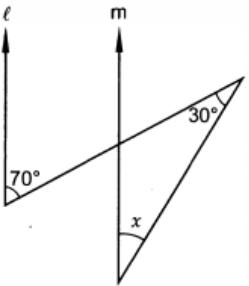


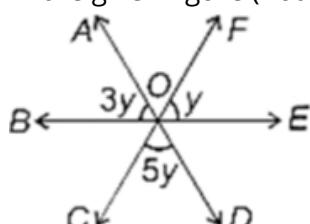
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Class 09 - Mathematics

Section A

1. Two angles measure $(70 + 2x)^\circ$ and $(3x - 15)^\circ$. If each angle is the supplement of the other, then the value of x is : [1]
 - a) 250°
 - b) 30°
 - c) 25
 - d) 20
2. Which of the following statements is CORRECT? [1]
 - a) If two angles forming a linear pair, then each of these angle is of measure 90° .
 - b) Both of the angles forming a linear pair can be obtuse angles.
 - c) Angles forming a linear pair can both be acute angles.
 - d) Bisectors of the adjacent angles forming a linear pair form a right angle.
3. An exterior angle of a triangle is 80° and the interior opposite angles are in the ratio $1 : 3$. [1]
 Measure of each interior opposite angle is :
 - a) $30^\circ, 90^\circ$
 - b) $30^\circ, 60^\circ$
 - c) $40^\circ, 120^\circ$
 - d) $20^\circ, 60^\circ$
4. If $\angle A = 4\angle B = 6\angle C$, then $A : B : C$? [1]
 - a) $12 : 3 : 2$
 - b) $3 : 4 : 6$
 - c) $2 : 3 : 4$
 - d) $6 : 4 : 3$
5. In Fig. ,if lines l and m are parallel lines, then $x =$ [1]

 - a) 100°
 - b) 40°
 - c) 30°
 - d) 70°

6. In the given figure (not drawn to scale), the value of y is _____. [1]



a) 22°

b) 20°

c) 10°

d) 24°

7. An exterior angle of a triangle is 110° and its two interior opposite angles are equal. Each of these equal angles is [1]

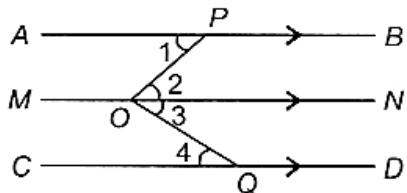
a) $27\frac{1}{2}^\circ$

b) 35°

c) 55°

d) 70°

8. In the given figure (not drawn to scale), $\angle APO = 42^\circ$ and $\angle CQO = 38^\circ$. Find the value of $\angle POQ$. [1]



a) 68°

b) 126°

c) 72°

d) 80°

9. An angle is one-fifth of its supplement. The measure of the angle is :- [1]

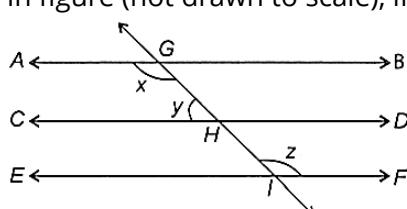
a) 15°

b) 150°

c) 75°

d) 30°

10. In figure (not drawn to scale), if $AB \parallel CD$, $CD \parallel EF$ and $y : z = 4:5$, then find the value of x . [1]



a) 76°

b) 122°

c) 100°

d) 82°

11. The angles of a triangle are in the ratio $5 : 3 : 7$, the triangle is [1]

a) An isosceles triangle.

b) A right triangle

c) An obtuse angled triangle

d) An acute angled triangle

12. When two straight lines intersect: [1]

- i. Adjacent angles are complementary
- ii. Adjacent angles are supplementary.
- iii. Opposite angles are equal.
- iv. Opposite angles are supplementary.

