CBSE Sample Paper
Maths Set – B Answer
Class 7

Section-A

1. 7×11^5.
2. 4.
3. 3
4. 60°.
5. 70
6. 8 vertices.
7. 80°.
8. -9/10.

Section - B

9. Here, AB = PR = 3.5 cm,

   BC = PQ = 7.1 cm

   and AC = QR = 5 cm

   So, by SSS congruence rule,

   we have $\triangle ABC \cong RPQ$

10. By exterior angle property of a triangle we know,

    Exterior angle = Sum of two interior opposite angles

    $\therefore\ 50^\circ + x = 120^\circ$

    or $\quad x = 70^\circ$

Now, sum of the angles of a triangle = 180°

$\therefore\ 50^\circ + y + 70^\circ = 180^\circ$

$\Rightarrow \quad y = 60^\circ$

11. $104278 = 1 \times 100{,}000 + 0 \times 10{,}000 + 4 \times 1000 + 2 \times 100 + 7 \times 10 + 8 \times 1$

$= 1 \times 10^5 + 0 \times 10^4 + 4 \times 10^3 + 2 \times 10^2 + 7 \times 10^1 + 8 \times 10^0$

$= 1 \times 10^5 + 4 \times 10^3 + 2 \times 10^2 + 7 \times 10^1 + 8 \times 10^0$

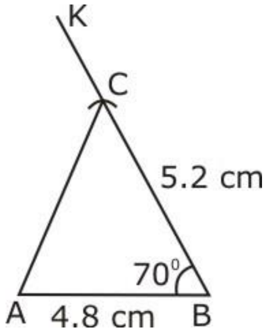
Or,

$$\frac{2 \times 3^4 \times 2^5}{9 \times 4^2} = \frac{2 \times 3^4 \times 2^5}{3^2 \times (2^2)^2}$$
$$= \frac{2 \times 3^4 \times 2^5}{3^2 \times 2^{2 \times 2}}$$
$$= \frac{3^4 \times 2^{1+5}}{3^2 \times 2^4}$$
$$= \frac{3^4 \times 2^6}{3^2 \times 2^4}$$
$$= 2^{6-4} \times 3^{4-2}$$
$$= 2^2 \times 3^2$$
$$= 4 \times 9$$
$$= 36$$

12. Steps of construction:

1. Draw AB = 4.8cm.
2. Using protractor, draw $\angle ABK = 70^\circ$
3. On the line segment BK, cut off BC = 5.2cm.
4. Join A and C.

$\triangle$ABC is the required triangle.



13. Total area of the four walls of a room = 2h(l + b).
Here l = 6 m, b = 4.5 m and h = 3 m
Therefore,
Area of the walls = 2 $\times$ 3 m $\times$ (6 m + 4.5 m)
= 6 m $\times$ 10.5 m
= 63 m^2.

14. Additive inverse of 3/7 = - 3/7 as (3/7) + (-3/7) = 0 = (-3/7)+(3/7)
and additive inverse of -4/9 = 4/9 as (4/9) + (-4/9) = 0 = (-4/9)+(4/9)

Section - C

15. In the two triangles AOC and BOD,
$\angle$C = $\angle$D (each 70°)
Also, $\angle$AOC = $\angle$BOD = 30° (vertically opposite angles)
So, $\angle$A of ΔAOC = 180° – (70° + 30°) = 80° (using angle sum property of a triangle)
Similarly, $\angle$B = 80°
AC = BD (each 3 unit)
So, by ASA congruence rule, ΔAOC $\cong$ ΔBOD.

16. (i) The three pairs of equal parts are as follows:
AB = AC (Given)
$\angle$BAD = $\angle$CAD (AD bisects $\angle$BAC)
and AD = AD (common)

(ii) Yes, ΔADB $\cong$ ΔADC (By SAS congruence rule)

(iii) $\angle$B = $\angle$C (Corresponding parts of congruent triangles)

17. Vertically opposite angles are always equal

$\therefore$ $y = 90^\circ$

Now, sum of all the angles of a triangle = 180°

$\therefore$ $x + x + 90^\circ = 180^\circ$

$\Rightarrow$ $2x = 90^\circ$

$\Rightarrow$ $x = 45^\circ$

18. Vertically opposite angles are always equal

$\therefore$ $y = 80^\circ$

Now, sum of all the angles of a triangle = 180°

$\therefore$ $50^\circ + x + 80^\circ = 180^\circ$

$\Rightarrow$ $x = 50^\circ$

19. $16000 = 16 \times 1000 = (2 \times 2 \times 2 \times 2) \times 1000$

$= 2^4 \times 10^3$ (as $16 = 2 \times 2 \times 2 \times 2$)

$= (2 \times 2 \times 2 \times 2) \times (2 \times 2 \times 2 \times 5 \times 5 \times 5)$ [as $10 = 2 \times 5$]

$= (2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2) \times (5 \times 5 \times 5)$

Hence, $16000 = 2^7 \times 5^3$.

