MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

LINES AND ANGLES

Others

1. The measure of an angle is twice the measure of its supplementary angle. Find its measure.

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2. Two supplementary angles are in the ratio 2:3. Find the angles.

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3. An angle is equal to one-third of its supplement. Find the measure.

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4. Two supplementary angles differ by 34^0 . Find the angles.

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5. If the angles $(2x - 10)^\circ$ and $(x - 5)^\circ$ are complementary angles, find x.

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6. Two supplementary angles are in the ratio $4:5$. Find the angles.

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7. If an angle is 28° less than its complement, find its measure.

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8. The supplement of an angle is one-third of itself. Determine the angle and its supplement.

A. $110^\circ, 30^\circ$.

B. $135^\circ, 45^\circ$.

C. $125^\circ, 35^\circ$.

D. $140^\circ, 40^\circ$.

Answer: B

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9. Lines PQ and RS intersect each other at point O. If $\angle POR : \angle ROQ = 5:7$, find all the angles.

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10. An angle is 14° more than its complementary angle. What is its measure?

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11. If an angle differs from its supplement by 10° , find the angle.

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12. Find the angle which is equal to its complement

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13. Find the measure of an angle which forms a pair of supplementary angles with itself.

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14. Two supplementary angles differ by 34^0 . Find the angles.

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15. An angle is equal to five times its complement. Determine its measure.

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16. An angle is equal to one-third of its supplement. Find its measure.

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17. Two supplementary angles are in the ratio 2:3. Find the angles.

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18. The supplement of an angle is one-third of itself. Determine the angle and its supplement.

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19. Write the complement of each of the following angles: (i) 20^0 (ii) 35^0 (iii) 90^0 (iv) 77^0 (v) 30^0

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20. Write the supplement of each of the following angles: (i) 54^0 (ii) 132^0 (iii) 138^0

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21. If an angle is 28^0 less than its complement, find its measure.

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22. If an angle is 30^0 more than one half of its complement, find the measure of the angle.

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23. Two supplementary angles are in the ratio $4:5$. Find the angles.

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24. Two supplementary angles differ by 48^0 . Find the angles.

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25. An angle is equal to 8 times its complement. Determine its measure.

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26. If the angles $(2x-10)^0$ and $(x-5)^0$ are complementary angles, find x.

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27. If the complement of an angle is equal to the supplement of the thrice of it. Find the measure of the angle.

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28. If an angle differs from its complement by 10^0 , find the angle.

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29. If the supplement of an angle is three times its complement, find the angle.

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30. If the supplement of an angle is two-third of itself. Determine the angle and its supplement.

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31. An angle is 14^0 more than its complementary angle. What is its measure?

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32. The measure of an angle is twice the measure of its supplementary angle. Find its measure.

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33. The bisectors of base angles of a triangle cannot enclose a right angle in any case.

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34. If the bisectors of the base angles of a triangle enclose an angle of 135^0, prove that the triangle is a right triangle.

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35. In a parallelogram $ABCD$ diagonals $AC\ and\ BD$ intersect at $O\ and\ AC = 6.8\ cm\ and\ BD = 5.6cm$. Find the measures of $OC\ and\ OD$

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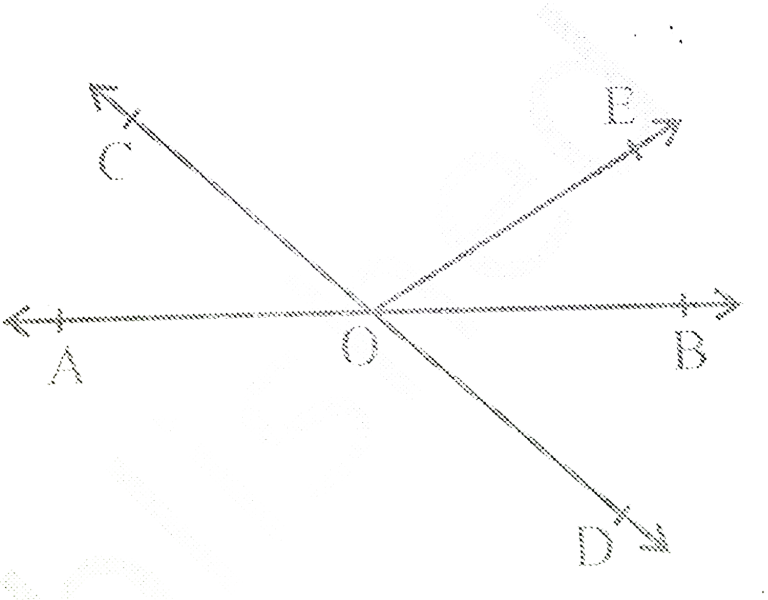
36. In Fig. 6.13, lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70^\circ$ and $\angle BOD = 40^\circ$, find $\angle BOE$

and reflex $\angle COE$.



