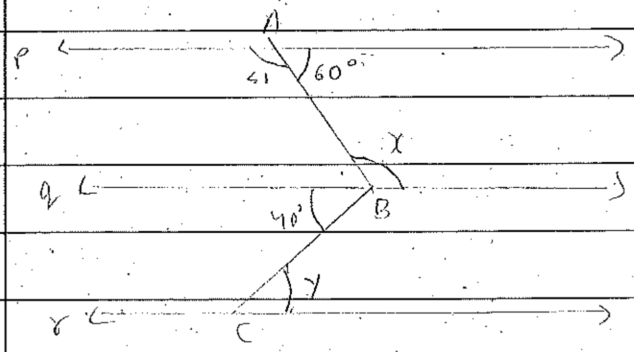
9. Angle of rotational symmetry of ||gm = 180°

Order of rotational symmetry of ||gm $= \dfrac{360^\circ}{\text{Angle of rotation}}$

$$= \frac{360^\circ}{180^\circ} = 2$$

2

10. Given: $p \parallel q \parallel r$, $\cancel{\angle A = 60^\circ}$



To find: $\cancel{\angle A =} \angle x$ and $\angle y$

~~Ir:~~

$\angle A = 60^\circ$

$\angle A + \cancel{\angle B}\ \angle x = 180^\circ$ ~~(∵ p ∥ q and~~

In lines, p and q, AB is transversal.

$\angle A = 60^\circ$

$\angle A + \angle x = 180^\circ$ (∵ co-int. ∠s are supplementary)

or, $60^\circ + \angle x = 180^\circ$

or, $\angle x = 180^\circ - 60^\circ = 120^\circ$

2

In lines q & r, BC is the transversal.

$\angle B = \angle y = 40^\circ$ [∵ they're int. alt. angles]

∴ The values of $\angle x = \cancel{60}\ 120^\circ$ and $\angle y = \cancel{120^\circ}\ 40^\circ$

Section - D

11. $4x^2 + 9y^2 - 25z^2 + 12xy$

$= 4x^2 + 12xy + 9y^2 - 25z^2$

$= (2x)^2 + 2(2x)(3y) + (3y)^2 - (5z)^2$ [using $(a+b)^2 = a^2 + 2ab + b^2$]

$= (2x+3y)^2 - (5z)^2$

3

$= (2x+3y+5z)(2x+3y-5z)$ [using $a^2 - b^2 = (a+b)(a-b)$]

12. $(\sqrt{2}x + 2y - \sqrt{3}z)^2$

$= (\sqrt{2}x)^2 + (2y)^2 + (\sqrt{3}z)^2 + 2(\sqrt{2}x)(2y) + 2(2y)(-\sqrt{3}z) + 2(-\sqrt{3}z)(\sqrt{2}x)$

$= 2x^2 + 4y^2 + 3z^2 + 4\sqrt{2}xy - 4\sqrt{3}yz - 2\sqrt{6}xz$

3

$= 2x^2 + 4y^2 + 3z^2 + 4\sqrt{2}xy - 4\sqrt{3}yz - 2\sqrt{6}xz$

(using $(a+b+c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$)

13. diameter of the roller = 70 cm

Radius(r) of roller $= \frac{70}{2}$ cm $= 35$ cm $= \frac{35}{100}$ m $= 0.35$ m

Length (height) of the roller = 100 cm = 1m

~~Area of th~~ Curved surface area of roller $= 2\pi rh$

$= \cancel{2 \times \frac{22}{7} \times \frac{35}{100}\ 0.35 \times}$

$= \left(2 \times \frac{22}{7} \times \overset{0.05}{0.35} \times 1\right) m^2$

$= 2.2\ m^2$

2.2 44000

~~No of reveal revolutions the~~ Area of the playground = $4400 m^2$

No. of revolutions the roller takes to level the playground

$= \frac{4400}{2.2} = \frac{4400}{\frac{22}{10}}$

$= \frac{\overset{200}{4400} \times 10}{22} = 2000$

3

∴ The roller will take 2000 revolutions to level the playground.