Or,

$$(i)\ \frac{3^2 \times 4^5 \times x^4}{3^4 \times 4^3 \times x^9} = 3^{(2-4)} \times 4^{(5-3)} \times x^{(4-9)}$$
$$= 3^{-2} \times 4^2 \times x^{-5}$$
$$= \frac{4^2}{3^2 \times x^5}$$

$$(ii)\ \frac{4^5 \times 9^5 \times x^7}{2^3 \times 3^6 \times x^5} = \frac{(2^2)^5 \times (3^2)^5 \times x^7}{2^3 \times 3^6 \times x^5}$$
$$= \frac{2^{10} \times 3^{10} \times x^7}{2^3 \times 3^6 \times x^5}$$
$$= 2^{(10-3)} \times 3^{(10-6)} \times x^{(7-5)}$$
$$= 2^7 \times 3^4 \times x^2$$

20.

$$\text{Length of each piece} = \frac{\text{Total length}}{\text{Number of pieces}}$$
$$= 25\frac{1}{2} \div 12$$
$$= \frac{51}{2} \times \frac{1}{12} = \frac{17}{8} \text{ or } 2\frac{1}{8}\text{m}$$

21. Edge of one wooden cubical block = 12cm.

Its Volume = $(12)^3$ = 12 × 12 × 12 cm^3.

Edge of other block of wood = 3 m and 60 cm = 360 cm.

Its Volume = $(360)^3$ = 360 × 360 × 360 cm^3

Therefore required number of wooden cubical blocks = $\frac{360 \times 360 \times 360}{12 \times 12 \times 12}$

= 30 × 30 × 30 = 27,000 blocks.

Or,

Surface area of a cuboid = 2[lb + lh + bh]

Here l = 50 cm

b = 20 cm

and h = 15 cm

Therefore, surface area of the box
$= 2 \times [(50 \times 20) + (50 \times 15) + (20 \times 15)] cm^2$

$= 2 \times [1000 + 750 + 300] cm^2$

$= 2 \times 2050 cm^2$
$= 4100 cm^2$.

22.
Steps of construction:

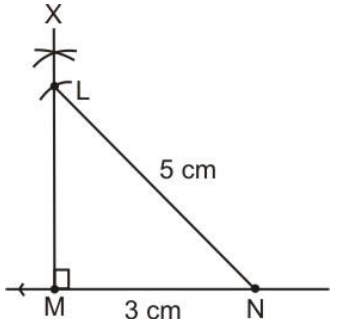
a. Draw MN of length 3 cm.

b. At M, draw MX $\perp$ MN. (L should be somewhere on this perpendicular)

c. With N as centre, draw an arc of radius 5cm. (L must be on this arc, since it is at a distance of 5cm from N).

d. L has to be on the perpendicular line MX as well as on the arc drawn with centre N. Therefore, L is the meeting point of the arc and perpendicular.

$\triangle$ LMN is now obtained.



23. (a) The order of rotational symmetry is 4.
(b) The order of rotational symmetry is 2.
(c) The order of rotational symmetry is 2.

24.

L.H.S

$$a+b=\frac{3}{5}+\left(\frac{-2}{5}\right)$$

$$=\frac{3-2}{5}=\frac{1}{5}$$

R.H.S

$$b+a=\frac{-2}{5}+\frac{3}{5}$$

$$=\frac{-2+3}{5}=\frac{1}{5}$$

Therefore, L.H.S = R.H.S

Section - D

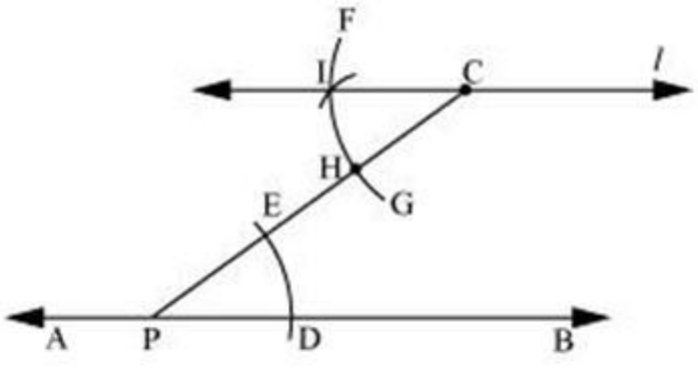
25. (i)Draw a line AB. Take a point P on it and a point C outside this line. Join C to P.