Of these statements

a) (ii) and (iv) are correct

b) (ii) and (iii) are correct

c) (i) and (iii) are correct

d) (i) and (iv) are correct

13. The measure of an angle is five times its complement. The angle measures [1]

a) 35°

b) 25°

c) 65°

d) 75°

14. The number of triangles that can be drawn having angles as 50° , 60° and 70° are : [1]

- a) Two
- b) Only one
- c) three
- d) Infinite

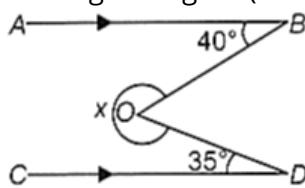
15. The sides of a quadrilateral are extended in order to form 4 exterior angles. The sum of these exterior angles is : [1]

- a) 90°
- b) 180°
- c) 360°
- d) 720°

16. Two angles measure $(25^\circ - a)$ and $(135^\circ + 2a)$. If each one is the supplement of the other, then the value of a is [1]

- a) 35°
- b) 20°
- c) 45°
- d) 65°

17. In the given figure (not drawn to scale), $AB \parallel CD$. Find the value of x . [1]



- a) 285°
- b) 280°
- c) 189°
- d) 215°

18. If the angles of a triangle are in the ratio $3 : 4 : 5$, then the triangle formed will be [1]

- a) Scalene triangle
- b) Right angled triangle
- c) Isosceles triangle
- d) Obtuse angled triangle

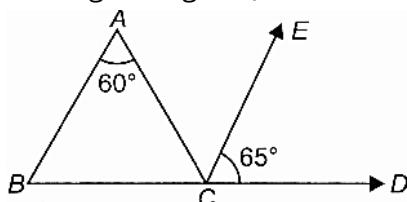
19. Two planes intersect each other to form a : [1]

- a) angle
- b) Straight line
- c) plane
- d) point

20. The angles of a triangle are in the ratio $2:3:4$. The largest angle of the triangle is [1]

- a) 12°
- b) 60°
- c) 100°
- d) 80°

21. In the given figure (not drawn to scale), if $CE \parallel BA$, then the value of $\angle ACB$ is [1]



- a) 90°
- b) 70°
- c) 60°
- d) 55°

22. Each angle of an equilateral triangle is [1]

- a) 60°
- b) 45°

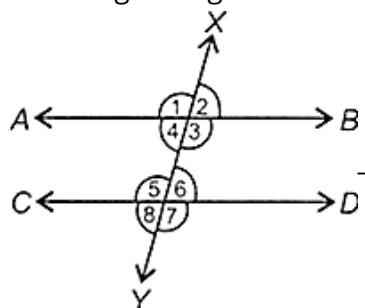
c) 90° d) 30° 23. If one angle of a triangle is equal to the sum of the other two angles, then the triangle is [1]

a) an isosceles triangle

b) an obtuse angled triangle

c) an equilateral triangle

d) a right triangle

24. Use the given figure to match Column-I with Column-II, if $AB \parallel CD$. [1]

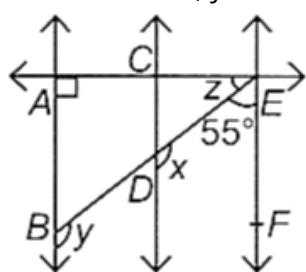
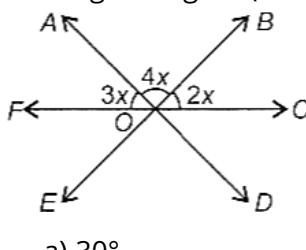
Column-I	Column-II
(a) Corresponding angles	(i) $\angle 1 = \angle 7$
(b) Alternate interior angles	(ii) $\angle 4 + \angle 5 = 180^\circ$
(c) Alternate exterior angles	(iii) $\angle 1 = \angle 5$
(d) Co-interior angles	(iv) $\angle 4 = \angle 6$