14. Profits of firm in 2014 = ₹84000

the next year, the profit increased by 5% & it decreased by 2% in the following year.

So, profit of firm after 2yrs $= 84000\left(1+\frac{5}{100}\right)\left(1-\frac{2}{100}\right)$

$= 84000 \times \frac{21}{20} \times \frac{49}{50}$

= ₹86436

∴ The profits of the firm after 2yrs is ₹86436.

Rough

$84 \times 21 = 1764$

$1764 \times 49 = 86436$

3

15. Dividend $= z^5 - 9z$, Divisor $= z^2+3$

$z^2+3 \,)\, z^5 + 0x^4 + 0z^3 + 0x^2 + 0x - 9z \,($

$z^2+3 \,)\, z^5 + 0z^3 - 9z \,(\, z^3 - 3z$

$z^5 + 3z^3$

$-3z^3 - 9z$

$-3z^3 - 9z$

0

Quotient $= z^3 - 3z$

Remainder $= 0$

3

∵ Remainder = 0, z^2+3 is a factor of z^5-9z.

16. $\left(\frac{-7}{8}\right)^{2+x} = \left(\frac{-7}{8}\right)^{3}\left[\left(\frac{-7}{8}\right)^{2/3} \div \left(\frac{-7}{8}\right)^{-1/3}\right]$

or, $\left(\frac{-7}{8}\right)^{2+x} = \left(\frac{-7}{8}\right)^{3}\left[\left(\frac{-7}{8}\right)^{2/3-(-\frac{1}{3})}\right]$ $\left[\left(\frac{a}{b}\right)^{m} \div \left(\frac{a}{b}\right)^{n} = \left(\frac{a}{b}\right)^{m-n}\right]$

$= \left(\frac{-7}{8}\right)^{3}\left[\left(\frac{-7}{8}\right)^{\frac{3}{3}}\right]$

$= \left(\frac{-7}{8}\right)^{3} \times \left(\frac{-7}{8}\right)^{1}$

or, $\left(\frac{-7}{8}\right)^{2+x} = \left(\frac{-7}{8}\right)^{3+1}$ $\left[\left(\frac{a}{b}\right)^{m} \times \left(\frac{a}{b}\right)^{n} = \left(\frac{a}{b}\right)^{m+n}\right]$

or, $\left(\frac{-7}{8}\right)^{2+x} = \left(\frac{-7}{8}\right)^{4}$

As bases are equal, we equate powers.

$2 + x = 4$

$x = 4 - 2 = 2$

$\therefore \boxed{x = 2}$

3

$\left(\frac{7}{8}\right)^{2/3}$

$\left(\frac{-7}{8}\right)^{-1/3}$

$\left(-\frac{8}{7}\right)^{\frac{1}{3}}$

$\left(-\frac{7}{8}\right)^{\frac{2}{3}} \times \left(\frac{7}{8}\right)^{\frac{1}{3}}$

$\left(\frac{-7}{8}\right)^{\frac{2}{3}+\frac{1}{3}}$

$3 - \frac{1}{3} = \frac{6-1}{3}$

$= \frac{5}{3}$

$1 - \frac{1}{3}$

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

17. $\dfrac{x^2-(x+2)(x+3)}{6x+1} = \dfrac{2}{3}$

or, $\dfrac{x^2-[x^2+5x+6]}{6x+1} = \dfrac{2}{3}$

or, $\dfrac{\cancel{x^2}-\cancel{x^2}-5x-6}{6x+1} = \dfrac{2}{3}$

or, $3(-5x-6) = 2(6x+1)$

or, $-15x-18 = 12x+2$

or, $-15x-12x = 2+18$

or, $-27x = \cancel{20}\;20$

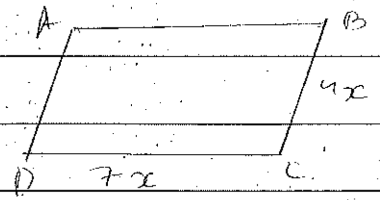
or, $x = \dfrac{20}{-27} = -\dfrac{20}{27}$

3

$\therefore \boxed{x = -\dfrac{20}{27}}$

18. Given: 2 adjacent sides of ||gm are in ratio 4:7 and its perimeter is 132 cm.

To find: all the sides of the ||gm



let ABCD be the given ||gm and let BC & DC be $4x$ cm and $7x$ cm respectively.