(ii)Taking P as centre and with a convenient radius, draw an arc intersecting line AB at point D and PC at point E.

(iii) Taking C as centre and with the same radius as before, draw an arc FG intersecting PC at H.

(iv) Adjust the compass up to the length of DE. Without changing the opening of the compass and taking H as the centre, draw an arc to intersect the previously drawn arc FG at point I.

(v) Join the points C and I to draw a line '*l*'.



This is the required line that is parallel to line AB.

26.

Shape	Centre of Rotation	Order of Rotation	Angle of Rotation
Square	Intersection point of diagonals	4	360°/4 =90°

Rectangle	Intersection point of diagonals	2	360°/2 = 180°
Rhombus	Intersection point of diagonals	2	360°/2 = 180°
Circle	Centre of circle	Infinite	0°

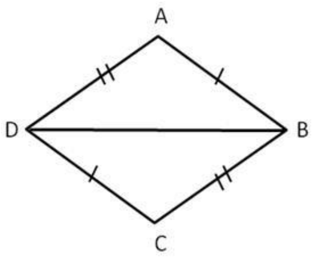
27.

$$(i)\ \frac{(6^5)^3}{6^3} = \frac{6^{15}}{6^3}$$
$$= 6^{(15-3)}$$
$$= 6^{12}$$
$$(ii)\ (90^{50})^3 = (90)^{50\times3}$$
$$= (90)^{150}$$
$$(iii)\ (5^{32})^5 = (5)^{32\times5}$$
$$= 5^{160}$$
$$(iv)\ (2^{64})^5 = (2)^{64\times5}$$
$$= 2^{320}$$

28. Mayank reads a story book on first day = 1/3 part
He reads that story book on second day = 1/4 part
Total story book read by Mayank = 1/3 + 1/4
= 7/12 part
Story book left to be read = 1 – 7/12

= 5/12 part
Thus, 5/12 part of the book is left to be read.

29.



ABCD is a quadrilateral, in which AB = CD and
BC = AD. BD is a diagonal.

To Prove: Δ ABD $\cong$ DCDB

Proof: In Δ ABD and DBCD,

AB = CD [Given]
BC = DA [Given]
BD = DB [Common]

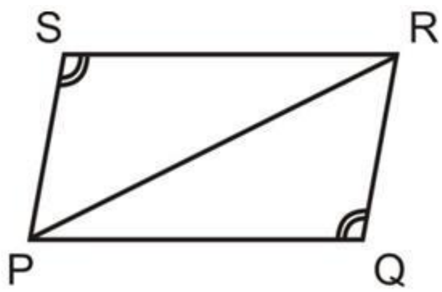
So, Δ ABD $\cong$ Δ CDB (By SSS)

Congruent parts are

AB = CD
BC = DA
BD = DB

and $\angle$A = $\angle$C

Or,



In PSR and PQR,

$\angle$SPR = $\angle$QRP [Given]

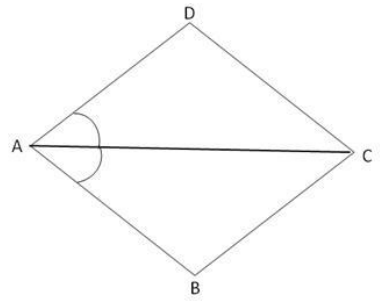
$\angle$RSP = $\angle$PQR [Given]

PR = PR (Common)

$\therefore$ Δ PSR $\cong$ Δ PQR (By ASA rule)

$\therefore$ PQ = RS (By CPCT)

30.



In Δ ACD and Δ ACB

AD = AB [Given]

$\angle$DAC = $\angle$BAC [Given]

AC = CA [Common]

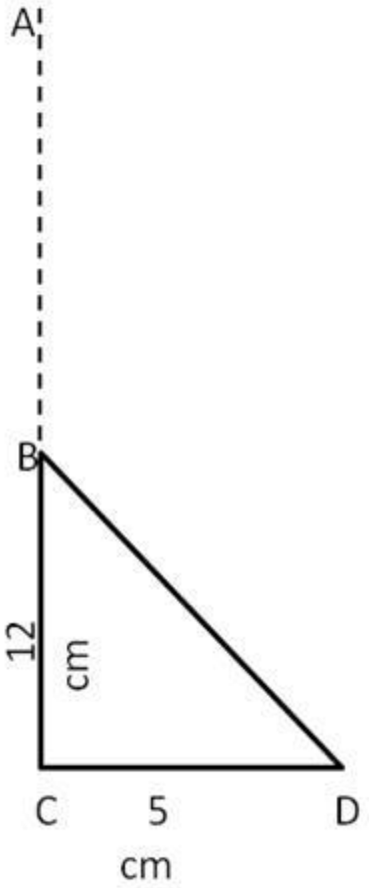
Δ ACD $\cong$ Δ ACB [By SAS]

therefore, DC = BC [By CPCT]

31. Let AC be the tree that is broken at point C, 12 m above the ground. Its broken top meets the earth at point D. Point D is 5 m away from the base of the tree.

