CHAPTER 13

UNDERSTANDING SHAPES

More Questions for Practice

1. How many *degrees* are there in:

(*a*) $\frac{1}{5}$ of a right angle (*b*) $\frac{1}{6}$ of a right angle.

2. Write the *complement* of each of the following angles:

(*a*) $\frac{1}{5}$ of a right angle (*b*) $(x + 15)°$ (*c*) $45° 45'$.

3. Write the *supplement* of each of the following angles:

(*a*) $\frac{1}{5}$ of a right angle (*b*) $\frac{1}{3}$ of a straight angle (*c*) $39° 29' 27''$.

4. (*a*) Find the angle which is twice its complement.

(*b*) Find the angle which is twice its supplement.

5. (*a*) The measure of an angle is 20° less than the measure of its complement. Find its measure.

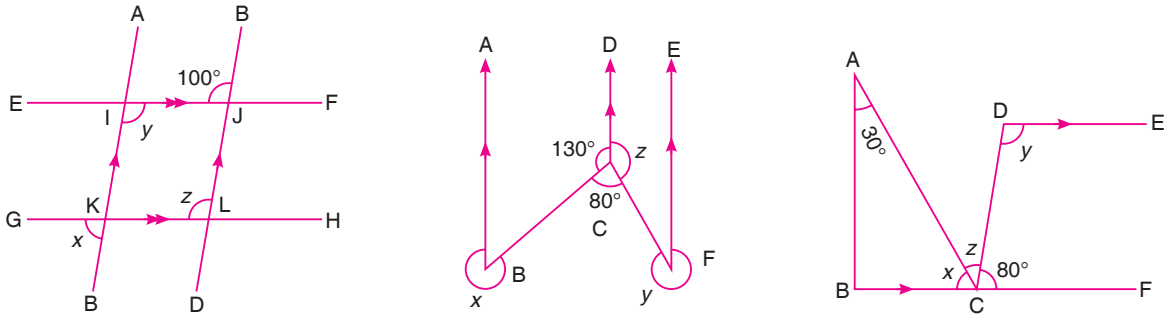
(*b*) The measure of an angle is 50° more than the measure of its supplement. Find its measure.

6. (*a*) If the complement of an angle is equal to the supplement of four times the angle, then find the measure of the angle.

(*b*) If two angles are supplementary and one angle is 5° more than four times the other, then find the measure of the angles.

(*c*) The difference of two supplementary angles is 48°. Find the two angles.

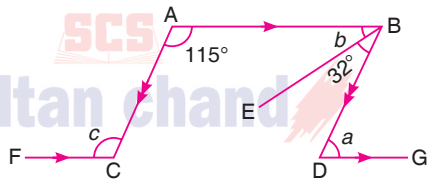
7. From the figures given below, find the values of x, y and z:



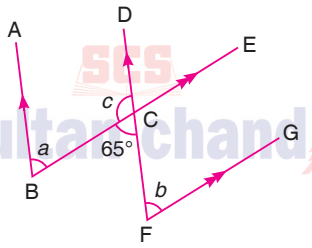
(*a*) (*b*) (*c*)

Fig. 13.1

8. In the following figures, find the values of a, b and c.



(*a*)



(*b*)

Fig. 13.2

9. In the following figure, state which two lines are parallel. Give reasons.

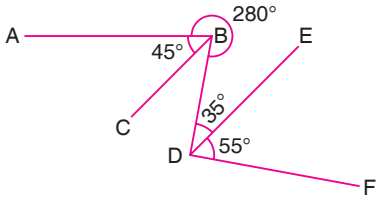


Fig. 13.3

10. (*a*) Are adjacent angles always (*i*) complementary or (*ii*) supplementary?

(*b*) Are (*i*) complementary angles (*ii*) supplementary angles always adjacent?

11. (*a*) Determine the measure of the angle between the bisectors of a linear pair of angles.

(*b*) If each of the two lines is perpendicular to the same line, what kind of lines are they to each other?

12. If 10% of $x°$ is the complement of 40% of $2x°$, then find the values of x.

13. In the adjoining figure, line l is parallel to line m. Find x.

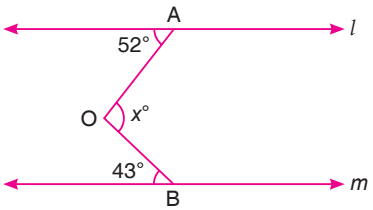


Fig. 13.4

14. In the adjoining figure, l, m and n are parallel lines intersected by a transversal q at X, Y and Z respectively. Find $\angle 1$, $\angle 2$ and $\angle 3$, giving reasons.