Perimeter of ABCD $= 2(4x+7x) = 132$ cm

($\because$ opposite sides of a ||gm are equal.)

A/Q

$2(4x+7x) = 132$

or, $2 \times 11x = 132$

or, $22x = 132$

or, $\boxed{x = \frac{132}{22} = 6}$

48
84
132

One side of ~~A~~ the ||gm (adjacent) $= 6 \times 4 = 24$ cm

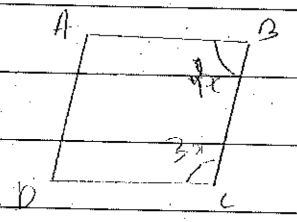
3

Another side of the ||gm $= 6 \times 7 = 42$ cm

$\therefore$ 4 sides of the ||gm are 24 cm, 42 cm, 24 cm and 42 cm.

19. Given: 2 adjacent $\angle$s ~~are~~ of a rhombus are in the ratio 2:3

To find: All the angles of rhombus.



Let ABCD be the given rhombus and let $\angle B$ & $\angle C$ be $2x°$ and $3x°$.

$2x + 3x = 180°$ [$\because$ Rhombus is a ||gm and its adjacent $\angle$s are always supplementary (AB || CD)]

or, $5x = 180°$

or, $x = \frac{180°}{5} = 36°$

One angle $= 3x = 3 \times 36° = 108°$

3

Other angle $= 2x = 2 \times 36° = 72°$

~~$\angle A = \angle C$~~ $\angle A = \angle C = 108°$ and $\angle B = \angle D = 72°$ ($\because$ opp. angles ...

equal).

$\therefore$ the 4 $\angle$s of the rhombus are $72°$, $108°$, $72°$ and $108°$.

21. King and queen of spade are removed.

So, total no. of cards left $= 52 - 2 = 50$

i) Total no. of queens in the deck (of 50 cards)

$= 3$ [Queens of hearts, diamonds and club are left]

Total no. of outcomes $= 50$

No. of favourable outcomes $= 3$

Required probability (of getting a queen) $= \frac{3}{50}$

ii) There are 26 red cards in the deck of 50 cards.

~~No.~~ Total no. of outcomes $= 50$

No. of favourable outcomes $= 26$

Required probability (of getting a red card)

$= \frac{26}{50} = \frac{13}{25}$

iii) There are 24 ~~rec~~ black cards in the deck of 50 playing cards

($\because$ King & Queen (2 black cards) of spades are removed)

Total no. of outcomes $= 50$

No. of favourable outcomes $= ~~24~~ 2$

3 Reqd. probability (of getting a black 10) $= \frac{2}{50} = \frac{1}{25}$

~~23.~~

Section - D

23. Total no. of plants $= 3609$

A/Q

No. of plants arranged in the form of a perfect square

$= 3609 - 9 = 3600$

A/Q

No. of plants in a row = no. of ~~pla~~ rows.

Let the no. of plants in the front row ~~& no. of rows~~ be x.

Total no. of plants arranged (3600) = no. of plants in a row × no. of rows

$= x \times x$ [∵ both are equal]

4

or, $x^2 = 3600$

or, $x = \sqrt{3600} = 60$

∴ 60 plants are there in the front row and there are 60 rows.

Rough:

$$\begin{array}{r|l} & 60 \\ 6 & \overline{36}\,\overline{00} \\ & 36 \\ \hline 120 & 0\;00 \\ & \;\;00 \\ \hline & \;\;\;0 \end{array}$$

24. Principal (P) = ₹640

Rate % p.a. (R) = ?

Time (n yrs) = 2 yrs.