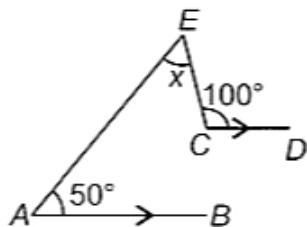
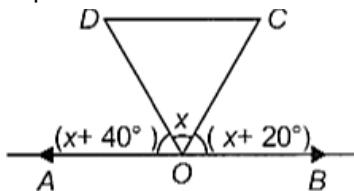
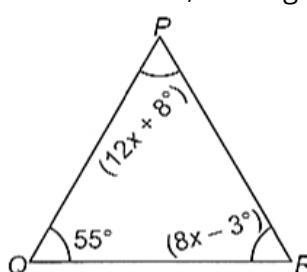
a) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i)

b) (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)

c) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

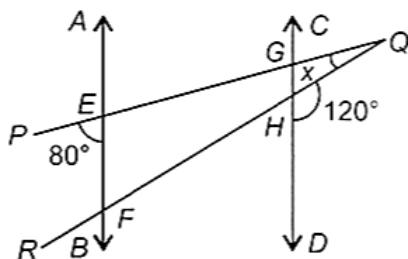
d) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

25. Angles of a triangle are in the ratio $2 : 4 : 3$. The smallest angle of the triangle is [1]a) 40° b) 80° c) 60° d) 20° 26. In the given figure (not drawn to scale), $AB \parallel CD$ and $AB \parallel EF$. If $EA \perp BA$ and $\angle BEF = 55^\circ$, then the values of x , y and z respectively are _____. [1]a) $125^\circ, 125^\circ, 35^\circ$ b) $35^\circ, 150^\circ, 35^\circ$ c) $130^\circ, 50^\circ, 40^\circ$ d) $125^\circ, 35^\circ, 35^\circ$ 27. In the given figure (not drawn to scale), find the value of $\angle DOC$. [1]a) 30° b) 60°

c) 75° d) 50° 28. In the given figure (not drawn to scale), $AB \parallel DC$. Then the value of x is _____. [1]a) 25° b) 50° c) 30° d) 45° 29. In the given figure (not drawn to scale), if OCD is an isosceles triangle in which OD and OC are equal, then what will be the value of $\angle OCD$? [1]a) 65° b) 50° c) 45° d) 70° 30. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio $5 : 4$, then the smaller of the two angles is : [1]a) 60° b) 80° c) 100° d) 120° 31. The angles of a triangle in ascending order are x, y, z and $y - x = z - y = 10^\circ$. The smallest angle is [1]a) 60° b) 50° c) 70° d) 40° 32. Two straight lines AB and CD intersect one another at the point O. If $\angle AOC + \angle COB + \angle BOD = 274^\circ$, then $\angle AOD =$ [1]a) 86° b) 94° c) 137° d) 90° 33. Two complementary angles are such that two times the measure of one is equal to three times the measure of the other. The measure of the smaller angle is [1]a) 36° b) 30° c) 20° d) 45° 34. The value of x , in the given triangle is _____. [1]

a) 6° b) 4°
 c) 5° d) 8°

35. In the given figure (not drawn to scale), $AB \parallel CD$ and PQ, QR intersects AB and CD both at E, F and G, H respectively. Find the value of x . [1]



a) 20° b) 100°
 c) 30° d) 40°

36. A, B, C are the three angles of a triangle. If $A - B = 15^\circ$ and $B - C = 30^\circ$, then angles A, B, C are respectively: [1]

a) $65^\circ, 80^\circ, 35^\circ$ b) $35^\circ, 65^\circ, 80^\circ$
 c) $80^\circ, 65^\circ, 35^\circ$ d) $80^\circ, 35^\circ, 65^\circ$