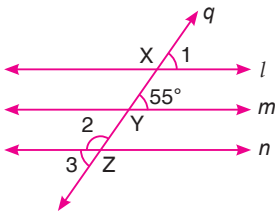


Fig. 13.5

15. In Fig. 13.6, line AC is parallel to line DE and ∠CBE = 43°. Find out ∠x° and ∠y°, given that ∠D = 140°.

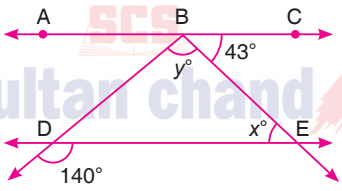


Fig. 13.6

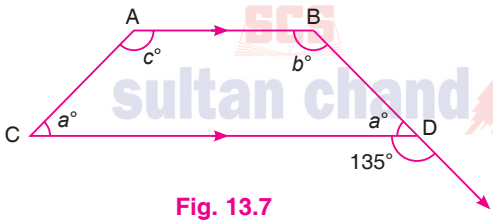


Fig. 13.7

16. In Fig. 18.7, AB ∥ CD. Find the values of a, b, c.

17. $\overleftrightarrow{AB}$ is a transversal to two parallel lines LM and RS. The transversal meets LM at X and RS at Y. If ∠MXY = 80°, find the measures of the other angles.

18. In the adjoining figure, $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$. Find the values of x, y, z and p.

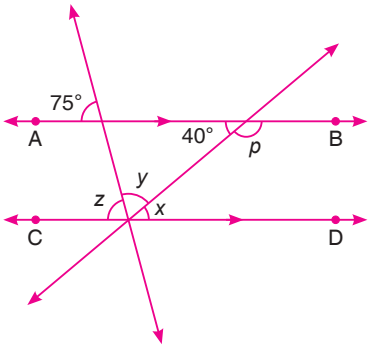


Fig. 13.8

19. In the adjoining figure, l ∥ m. Find the values of x and y if $x = 2y$.

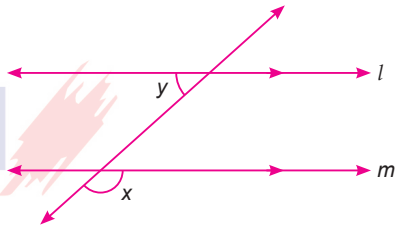


Fig. 13.9

20. In Fig. 13.10, line AB ∥ line CD and line CD ∥ line EF. Is line AB ∥ line EF? Give reasons.

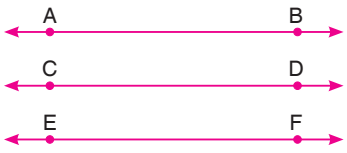


Fig. 13.10

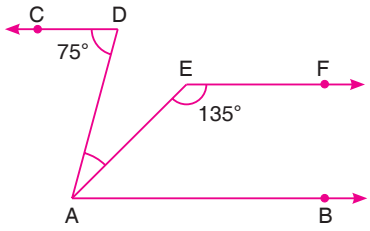


Fig. 13.11

21. In Fig. 13.11, if AB ∥ CD and AB ∥ EF, find ∠DAE.

22. In Fig. 13.12, l ∥ m and p ∥ q. Find a, b, c and d.

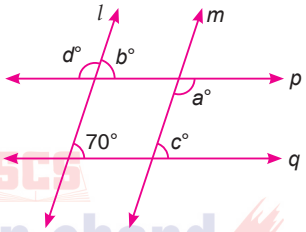


Fig. 13.12

23. In Fig. 13.13, AB || CD. Find the value of x.

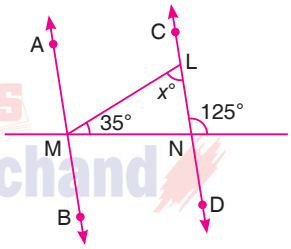


Fig. 13.13

ANSWERS

1. (*a*) 18° (*b*) 15°

2. (*a*) 72° (*b*) $(75 - x)°$ (*c*) 44° 15′

3. (*a*) 162° (*b*) 120° (*c*) 140° 30′ 33″

4. (*a*) 60° (*b*) 120° **5.** (*a*) 35° (*b*) 115°

6. (*a*) 30° (*b*) 35°, 145° (*c*) 66°, 114°

7. (*a*) $x = 80°, y = 100°, z = 100°$ (*b*) $x = 310°, y = 330°, z = 150°$ (*c*) $x = 60°, y = 100°, z = 40°$

8. (*a*) $a = 65°, b = 33°, c = 115°$ (*b*) $a = 65°, b = 65°, c = 115°$

9. $\angle CBD = 360° - (45° + 280°) = 35°$, Hence, $\overline{CB} \parallel \overline{DE}$.

10. (*a*) (*i*) No (*ii*) No (*b*) (*i*) No (*ii*) No **11.** (*a*) 90 (*b*) parallel

12. 100° **13.** $x = 95$ **14.** $\angle 1 = 55°; \angle 2 = 125°; \angle 3 = 55°$

15. $x° = 43°; y° = 97°$ **16.** $a = 45; b = c = 135$.

17. $\angle LXA = \angle BYS = \angle XYR = 80°; \angle AXM = \angle LXY = \angle XYS = \angle RYB = 100°$

18. $x = 40°, y = 65°, z = 75°$ and $p = 140°$ **19.** $x = 120°$ and $y = 60°$

20. Yes **21.** 30° **22.** $a = d = 110; b = c = 70$ **23.** $x = 90$.