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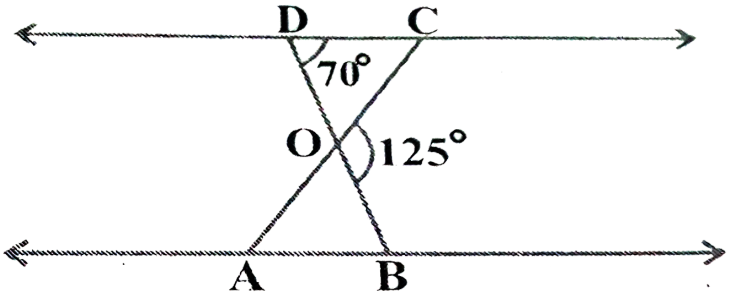
37. In figure, $\Delta ODC \sim \Delta OBA$, $\angle BOC = 125^o$ and $\angle CDO = 70^o$. Find $\angle DOC$, $\angle DCO$ and $\angle OAB$.



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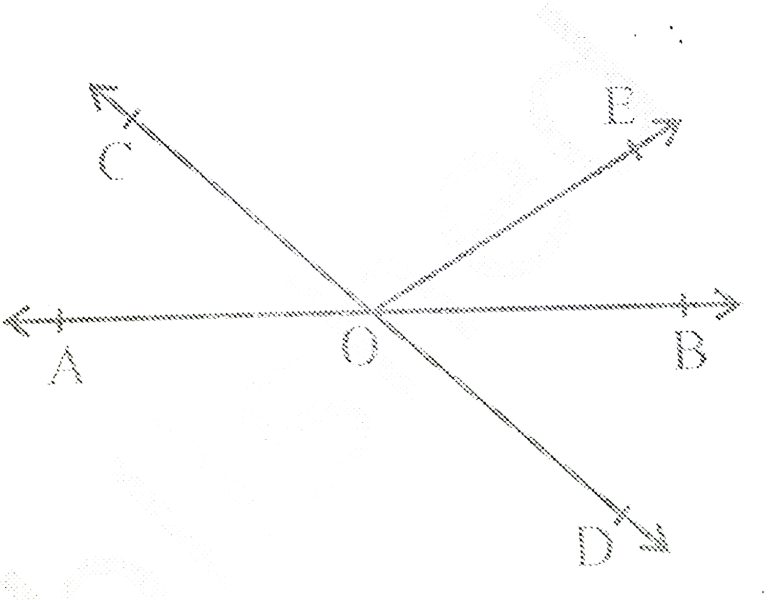
38. In Fig. 6.13, lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70^\circ$ and $\angle BOD = 40^\circ$, find $\angle BOE$

and reflex $\angle COE$.



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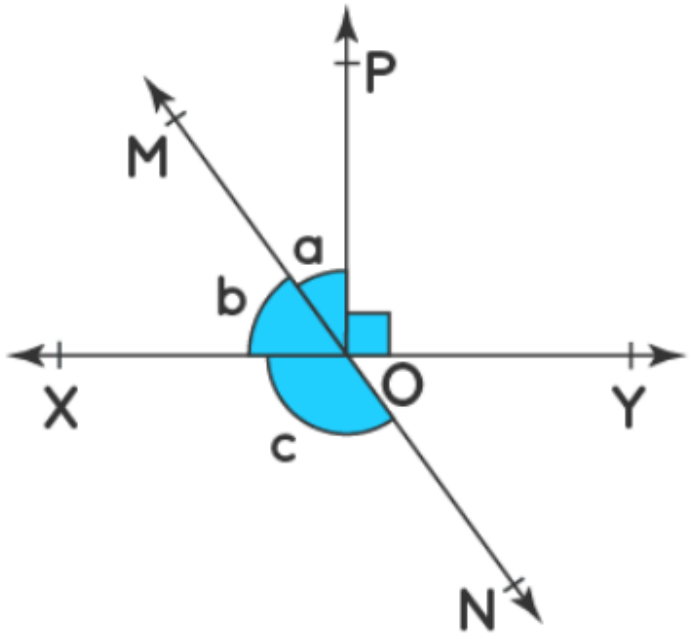
39. In Figure, lines XY and MN intersect at O. If $\angle POY = 90^0$ and $a:b = 2:3$, find c



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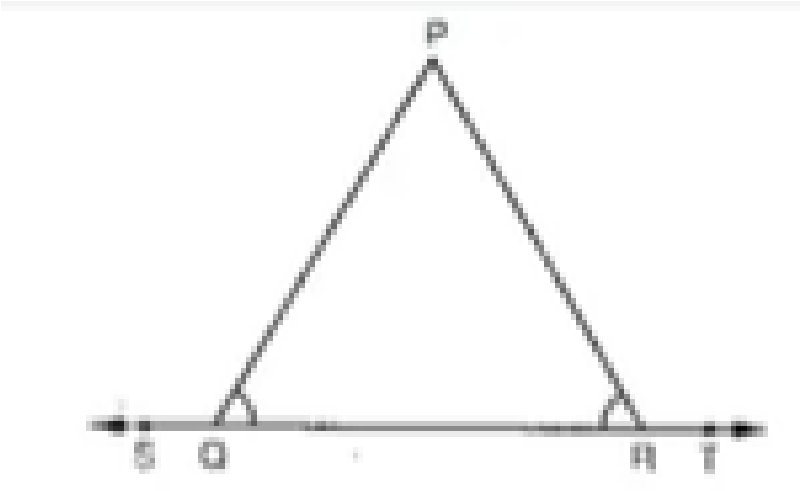
40. In Figure, $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$.



