Check Your Understanding

(Chapters 4–6)

A. Select the correct answer.

1. If Aditya has x marbles and his friend Sahil has 5 more than twice his number of marbles, then the number of marbles Sahil has

   a. $5x - 2$ ☐ b. $5x + 2$ ☐ c. $2x - 5$ ☐ d. $2x + 5$ ☐

2. If one-fifth of a number is 10, the number is

   a. 25 ☐ b. 50 ☐ c. 5 ☐ d. 20 ☐

3. The pair of complementary angles is

   a. 53°, 127° ☐ b. 71°, 19° ☐ c. 100°, 80° ☐ d. 55°, 45° ☐

4. The supplement of an obtuse angle can only be

   a. a right angle ☐ b. an obtuse angle ☐

   c. an acute angle ☐ d. a reflex angle ☐

5. If $l \parallel m$, then the value of x in Figure 1 is

   a. 10° ☐ b. 20° ☐

   c. 30° ☐ d. 25° ☐

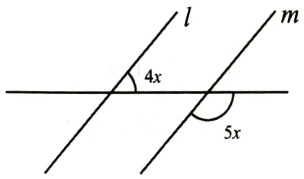

Fig. 1

6. In Figure 2, CE $\parallel$ BA. If $\angle BAC = 60°$ and $\angle ECD = 65°$, then the measure of $\angle ACB$ is

   a. 70° ☐ b. 55° ☐

   c. 60° ☐ d. 65° ☐

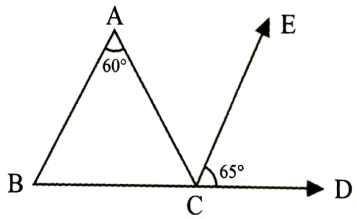

Fig. 2

7. If the exterior angle of a triangle measures 110° and one of the interior opposite angles is 60°, then the measure of the other interior opposite angle is

   a. 60° ☐ b. 50° ☐ c. 70° ☐ d. 5° ☐

8. ABC is an isosceles right angled triangle in which angle C = 90°. If AC = 6 cm, then AB^2 is equal to

   a. 72 cm^2 ☐ b. 36 cm^2 ☐ c. 42 cm^2 ☐ d. 66 cm^2 ☐

B. Fill in the blanks.

1. The highest power of a variable in a linear equation is _____

2. If $9x - 25 = 2$, then x = _____

C. Short-answer type questions

1. The number 16 is divided into two parts, one of them being three times the other. Find the two parts.
2. A man walks 12 km, then travels some distance by train and then thrice the same distance by cab. If the whole journey is 50 km, how far does he travel by cab?
3. A is twice as old as B. Ten years ago he was four times as old as B. What are their present ages?
4. Determine the measure of an angle which is five times its complement.
5. If the measure of an angle is $(3x+8)^\circ$, find the measure of its complement.
6. In Figure 3, $l \| m$ and $p \| q$. If $\angle 1 = 115^\circ$, find the measure of $\angle 2$.

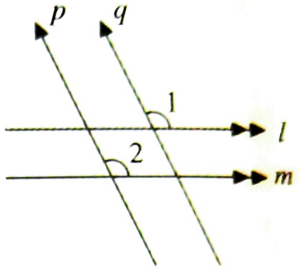

Fig. 3

7. Find the measure of x and y in Figure 4.

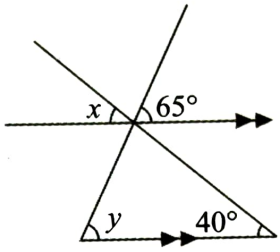

Fig. 4

8. In Figure 5, AB $\|$ DC, find the values of x, y, z.

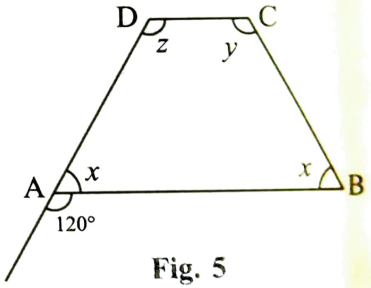

Fig. 5

9. Find the value of x in Figure 6.

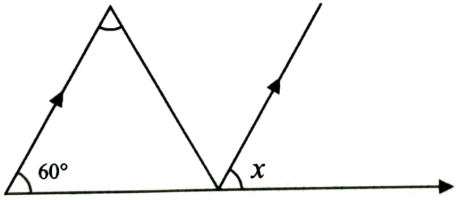

Fig. 6

10. Two angles of a triangle are equal and the third angle is greater than each of these angles by 60°. Determine all the angles of the triangle.