In triangle BCD,

$\angle$BCD = 90°



Using Pythagoras Theorem

$BD^2 = CD^2 + BC^2$

$= (5)^2 + (12)^2$

$= 25 + 144$

$= 169$

BD = 13 m

So, the length of tree AC = AB + BC

= BD + BC [AB = BD]

= 13 + 12

= 25 m

Thus, height of tree is 25 m.

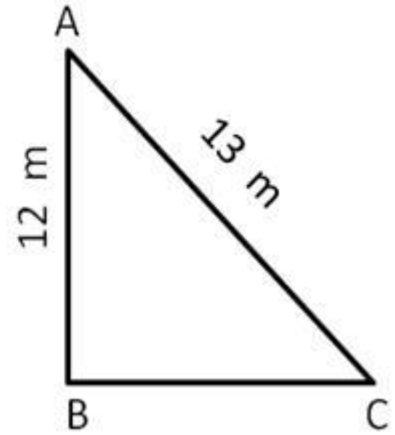
Or,

Given: Let AB be a ventilator at height of 12 m and AC be a ladder of length 13 m.

To Find: Distance of foot of ladder from wall.

Solution:

In △ ABC, ∠ABC = 90°



By Pythagoras Theorem, we have

$AC^2 = AB^2 + BC^2$

$(13)^2 = (12)^2 + BC^2$

$BC^2 = 169 - 25$

$= 144$

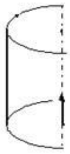
BC = 12 m

Thus, the distance of foot of ladder from wall is 12 m.

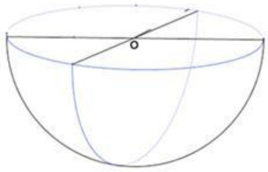
32.

	Cube	Pyramid(Triangular)	Prism	Brick
Faces	6	4	5	6
Edges	12	6	9	12
Vertices	8	4	6	8

33. The figures of cross-sections obtained by cutting vertically the following shapes are given below:

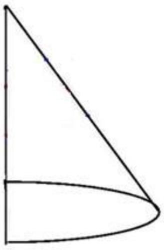


(ii)Cylinder



(ii)Sphere

(iii)Prism



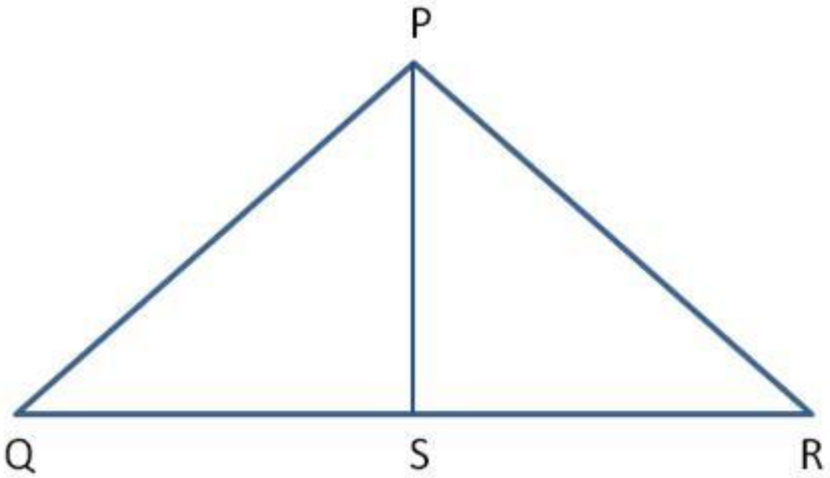
(iv)Cone

34.

Given: In triangle PQR, PS is a median.

To Prove: PQ + QR + RP > 2PS

Proof:



In triangle PQS,

PQ + QS > PS … (1) (Since sum of two sides is greater than third side in a triangle.)

In triangle PRS,

PR + RS > PS … (2) (Since sum of two sides is greater than third side in a triangle.)

Adding relation (1) and (2), we get

PQ + QS + PR + RS > 2PS

PQ + QR + PR > 2PS [Since, QS + SR = QR]