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41. If ray OC stands on line AB such that $\angle AOC = \angle COB$, then show that $\angle AOC = 90^\circ$

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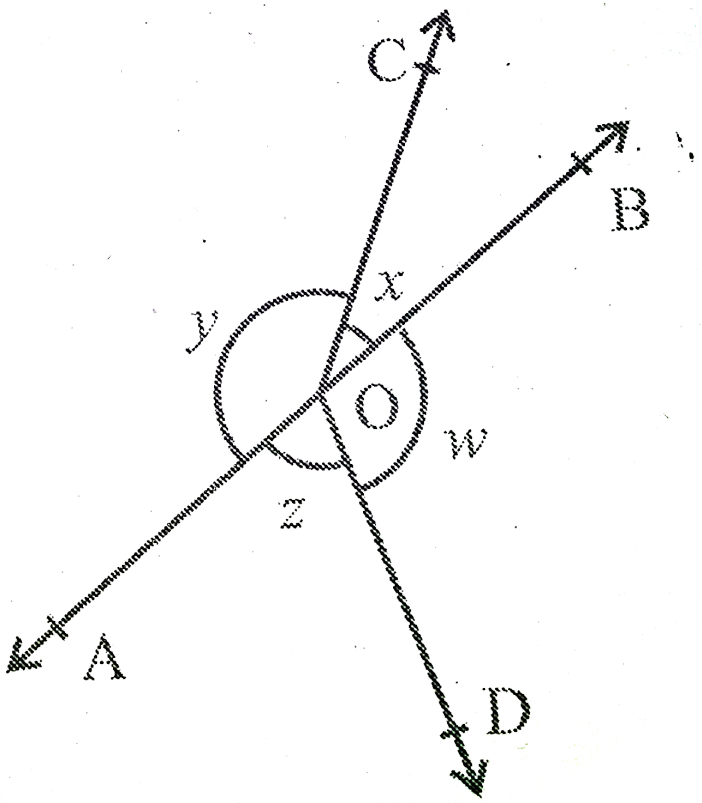
42. In Fig. 6.16, if $x + y = w + z$, then prove that AOB is a line.



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43. It 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 $\angle QYP$.

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44. Prove that ,The bisectors of base angles of a triangle cannot enclose a right angle in any case.

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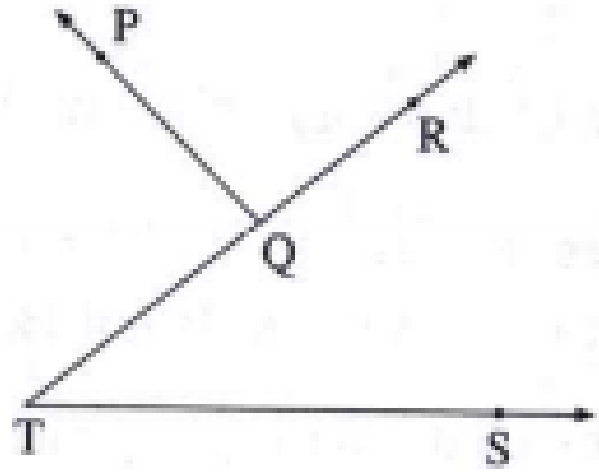
45. Name the pairs of adjacent angles in the figures given below :



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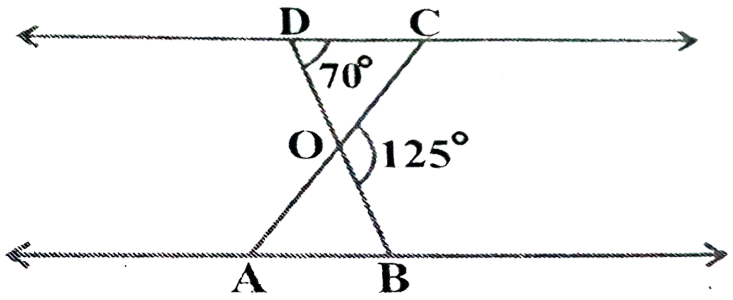
46. In figure, $\Delta ODC \Delta OBA$, $\angle BOC = 125^o$ and $\angle CDO = 70^o$. Find $\angle DOC$, $\angle DCO$ and $\angle OAB$.



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47. $OA = OB and\, OD = OC.$ Show that $(i)\Delta AOD \cong \Delta BOC$ and $(ii)AD \mid\mid BC$

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48. $ABCD$ is a cyclic quadrilateral in which: $BCAD,\ \angle ADC = 110^0\ and\ \angle BAC = 50^0.$ Find $\angle DAC$

$\angle DBC = 80^0$ and $\angle BAC = 40^0$. Find $\angle BCD$

$\angle BCD = 100^0 and \angle ABD = 70^0$ find $\angle ADB$

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49. How many pairs of adjacent angles are formed when two lines intersect at a point?