11. Find the length of QR in Figure 7.

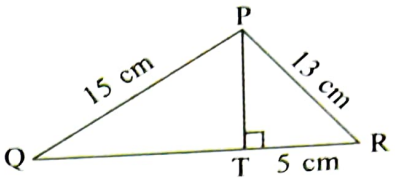

Fig. 7

12. Find x, y, z in Figure 8, if it is given that $x + y = 90°$.

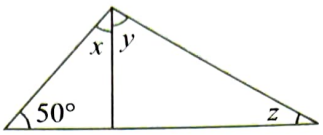

Fig. 8

D. Long-answer type questions

1. To make each column addition and row addition true, a, b and c will have to take particular values. Find the value of each of them.

a	*a*	*a*	*b*	32
c	*c*	*b*	*a*	34
b	*a*	*b*	*a*	28
24	28	19	23	94

2. The length of a room exceeds its breadth by 8 cm. If each had been increased by 2 cm, the area would have been increased by 60 cm^2. Find the original dimensions of the room.

3. Determine the measure of ∠COB in Figure 9.

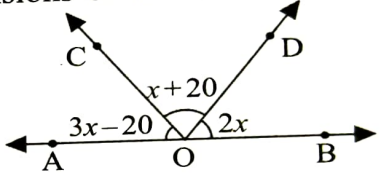

Fig. 9

4. In Figure 10, AB || DC and AD || BC and AC is a diagonal. If ∠BAC = 25°, ∠CAD = 40°, find ∠ACB and ∠ACD.

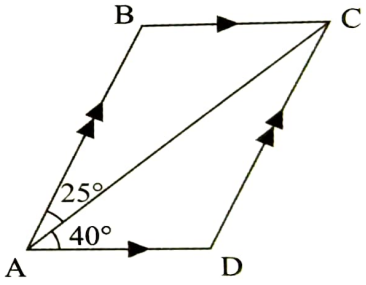

Fig. 10

5. In Figure 11, AB || CD. If the ratio of measures of ∠4 and ∠7 is 4 : 5, find the measures of ∠4 and ∠7.

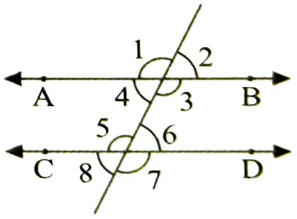

Fig. 11

6. In Figure 12, if ∠POR + ∠ROQ + ∠QOS = 315°, find all the four angles.
[*Hint:* (∠POR + ∠ROQ) + ∠QOS = 315°
⇒ 180° + ∠QOS = 315° ⇒ ∠QOS = 135°]

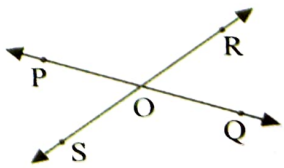

Fig. 12

7. A rectangular park has a diagonal path AC as shown in Figure 13. The length of the park is 24 m and its width is 10 m. Which route is shorter AB + BC or AC? By how much?

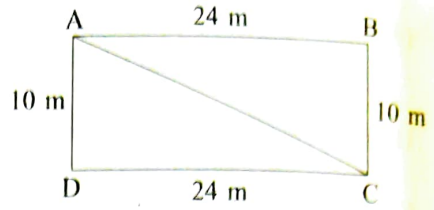

Fig. 13

8. O is a point in the interior of a triangle ABC. Prove that $OA + OB + OC > \frac{1}{2}(AB + BC + CA)$.

9. Find the measure of $\angle QPR$ in Figure 14.

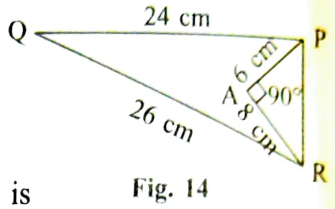

Fig. 14

10. Bikram has to fence his garden whose width is 6 m and diagonal is 10 m. How much metre of wire does he actually need for fencing?

HOTS

•• Higher order thinking

1. A 25 m long ladder is placed against a vertical wall such that the foot of the ladder is 7 m from the foot of the wall. If the top of the ladder slides down by 4 m, by how much distance will the foot of the ladder slide?

2. A 27 metre long wire is used to anchor a 12 metre high flagstaff. The foot of the flagstaff is 35 m away from the point the wire would be tied on the ground. The length of the wire fell short by a few metres. Determine the remaining length of the wire required to anchor the flagstaff.

PUZZLE

•• Higher order thinking; Maths games

In the puzzle given below $p \| q$, $l \| m$ and $m \perp e$. Find the measures of angles 1–15.