37. One angle is equal to three times its supplement. The measure of the angle is [1]

a) 135° b) 120°
 c) 90° d) 130°

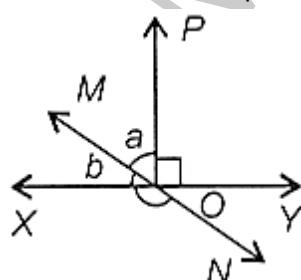
38. How many triangles can be drawn having angles as $45^\circ, 60^\circ$ and 85° ? [1]

a) Two b) Infinitely many
 c) None d) Only one

39. If two complementary angles are in the ratio $7 : 11$, then the angles are _____. [1]

a) $35^\circ, 55^\circ$ b) $20^\circ, 60^\circ$
 c) $30^\circ, 50^\circ$ d) $40^\circ, 50^\circ$

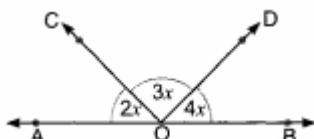
40. In the given figure (not drawn to scale), lines XY and MN intersect at O. If $\angle POY = 90^\circ$ and $a : b = 2 : 3$, then $\angle XON$ is equal to _____. [1]



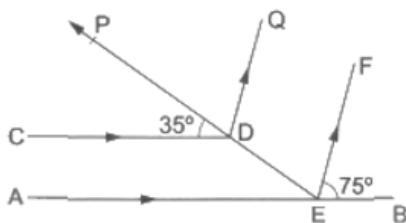
a) 126° b) 180°
 c) 90° d) 130°

Section B

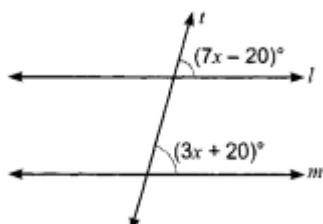
41. In Fig., find the value of x . [2]



42. In the given figure, $AB \parallel CD$ and $\angle CDP = 35^\circ$. PD is produced downwards to meet AB at E and $\angle BEF = 75^\circ$. If $DQ \parallel EF$, find $\angle AED$, $\angle DEF$ and $\angle PDQ$. [2]

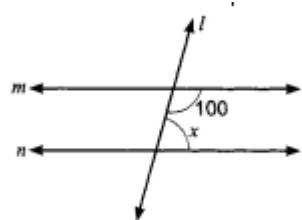


43. For what value of x will the lines l and m be parallel to each other? [2]



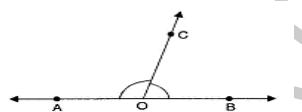
44. Can a triangle have two obtuse angles? Give reason for your answer. [2]

45. In Fig., if $m \parallel n$, then find the value of x . [2]

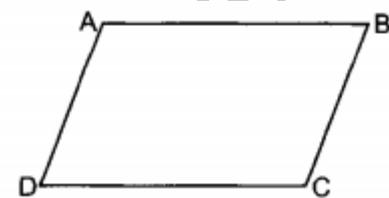


46. Two adjacent angles are equal. Is it necessary that each of these angles will be a right angle? Justify your answer. [2]

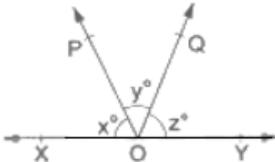
47. In figure, OA and OB are opposite rays. If $\angle BOC = 75^\circ$, find $\angle AOC$ and If $\angle AOC = 110^\circ$, find $\angle BOC$ [2]



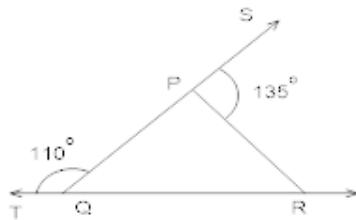
48. In Fig. $AB \parallel DC$ and $AD \parallel BC$. Prove that $\angle DAB = \angle DCB$. [2]



49. In the adjoining figure, $x : y : z = 5 : 4 : 6$. If XOY is a straight line, find the values of x , y and z [2]

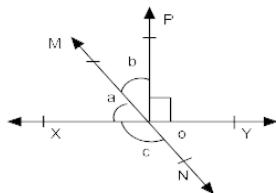


50. In fig. sides QP and RQ of $\triangle PQR$ are produced to points S and T respectively. If $\angle SPR = 135^\circ$ and $\angle PQT = 110^\circ$, find $\angle PRQ$ [2]