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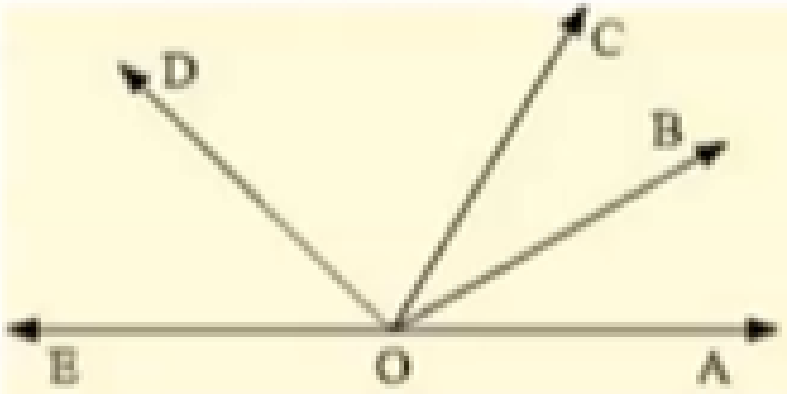
50. How many pairs of adjacent angles, in all, can you name in Figure.



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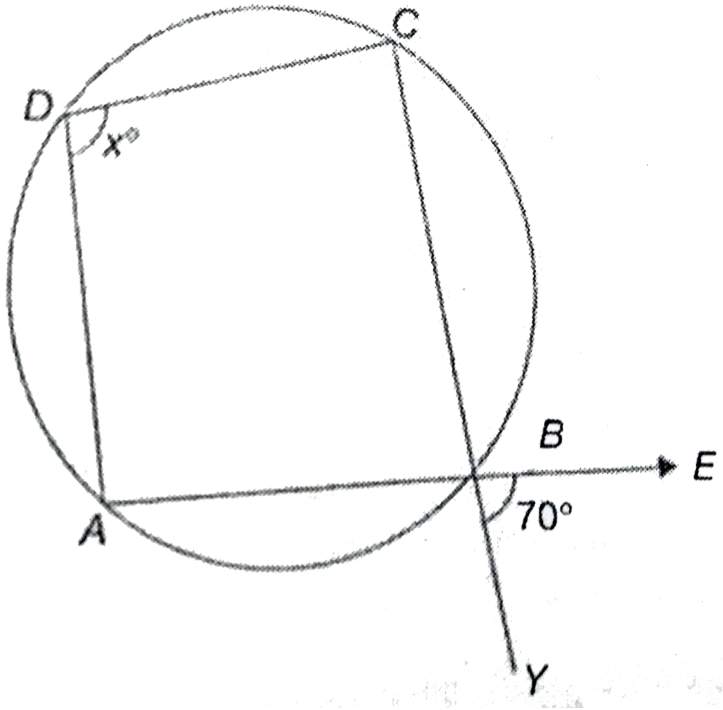
51. In the figure ,find the value of x.



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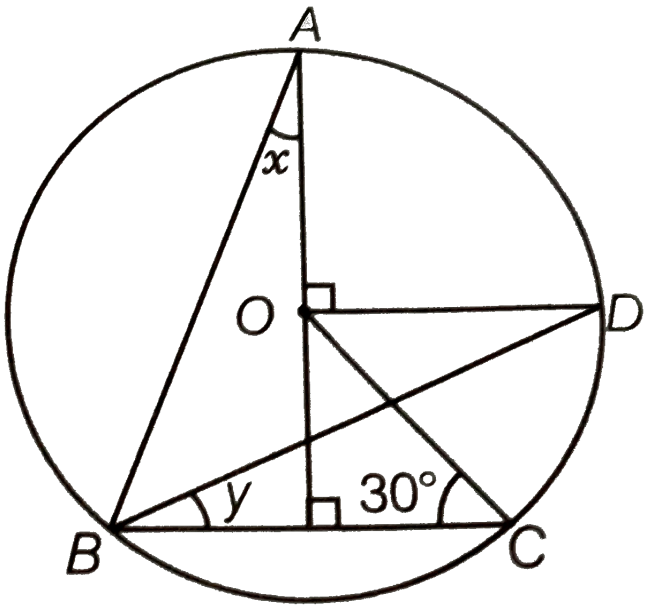
52. In figure, O is the centre of the circle $\angle BCO = 30^\circ$.

Find X and Y.



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53. In Figure, ray OS stand on a line POQ. Ray OR and ray OT are angle bisectors of $\angle POS \; and \; \angle SOQ$ respectively. If $\angle POS = x,$ find $\angle ROT$