Amount $= P\left(1+\frac{R}{100}\right)^n = 774.40$

or, $640\left(1+\frac{R}{100}\right)^2 = 774.40$

or, $\left(1+\frac{R}{100}\right)^2 = \frac{774.40}{640}$

$= \frac{7744\cancel{0}}{6400\cancel{0}}$

$= \left(\frac{88}{80}\right)^2$

or, $1+\frac{R}{100} = \frac{88}{80}$

or, $\frac{R}{100} = \frac{88}{80} - 1$

$= \frac{8}{80}$

4

or, $R = \frac{\cancel{8}^{1}}{\cancel{80}_{10}} \times 10\cancel{0} = 10\%$

∴ The reqd. rate percent is 10%.

Rough

$8 \overline{)7744}$ 88

64

168) 1344

168 × 8 = 1344

13 + 8 = 21

13, 21

30, 20, 13, 17, 30

25. Dividend $= -6x^4 + 5x^2 + 11x + 1$, Divisor $= 2x^2 + 1$

$$
\begin{array}{r|l}
2x^2+1 & -6x^4 + 5x^2 + 11x + 1 \;(-3x^2 + 4 \\
 & -6x^4 - 3x^2 \\
 & \;+ \quad\;\; + \\
\hline
 & 8x^2 + 11x + 1 \\
 & 8x^2 \qquad\quad + 4 \\
 & - \qquad\qquad\; - \\
\hline
 & 11x - 3
\end{array}
$$

Quotient $= -3x^2 + 4$

Remainder $= 11x - 3$

Dividend = Divisor x quotient + remainder.

R.H.S $= \left[(-3x^2+4)(2x^2+1)\right] + (11x-3)$

$= \left[2x^2(-3x^2+4) + 1(-3x^2+4)\right] + 11x - 3$

$= -6x^4 + 8x^2 - 3x^2 + 4 + 11x - 3$

$= -6x^4 + 5x^2 + 11x + 1$ = Dividend = L.H.S.

4

Hence verified.

26. let the numerator be x.

denominator = 8 greater than numerator $= x + 8$

Numerator increased by 17 $= x + 17$

Denominator decreased by 1 $= x + 8 - 1 = x + 7$

A/Q

$$\frac{x+17}{x+7} = \frac{3}{2}$$

or, $2(x+17) = 3(x+7)$

or, $2x + 34 = 3x + 21$

or, $3x - 2x = 34 - 21$

or, $\boxed{x = \cancel{8}\ 13}$

$\therefore$ numerator $= 13$, denominator $= 13+8 = 21$, rational no $= \frac{13}{21}$

Verification

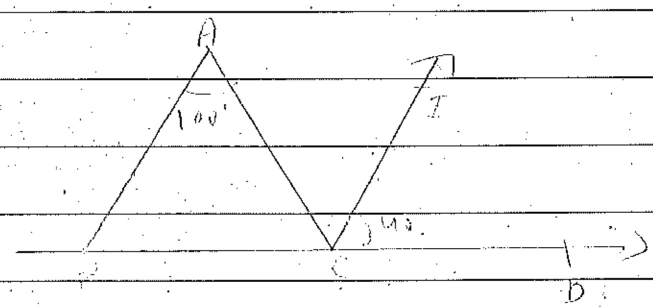
$\cancel{13}$ $\frac{13+17}{13+7} = \frac{30}{20} = \frac{3}{2}$

or, $\frac{13+17}{21-1} = \frac{30}{20} = \frac{3}{2}$

4

Hence, the solution is $\boxed{x = 13}$ is correct.

27.