Section C

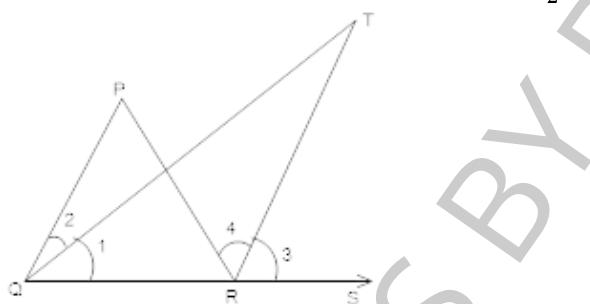
51. In fig lines XY and MN intersect at O. If $\angle POY = 90^\circ$ and $a : b = 2 : 3$ find $\angle c$. [3]



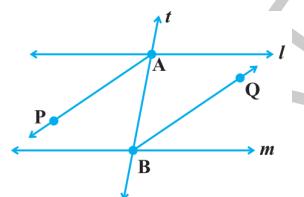
52. Bisectors of interior $\angle B$ and exterior $\angle ACD$ of a $\triangle ABC$ intersect at the point T. Prove that $\angle BTC = \frac{1}{2} \angle BAC$ [3]

53. Side BC of a $\triangle ABC$ is produced in both the directions. Prove that the sum of the two exterior angles so formed is greater than 180° . [3]

54. In figure the sides QR of $\triangle PQRS$ is produced to a point S. If the bisectors of $\angle PQS$ and $\angle PRS$ meet at point T. Then prove that $\angle QRT = \frac{1}{2} \angle QPR$ [3]

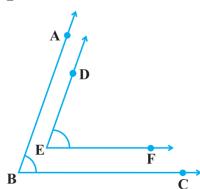


55. If in figure, bisectors AP and BQ of the alternate interior angles are parallel, then show that $l \parallel m$. [3]

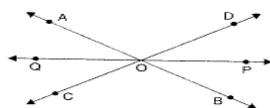


56. Prove that two lines that are respectively perpendicular to two intersecting lines intersect each other.
[Hint: Use proof by contradiction].

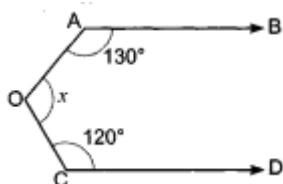
57. In a figure, $BA \parallel ED$ and $BC \parallel EF$. Show that $\angle ABC = \angle DEF$
[Hint: Produce DE to intersect BC at P (say)]



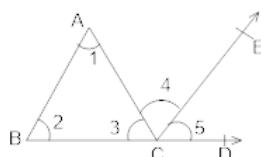
58. In figure, AB and CD are two intersecting lines. OP and OQ are respectively bisectors of $\angle BOD$ and $\angle AOC$. Show that OP and OQ are opposite rays. [3]



59. In Fig., $AB \parallel CD$. Find the value of x . [3]



60. The side BC of $\triangle ABC$ is produced to form ray BD. CE is drawn parallel to AB, show that $\angle ACD = \angle A + \angle B$. Also prove that $\angle A + \angle B + \angle C = 180^\circ$ [3]

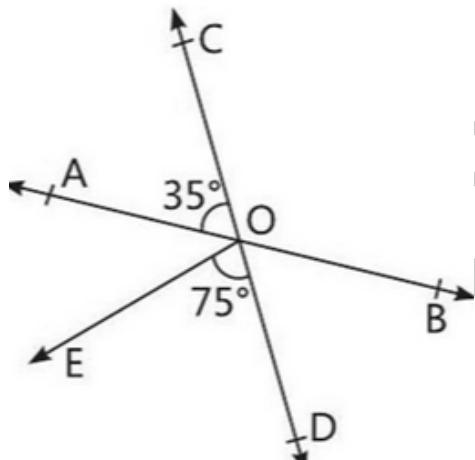


Section D

61. **Read the case study carefully and answer the questions that follow:** [4]

A math's teacher was teaching students about intersecting lines.

