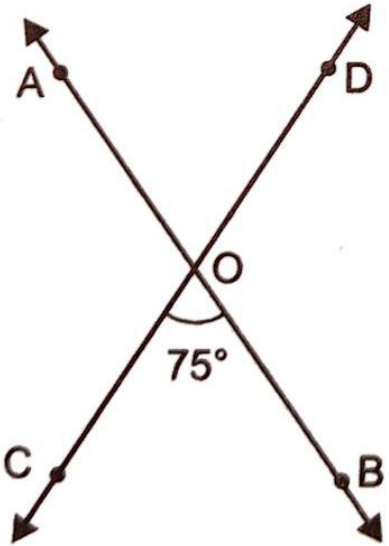
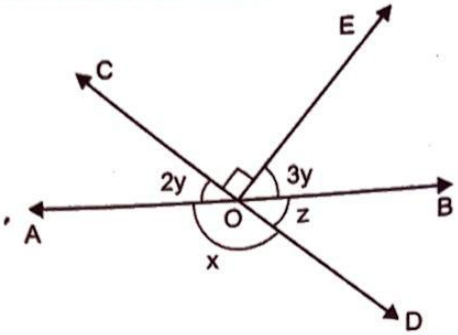
Exercise 12.3

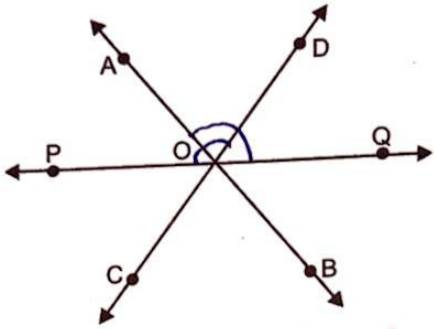
1. If two lines intersect, prove that vertically opposite angles are equal.
2. If $\angle BOC = 75°$, write down (without measurement), the values of each of $\angle AOC$, $\angle AOD$ and $\angle BOD$.



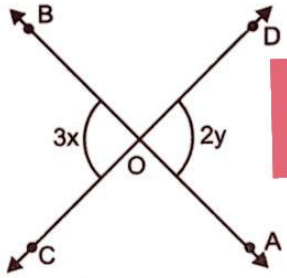
3. AB and CD intersect at O. Find x, y and z.



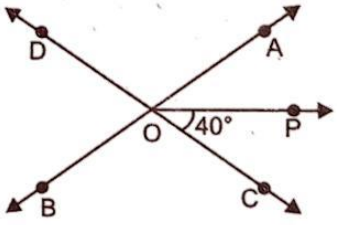
4. In the given figure, $\angle QOA = 110°$, $\angle POD = 102°$, find $m\angle BOC$.



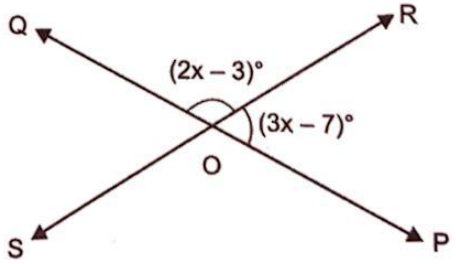
5. In the given figure, $\angle BOD = 126°$. Find x and y.



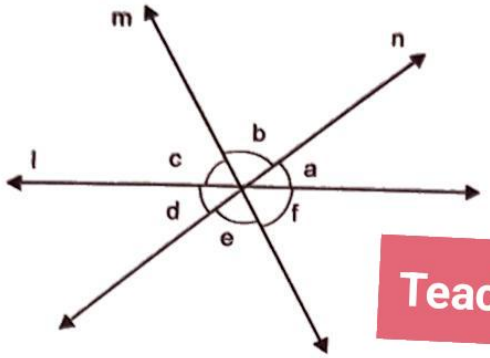
6. $\angle AOC$ is bisected by OP. Find the measure of $\angle AOD$.



7. Find all the four angles.

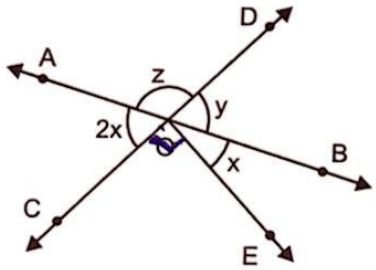


8. In the given figure, three coplanar lines intersect in a common point, forming angles as shown.

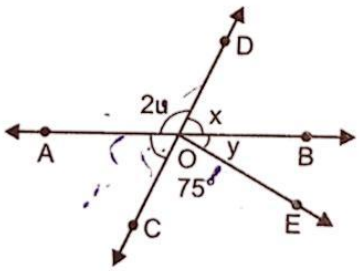


If $a = 40°$ and $b = 80°$, find the values of c, d, e and f.