Given: ΔABC is isosceles

$\angle ECD = 40°$

$\angle A = 100°$

To prove: $AB \parallel CE$

In $\triangle ABC$

$\angle A + \angle B + \angle ACB = 180^\circ$ ($\triangle$ Angle sum property) ....(i)

$\angle ACB = \angle B$ ($\because \triangle ABC$ is isosceles, angles opposite equal sides are equal) ...(ii)

~~$\angle A +$~~ From (i) & (ii)

$\angle A + 2\angle B = 180^\circ$

or, $100^\circ + 2\angle B = 180^\circ$

or, $2\angle B = 180^\circ - 100^\circ = 80^\circ$

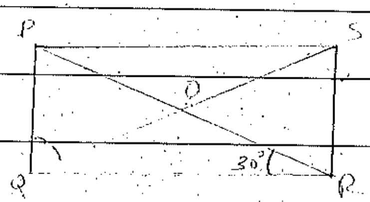
or, $\angle B = \frac{80^\circ}{2} = 40^\circ$

4

$\angle B = \angle ECD = 40^\circ$

$\Rightarrow AB \parallel CE$ (a pair of corres. $\angle$s is equal)
$\angle B = \angle ECD$

28.



Given: PQRS is a rectangle. $\angle PRQ = 30^\circ$

To find: Value of $\angle PQS$.

In $\triangle QOR$,

~~QO~~

$QO = RO$ ($\because$ diagonals of a rectangle are equal and bisect each other)

~~$\angle QRO$~~ $\angle PRQ = \angle OQR$ ($\angle$s opp. equal sides are equal.
$= 30^\circ$

$\angle Q = 90°$ [$\because$ Each angle of a rectangle is equal to 90°]

$\angle Q = \cancel{\angle PQO +}$ $\angle PQS +$ $\cancel{\angle OQR}$ $\angle OQR$

$= \angle PQS + 30°$ [$\because \angle OQR = 30°$]

or, $\angle PQS + 30° = 90°$ [$\because \angle Q = 90°$]

or, $\angle PQS = 90° - 30° = 60°$

4

$\therefore \angle PQS = 60°$.

30. (i) the class size is 5 yrs.

(ii) Class mark $= \frac{\text{lower} + \text{Upper limit}}{2}$

Class mark of the class $35\text{-}40 = \frac{35+40}{2} = \frac{75}{2}$

$= 37.5$

31. Let the speed of stream be x km/hr.

Speed of ~~boat~~ ~~= 3~~ in still water $= 35$ km/hr.

Speed of boat upstream $= \cancel{(35+x)}$ $(35-x)$ km/hr

Speed of boat downstream $= (35+x)$ km/hr

Time taken by boat to cover the distance upstream $= 2$ hrs

Time taken by boat to cover the distance downstream $= 1\frac{1}{2}$ hrs $= \frac{3}{2}$ hrs.

Distance covered in upstream = $2(35-x)$ km

Distance covered in downstream = $\frac{3}{2}(35+x)$ km

In any case, the distance covered is equal.

A/Q

$2(35-x) = \frac{3}{2}(35+x)$

or, $70 - 2x = \frac{105}{2} + \frac{3}{2}x$

or, $\frac{3}{2}x + \frac{105}{2} = -2x + 70$

or, $\frac{3}{2}x + 2x = 70 - \frac{105}{2}$

or, $\frac{7x}{2} = \frac{140-105}{2}$

or, $\frac{7x}{2} = \frac{35}{2}$

or, $x = \frac{35}{2} \times \frac{2}{7} = 5$ km/hr

∴ The speed of stream is 5km/hr.

Rough

$35 \times 3 = 105$

$140 - 105 = 35$

$35 + 105 = 140$

4

Verification:

~~2(30~~

$2(35-5)\text{km} = 2\times30 = 60\text{ km}$

$\frac{3}{2}(35+5)\text{ km} = \frac{3}{2}\times 40\text{ km} = 60\text{ km}$

~~∴ The~~ Hence, the solution is correct.

32. Let the original value of machine 3 yrs (n) ago be ₹ P.

Rate of depreciation of machine = 12.5% p.a. (R)

∴ Its present value = ₹ 13720 = $P\left(1-\frac{R}{100}\right)^n$

~~or, $P(13$~~

or, $P\left(1-\frac{12.5}{100}\right)^3 = 13720$

or, $P\left(1-\frac{125}{1000}\right)^3 = 13720$

or, $P\left(\frac{7}{8}\right)^3 = 13720$

or, $P\times\frac{343}{512} = 13720$

Rough

$\frac{125}{1000} = \frac{1}{8}$

$3\times3\times3\times3$

$$P = \frac{13720 \times 512}{729} \quad \frac{\overset{40}{\cancel{13720}} \times 512}{\cancel{343}} = ₹20480$$

Rough

$27) 13720 (5$
135
220

$343) 13720 (40$
13720

$81 \times 3 = 243$

$27 \times 5 = 135$

$512 \times 4 = 2048$

∴ The original value of machine 3 yrs ago was ₹ 20480.