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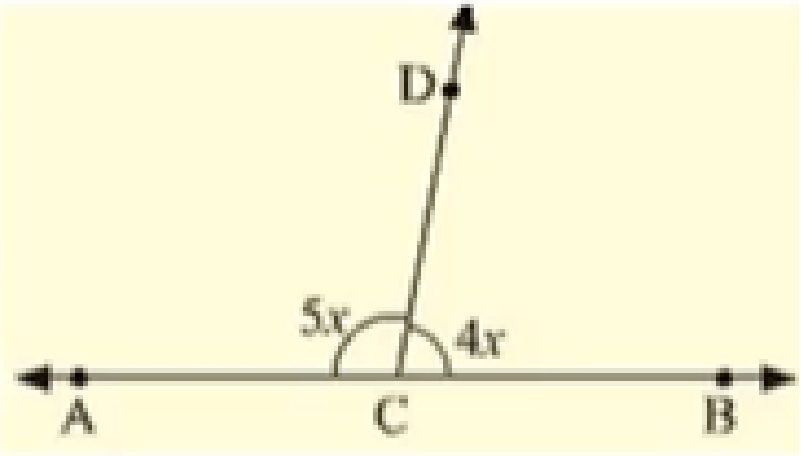
54. In Figure, ACB is a line such that $\angle DCA = 5x \; and \; \angle DCB = 4x$. Find the value of x



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55. Given $\angle POR = 3x and \angle QOR = 2x + 10,$ find the value of x for which POQ will be a line

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56. Lines PQ and RS intersect each other at point O. If $\angle POR : \angle ROQ = 5:7$, find all the angles.

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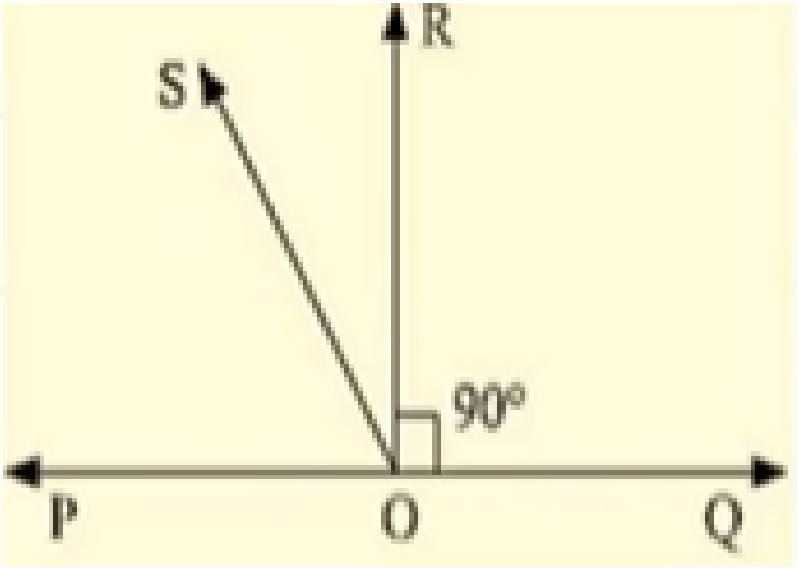
57. In Figure, POQ is a line. Ray OR is perpendicular to lien $PQ\dot{O}S$ is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)$



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58. In Figure, $ABCD$ is a rectangle. Find the values of $xandy$.

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59. Prove that the bisectors of a pair of vertically opposite angles are in the same straight line.

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60. If two straight lines intersect each other, prove that the ray opposite to the bisector of one of the angles thus

formed bisects the vertically opposite angle.

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61. If one of the four angles formed by two intersecting lines is a right angle, then show that each of the four angles is a right angle.

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62. The diagonals of a parallelogram $ABCD$ intersect at O. A line through O meets AB in X and CD in Y. Show that $ar(AXYD) = \frac{1}{2}(AR^{gm}ABCD)$

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63. In a parallelogram $ABCD$ diagonals $AC\ and\ BD$ intersect at $O\ and\ AC = 6.8\ cm\ and\ BD = 5.6cm$. Find the measures of $OC\ and\ OD$

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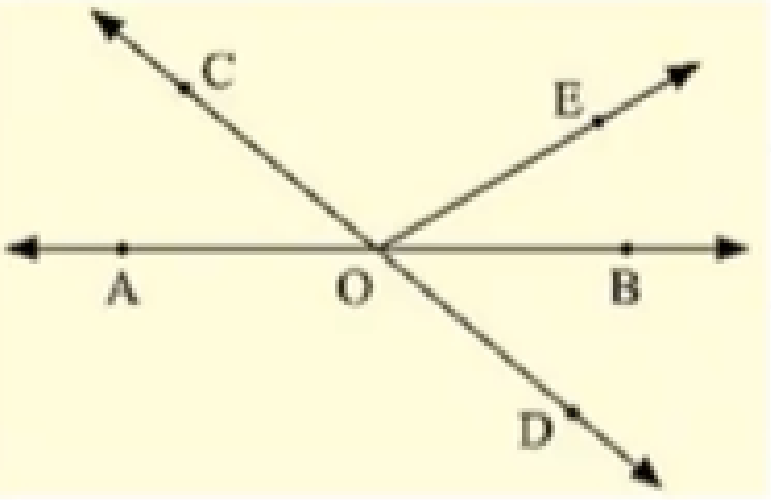
64. In Figure, lines $AB\ and\ CD$ intersect at O.



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65. Which of the following statements are true (T) and which are false(F) (i) Angles forming a linear pair are supplementary. (ii) If two adjacent angles are equal, then each angle measures 90°. (iii) Angles forming a linear pair can both the acute angles. {iv) If angles forming a linear pair are equal, then each of these angles is of measure 90°.