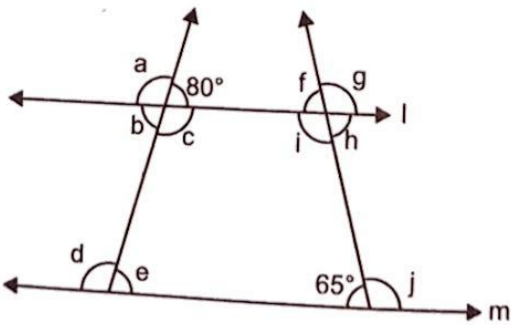
9. In the following figure, AB and CD are two straight lines, intersecting each other at a point O. If $\angle COE = 90°$, find the values of x, y and z.



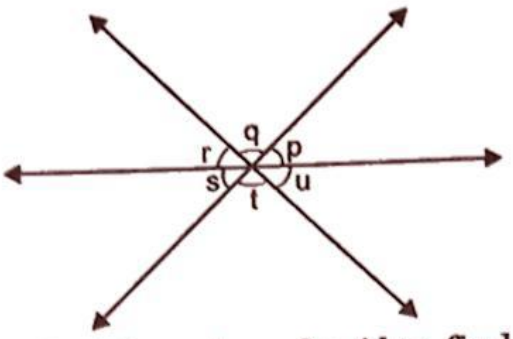
10. In the given figure, AB and CD are two straight lines which intersect each other at O. If $\angle COE = 75°$, find the values of x, y and u.



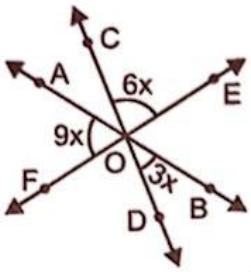
11. In the given figure, $l \parallel m$. Find the angles a, b, c, d, e, f, g, h, i, and j.



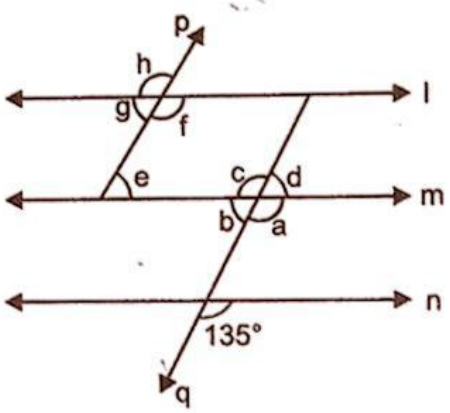
12. In the given figure, $p = 40°$, $t = 80°$. Find the values of q, r, s and u.



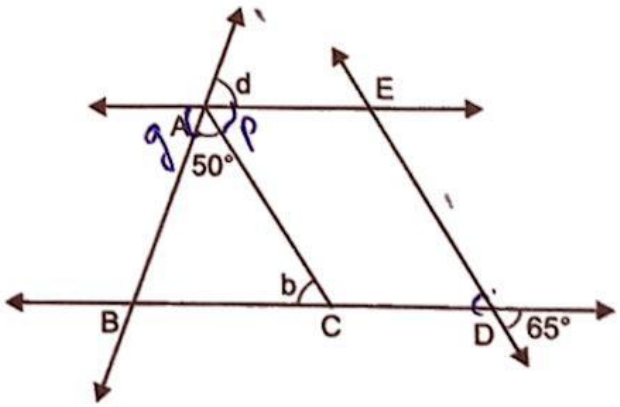
13. In the given figure, find the value of x. Also, find $m\angle AOC$, $m\angle EOB$ and $m\angle FOD$.



14. In the given figure, $l \parallel m \parallel n$ and $p \parallel q$. Find the angles a, b, c, d, e, f, g and h.



15. In the given figure, AE || BD and AC || ED, find $\angle b$ and $\angle d$. Is AB = AC?



Answers

2. $\angle AOC = 105°$, $\angle AOD = 75°$ and $\angle BOD = 105°$

3. $x = 144°$, $y = 18°$, $z = 36°$

4. 32° 5. $x = 18°, y = 27°$ 6. 100°

7. $\angle ROQ = \angle POS = 73°, \angle POR = \angle QOS = 107°$

8. $c = 60°$; $d = 40°$; $e = 80°$; $f = 60°$

9. $x = 30°$; $y = 60°$; $z = 120°$

10. $x = 84°, y = 21°, u = 48°$

11. $a = 100°, b = 80°, c = 100°, d = 100°, e = 80°, f = 65°, g = 115°,$ $h = 65°, i = 115°$ and $j = 115°$

12. $q = 80°, r = 60°, s = 40°, u = 60°$

13. $x = 10°, m\angle AOC = 30°, m\angle EOB = 90°, m\angle FOD = 60°.$

14. $a = 135°, b = 45°, c = 135°, d = 45°, e = 45°, f = 135°, g = 45°, h = 135°$

15. $\angle b = 65°$ and $\angle d = 65°$. Yes, AB = AC.