(4)

33. $$\frac{(81)^{3/4} \times (216)^{-2/3} \times (125)^{1/3}}{(64)^{1/6} \times (243)^{-2/5} \times (343)^{1/3}}$$

$$= \frac{(3^4)^{3/4} \times (6^3)^{-2/3} \times (5^3)^{1/3}}{(2^6)^{1/6} \times (3^5)^{-2/5} \times (7^3)^{1/3}} \qquad [\because (a^m)^n = a^{mn}]$$

$$= \frac{3^3 \times (2\times 3)^{-2} \times 5}{2 \times 3^{-2} \times 7} \qquad [\because (a \times b)^n = a^n \times b^n]$$

$$= \frac{3^3 \times 2^{-2} \times 3^{-2} \times 5}{2 \times 3^{-2} \times 7}$$

$$= \frac{3^3 \times 3^2 \times 5}{2 \times 2^2 \times 3^2 \times 7} = \frac{3^{3+2} \times 5}{2^{2+1} \times 3^2 \times 7} \qquad \left[\because a^{-n} = \frac{1}{a^n}\right]$$

$$= \frac{3^5 \times 5}{2^3 \times 3^2 \times 7} = \frac{3^{5-2} \times 5}{2^3 \times 7} \qquad [\because a^n \times a^m = a^{n+m}]$$

$$\left[\because \frac{a^m}{a^n} = a^{m-n}\right]$$

$$= \frac{3^3 \times 5}{2^3 \times 7} = \frac{27 \times 5}{8 \times 7} = \frac{135}{56}$$

(4)

34. Area l, b and h of the hall = 12 m, 10m & 6 m respectively.

Area of 4 walls of halls = 2 (l+b) h

$= 2 \times (12+10) \times 6$

$= 2 \times 22 \times 6 = 264 \text{ m}^2$

Area of the ceiling = $l \times b = 12 \times 10 = 120 \text{ m}^2$

Total area to be painted = $(120 + 264) \text{ m}^2 = 384 \text{ m}^2$

Area painted by each can of paint = 192 m^2

No. of cans of paint will be needed to paint the hall

$= \frac{384}{} = \frac{\text{Area to be painted}}{\text{Area painted by one can}} = \frac{384}{192}$