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66. Fill in the blanks so as to make the following statements true: (i) If one angle of a linear pair is acute, then its other angle will be ..... (ii) A ray stands on a line, then the sum of the two adjacent angles so formed is ..... (iii) If the sum of two adjacent angles is 180°, then the ..... arms of the two angles are opposite rays.

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67. In Figure, l, m and n are parallel lines intersected by a transversal at $X, Y,$ and Z respectively. Find $\angle 1, \ \angle 2 \ and \angle 3$. Give reasons.

$Let \angle 1 = 3x$ and $\angle 2 = 2x$

$\angle 1 + \angle 2 = 180^\circ$

$\Rightarrow 5x = 180^\circ$

$x = 36^\circ$

$\angle 1 = 108^\circ, \angle 2 = 72^\circ$

Since $m \parallel n$ and l is the intersector

$\angle 3 = \angle 1 = 108^\circ$ and $\angle 4 = \angle 2 = 72^\circ$ (Opposite angles

$\angle 7 = \angle 5 = \angle 2 = 72^\circ$

$= \angle 5 = 72^\circ$

$\angle 6 = 108^\circ = \angle 8$

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68. In Figure, given that $AB \| CD$ If $\angle 2 = (3x - 10)^\circ$ and $\angle 8 = (5x - 30)^\circ$, determine the measures of $\angle 2$ and $\angle 8$

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69. Prove that two lines perpendicular to the same line are parallel to each other.

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70. If the bisectors of a pair of alternate angles formed by a transversal with two given lines are parallel, prove that the given lines are parallel.

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71. In Figure, if $1m, np$ and $\angle 1 = 85^\circ$, find $\angle 2$

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72. Prove that two lines perpendicular to the same line are parallel to each other.

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73. Prove that if the two arms of an angle are perpendicular to the two arms of another angle, then the angles are either equal or supplementary.

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74. In Figure, $ABCD$ and P is any point shown in the figure. Prove that: $\angle ABP + \angle BPD + \angle CDP = 360^\circ$

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75. Two unequal angles of a parallelogram are in the ratio $2:3$. Find all its angles in degrees.

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76. If each of the two lines is perpendicular to the same line, what kind of lines are they to each other?

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77. $\angle 1 = 60^\circ$ and $\angle 2 = \left(\frac{2}{3}\right)^{rd}$ of a right angle. Prove that $l \mid\mid m$

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78., if l, m, n and $\angle 1 = 60^\circ$, find $\angle 2$.

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79. Prove that two lines perpendicular to the same line are parallel to each other.

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80. The opposite sides of a quadrilateral are parallel. If one angle of the quadrilateral is 60°, find the other angles.

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81. Two lines $AB \, and \, CD$ intersect at O. If $\angle AOC + \angle COB + \angle BOD = 270^\circ$, find the measures of $\angle AOC$, $\angle COB$, $\angle BOD$ and $\angle DOA$.

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82. In Fig., p is a transversal to lines m and n and , $\angle 2 = 120^\circ$ and $\angle 5 = 60^0$. Prove that $m \mid \mid n$

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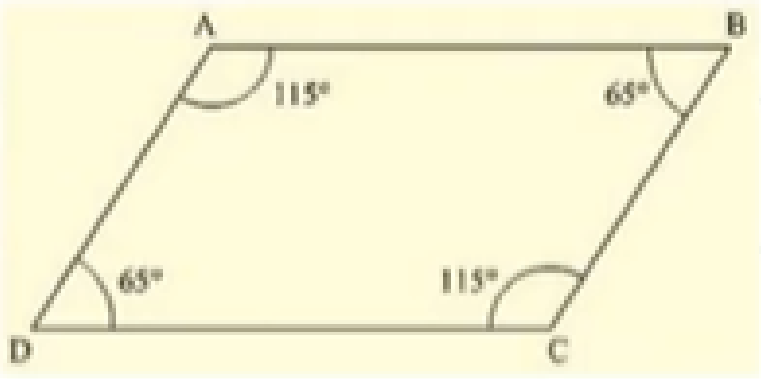
83. Which pair of lines in Fig. are parallel? Given reasons.



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84. If l, m, n are three lines such that $l \| m$ and $n \perp l$, prove that $n \perp m$.

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85. If Figure, arms BA and BC OF $\angle ABC$ are respectively parallel to arms ED andEF or $\angle DEF$. Prove that $\angle ABC = \angle DEF$

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86. In Figure, arms BA and $BCof\angle ABC$ are respectively parallel to arms ED and EF of $\angle DEF$. Prove that $\angle ABC + \angle DEF = 180^\circ$

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87. Which of the following statements are true (T) and which are false (F)? Give reasons. (i)If two lines are intersected by a transversal, then corresponding angles are equal. (ii)If two parallel lines are intersected by a transversal, then alternate interior angles are equal. (iii)Two lines perpendicular to the same line are perpendicular to each other. (iv)Two lines parallel to the same line are parallel to each other. (v)If two parallel lines are intersected by a transversal, then the interior angle on the same side of the transversal are equal.