Suppose AB and CD are two intersecting lines, which meets at point O. In this point O, she draw a line OE and all these lines were making different angles with each other.



After explaining the description of the figure, she asked the following questions from the students.

On the basis of the above information, solve the following questions.

- Find the measure of $\angle BOD$. (1)
- Check whether pair of angles $\angle AOC$ and $\angle BOC$ makes a linear pair. (1)
- Which of the following angles form a non collinear lines? (2)
 - A, O, B
 - C, O, E

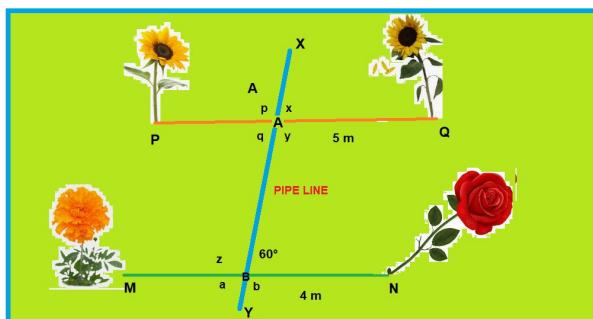
OR

Find the measure of $\angle AOE$ (2)

62. **Read the case study carefully and answer the questions that follow:** [4]

Once four students of class VIII were selected for plantation of flower plants in the school garden. The selected students were Pankaj, Raju, Deepak and Renu. As shown PQ and MN are the parallel lines of the plants. Pankaj planted a sunflower plant at P, then Raju planted another sunflower at

Q. Further, Deepak was called to plant any flowering plant at point M. He planted a Marigold there. Now it was turn of Renu. She was told to plant a flowering plant different from the three planted one. So she planted a rose plant at N. There was water pipeline XY which intersect PQ and MN at A and B and $\angle XBN = 60^\circ$.



Based on the above information, answer the following questions:

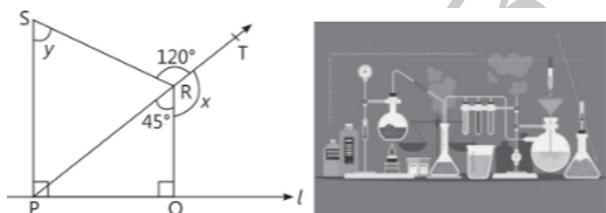
- What is the value of $\angle z$? (1)
- What is the value of $\angle x$? (1)
- What is the value of $\frac{(\angle p + \angle q + \angle a + \angle z)}{6}$? (2)

OR

What is the value of $\frac{(\angle q + \angle y + \angle a + \angle b)}{4}$? (2)

63. **Read the case study carefully and answer the questions that follow:** [4]

In a science experiment, a chemical was allowed to flow with high force and high temperature on the floor and the results were recorded. The movement of chemical is as shown in geometrical form as below.



On the basis of the above information, solve the following questions.

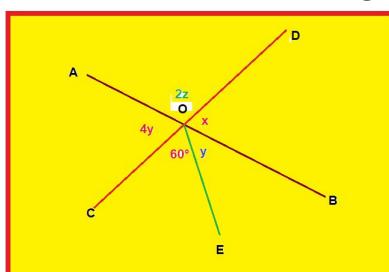
- PS and QR are parallel? (1)
- Measure of angle x? (1)
- Measure $\angle SRP$? (2)

OR

The Sum of angle $\angle PRQ + \angle QRT$? (2)

64. **Read the following text carefully and answer the questions that follow:** [4]

Maths teacher draws a straight line AB shown on the blackboard as per the following figure.