$= 2$

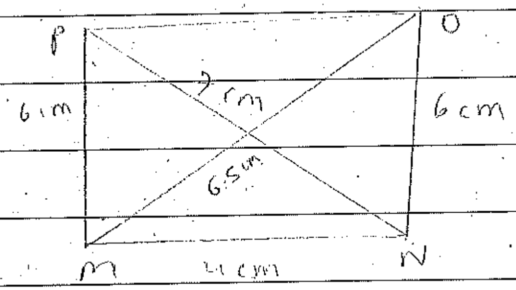
4

∴ 2 cans of paint will be needed by Ankur to paint the room

22
12
44
22×
264
120
384

20. Given: MN = 4cm, ON = 6cm, MP = 6cm

diagonals, NP = 7cm, OM = 6.5cm



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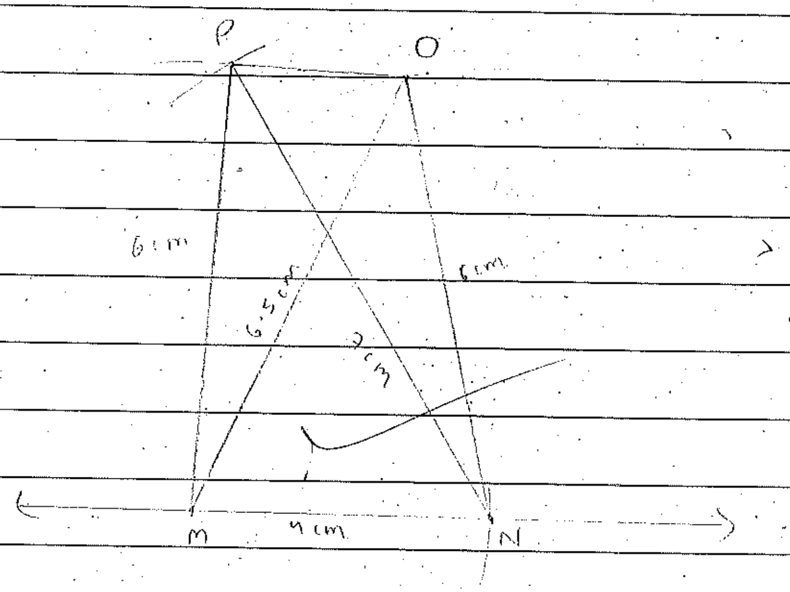


Steps

i) Line segment MN = 4cm is constructed

ii) With M as centre and 6.5cm radius, an arc is cut at O.

iii) With N as centre and 6 cm radius, an arc is cut at O.

iv) With N as centre and 7 cm radius, an arc is cut.

v) with M as centre & 6cm radius, an arc is cut at P.

vi) Points, M, N, O, P are joined.

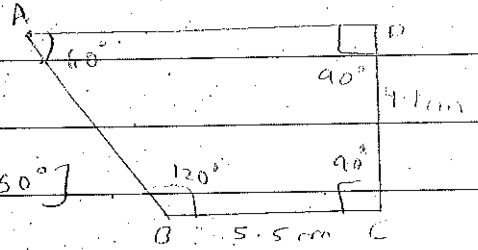
vii) MNOP is the reqd. quadrilateral.

22.

Quantities of milk (in l) (Class intervals)	Tally marks	Frequency (No. of days)
64 - 70	卌 |	6
70 - 76	卌	5
76 - 82	||||	4
82 - 88	||||	4
88 - 94	卌 ||	7
94 - 100	||	2
Total		Total 28

3

29. Given : BC = 5.5 cm, CD = 4.1 cm, $\angle A = 60^\circ$, $\angle B = 120^\circ$, $\angle D = 90^\circ$



$\angle A + \angle B + \angle C + \angle D = 360^\circ$ (sum of int. ∠s of quadrilateral is 360°)

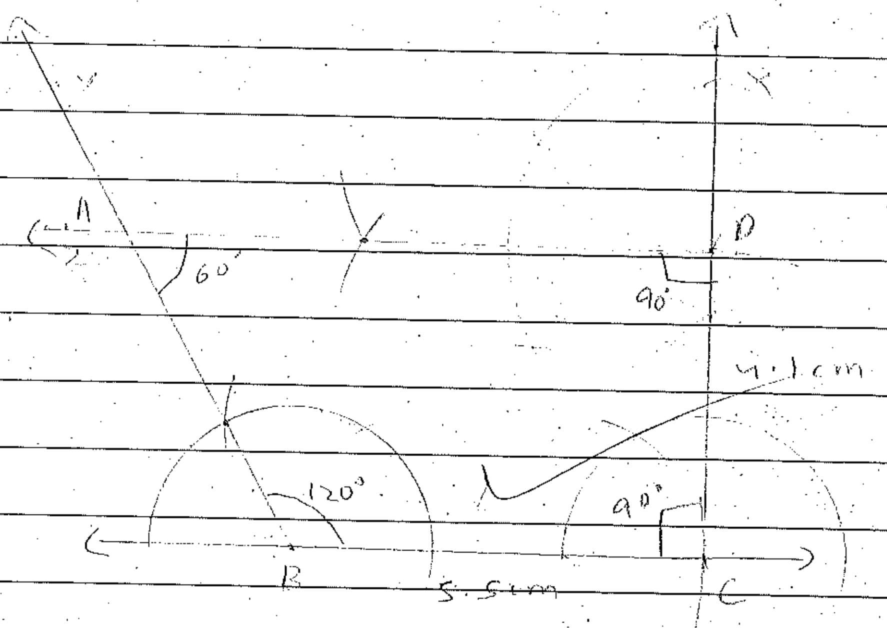
or, $60^\circ + 120^\circ + \angle C + 90^\circ = 360^\circ$

or, $270^\circ + \angle C = 360^\circ$

or, $\angle C = 360^\circ - 270^\circ = 90^\circ$

6
5
10
16
1
27.