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88. Fill in the blanks in each of the following to make the statement true: (i) If two parallel lines are intersected by a transversal, then each pair of corresponding angles are.... (ii) If two parallel lines are intersected by a transversal, then interior angles on the same side of the transversal are... (iii) Two lines perpendicular to the same line are.... to each other. (iv) Two lines parallel to the same line are ..... to each other. (v) If a transversal intersects a pair of lines in such away that a pair of alternate angles are equal, then the line are... (vi) If a transversal intersects a pair of lines in such away that the sum of interior angles on the same side of transversal is 180,then the line are .....

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89. Define complementary angles.

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90. Define supplementary angles.

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91. Define Adjacent angles

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92. The complement of an acute angle is .....

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93. The supplement of an acute angle is .....

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94. The supplement of a right angle is .....

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95. Write the complement of an angle of measure x°.

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96. Write the supplement of an angle of measure $2y^\circ$.

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97. If a wheel has six spokes equally spaced, then find the measure of the angle between two adjacent spokes.

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98. An angle is equal to its supplement. Determine its measure.

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99. An angle is equal to five times its complement. Determine its measure.

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100. How many pairs of adjacent angles are formed when two lines intersect at a point?

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101. One angle is equal to three times its supplement. The measure of the angle is (a) 130° (b) 135° (c) 90° (d) 120°

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102. 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 (a) 45° (b) 30° (c) 36° (d) none of these

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103. Two straight lines $AB\ and\ CD$ intersect one another at the point O. If $\angle AOC + \angle COB + \angle BOD = 274^0$, then $\angle AOD =$ (a) 86^0 (b) 90^0 (c) 94^0 (d) 137^0

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104. Two straight lines $AB\ and\ CD$ cut each other at O. If $\angle BOD = 63^0$, then $\angle BOC =$ (a) 63^0 (b) 117^0 (c) 17^0 (d) 153^0

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105. Consider the following statements: When two straight lines intersect:

(i)adjacent angles are complementary

(ii)adjacent angles are supplementary

(iii)opposite angles are equal

(iv)opposite angles are supplementary

Of those statements

(a) (i) and (iii) are correct

(b) (ii) and (iii) are correct

(c) (i) and (iv) are correct

(d) (ii) and (iv) are correct

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106. Given $\angle POR = 3x$ and $\angle QOR = 2x + 10^0$. If POQ is straight line, then the value of x is 30^0 (b) 34^0 (c) 36^0 (d) none of these

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107. In Figure, AOB is a straight line. If $\angle AOC + \angle BOD = 85^0$, then $\angle COD =$ (a)85^0 (b) 90^0 (c) 95^0 (d) 100^0

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108. If two interior angles on the same side of a transversal intersecting two parallel lines are in the ratio $2:3$, then the

measure of the larger angle is (a) 54^0 (b)120^0 (c) 108^0 (d) 136^0

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109. AB and CD are two parallel lines. PQ cuts $AB\ and\ CD$ at $E\ and\ F$ respectively. EL is the bisector of $\angle FEB$. If $\angle LEB = 35^0$, then $\angle CFQ$ will be 55^0 (b) 70^0 (c) 110^0 (d) 130^0

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110. Two lines $AB\ and\ CD$ intersect at O. If $\angle AOC + \angle COB + \angle BOD = 270^0$, find the measures of $\angle AOC,\ \angle COB,\ \angle BOD$ and $\angle DOA$.

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111. In Figure, $PQ \| RS$, $\angle AEF = 95^0$, $\angle BHS = 110^0$ *and* $\angle ABC = x^0$.

Then the value of x is (a)15^0 (b) 25^0 (c) 70^0 (d) 35^0

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112. In Figure, if $l_1 \| l_2$, what is the value of x? (a)90^0 (b) 85^0 (c) 75^0 (d) 70^0

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113. In Figure, if $l_1 \| l_2$, what is $x + y$ in terms of w *and* z?

(a) $180 - w + z$ (b) $180 + w - z$ $180 - w - z$ (d)

$180 + w + z$

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114. In Figure, if $l_1 \mid \mid l_2$, what is the value of y ? (a) 100 (b) 120 (c) 135 (d) 150

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115. In Figure, if $l_1 || l_2 and\ l_2 || l_4,$ what is y in terms of x? (a) $90 + x$ (b) $90 + 2x$ $90 - \frac{x}{2}$ (d) $90 - 2x$

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116. In Figure, if $l \mid\mid m$, what is the value of x? (a) 60 (b) 50 (c) 45 (d) 30

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117. In Figure, if line segment AB is parallel to the line segment CD, what is the value of y? (a)12 (b) 15 (c) 18 (d) 20

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118. In Figure, if $CP \mid\mid DQ$, then the measure of x is (a) 130^0 (b) 105^0 (c) 175^0 (d) 125^0