- Now he told Raju to draw another line CD as in the figure
- The teacher told Ajay to mark $\angle AOD$ as $2z$
- Suraj was told to mark $\angle AOC$ as $4y$

iv. Clive Made and angle $\angle COE = 60^\circ$
 v. Peter marked $\angle BOE$ and $\angle BOD$ as y and x respectively

Questions:

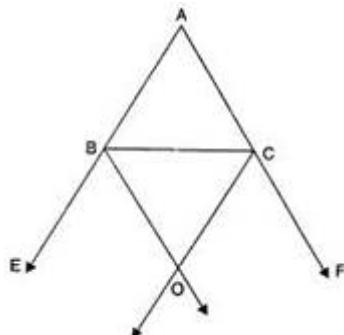
- What is the value of y ? (1)
- What is the value of z ? (1)
- What should be the value of $x + 2z$? (2)

OR

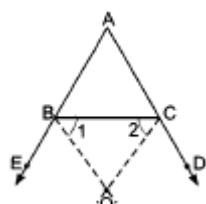
What is the relation between y and z ? (2)

Section E

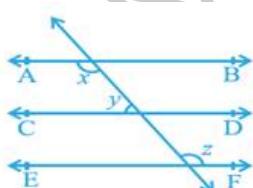
65. In figure, bisectors of the exterior angles at B and C formed by producing sides AB and AC of a $\triangle ABC$ intersect each other at the point O. Prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle A$. [5]



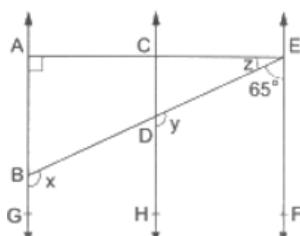
66. In $\triangle ABC$ in given figure, the sides AB and AC of $\triangle ABC$ are produced to points E and D respectively. If bisectors BO and CO of $\angle CBE$ and $\angle BCD$ respectively meet at point O, then prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle A$. [5]



67. If two lines intersect, prove that the vertically opposite angles are equal. [5]
 68. If is given that $\angle XYZ = 64^\circ$ and XY is produced to point P. Draw a figure from the given information. If ray YQ bisects $\angle ZYP$, find $\angle XYQ$ and reflex $\angle QYP$. [5]
 69. In the given figure, if $AB \parallel CD$, $CD \parallel EF$ and $y:z = 3:7$, find x. [5]

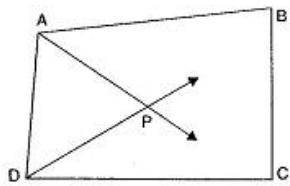


70. In the given figure, $AB \parallel CD \parallel EF$, $\angle DBG = x$, $\angle EDH = y$, $\angle AEB = z$, $\angle EAB = 90^\circ$ and $\angle BEF = 65^\circ$. Find the values of x, y and z. [5]

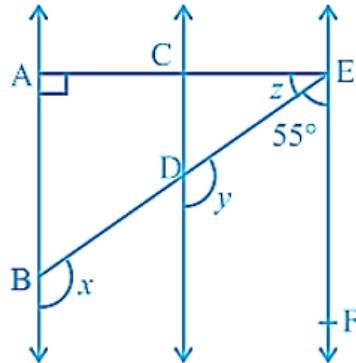


71. In figure, AP and DP are the bisectors of two adjacent angles A and D of a quadrilateral ABCD. [5]

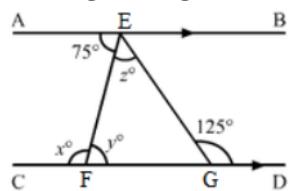
Prove that $2 \angle APD = \angle B + \angle C$.



72. Fig., $AB \parallel CD$ and $CD \parallel EF$. Also, $EA \perp AB$. If $\angle BEF = 55^\circ$, find the values of x , y and z . [5]



73. In the given figure, $AB \parallel CD$. Find value of x , y and z . [5]



74. Prove that if the arms of an angle are respectively perpendicular to the arms of another angle, then the angles are either equal or supplementary. [5]