180
90
270



Steps of construction

i) A line segment $BC = 5.5$cm is constructed.

ii) At ~~B, 90°~~ C $\angle BCX = 90°$ is ~~cont~~ conctructed.

iii) With C as centre & 4.1cm radius, an arc is cut on CX at D

iv) At B, $\angle CBY = 120°$ is constructed.

v) At D, $\angle CDZ = 90°$ is constructed.

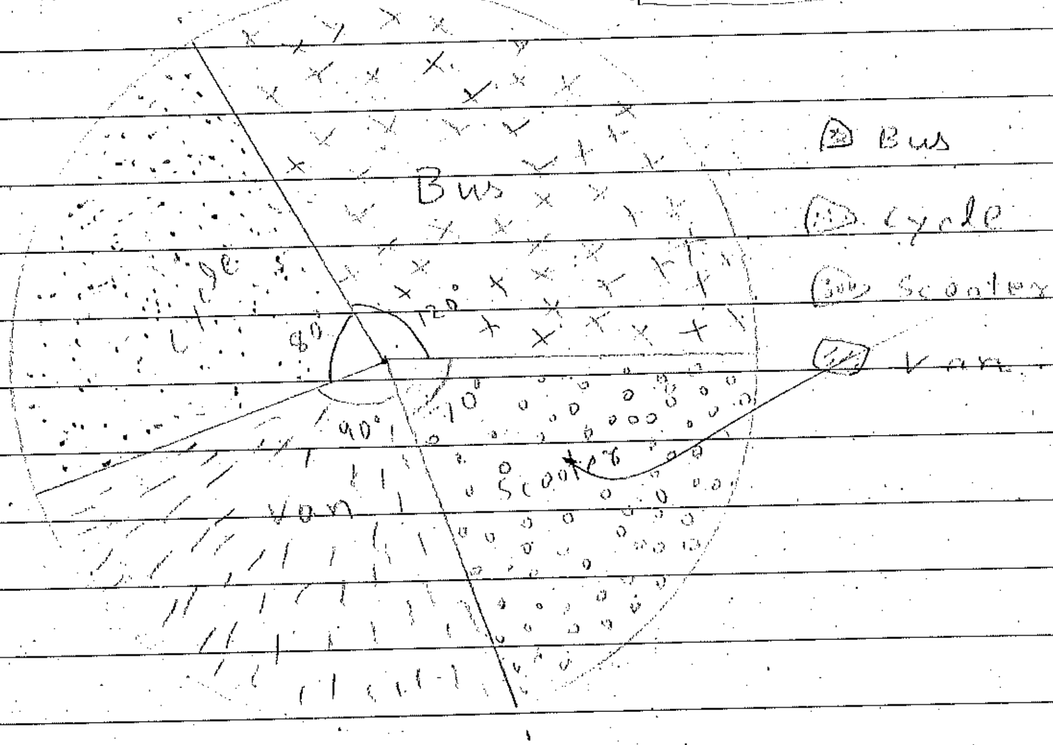
vi) Rays, $\overrightarrow{DZ}$ and $\overrightarrow{BY}$ meet at A.

vii) A,B, C, and D are joined.

viii) ABCD is the reqd. quadrilateral.

30.

No. of children	Mode of transport	Sector angle.
240	Bus	$\frac{240}{720} \times 360 = 120°$
160	Cycle	$\frac{160}{720} \times 360 = 80°$
180	Van	$\frac{180}{720} \times 360 = 90°$
140	Scooter	$\frac{140}{720} \times 360 = 70°$
		360°



4