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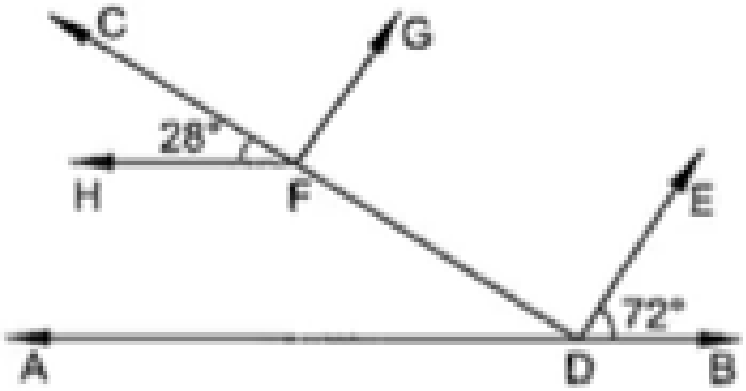
119. In Figure, if $AB||HF\ and\ DE||FG$, then the measure of $\angle FDE$ is (a) 108^0 (b) 80^0 (c) 100^0 (d) 90^0



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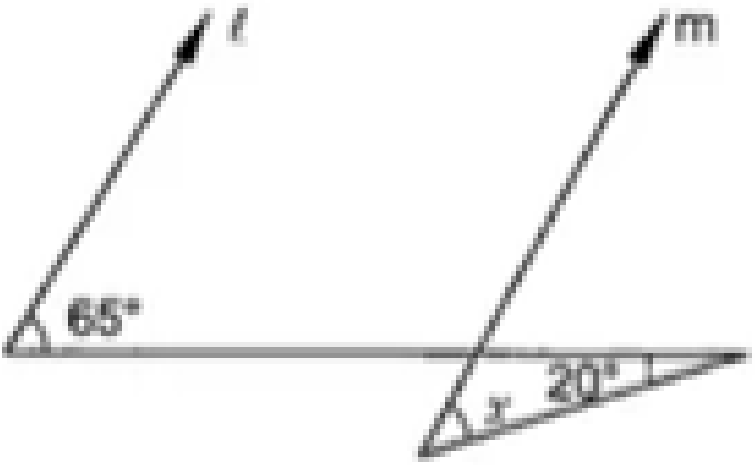
120. In Figure, if lines $l\ and\ m$ are parallel, then $x =$ (a) 20^0 (b) 45^0 (c) 65^0 (d) 85^0



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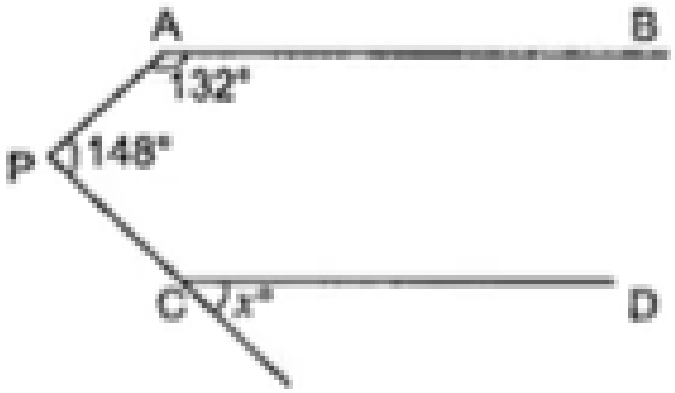
121. In Figure, if $AB \mid\mid CD$, then $x =$ (a) 100^0 (b) 105^0 (c) 110^0 (d) 115^0



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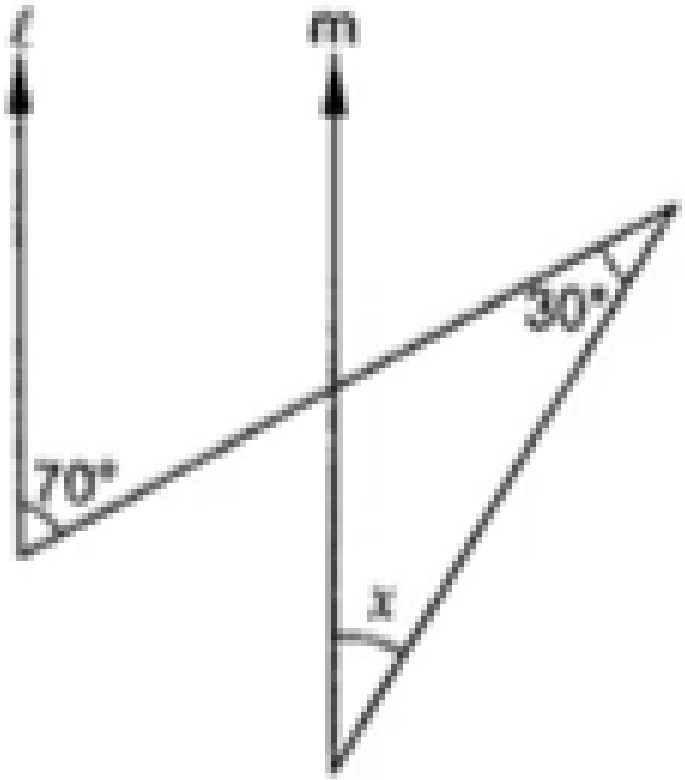
122. In Figure, if lines $l \, and \, m$ are parallel lines, then $x =$

(a)70^0 (b) 100^0 (c) 40^0 (d) 30^0



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