MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

TRIANGLE AND ITS ANGLES

Others

1. In a $ABC, \angle B = 105^0, \angle C = 50^0,$ Find $\angle A$

2. The sum of two angles of a triangle is equal to its third angle. Determine the measure of the third angle.

3. Of the three angles of a triangle, one is twice the smallest and another is three times the smallest. Find the angles.

4. If the angle of a triangle are in the ratio $2:3:4,$ determine three angles.

5. The sum of two angles of a triangle is 80^0 and their difference is $20^0.$ Find all the angles.

6. In a ABC, if $2\angle A = 3\angle b = 6\angle c$, determine $\angle A$, $\angle B$ and $\angle C$

7. A, B, C are the three angles of a triangle. If $A - B = 15°$, $B - C = 30°$, find $\angle A$, $\angle B$ and $\angle C$

8. In Figure, $ABDC$. If $x = \dfrac{4y}{3}$ and $y = \dfrac{3z}{8}$, find $\angle BCD$, $\angle ABC$ and $\angle BAD$

9. A triangle ABC is right angles at $A\dot{A}L$ is drawn perpendicular to BC . Prove that $\angle BAL = \angle ACB$

10. In Figure PS is the bisector of $\angle QPR$ and $PT \perp QR$. Show that $\angle TPS = \dfrac{1}{2}(\angle Q - \angle R)$

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11. If two parallel lines are intersected by a transversal, prove that the bisectors of the interior angles on the same side of transversal intersect each other at right angles.
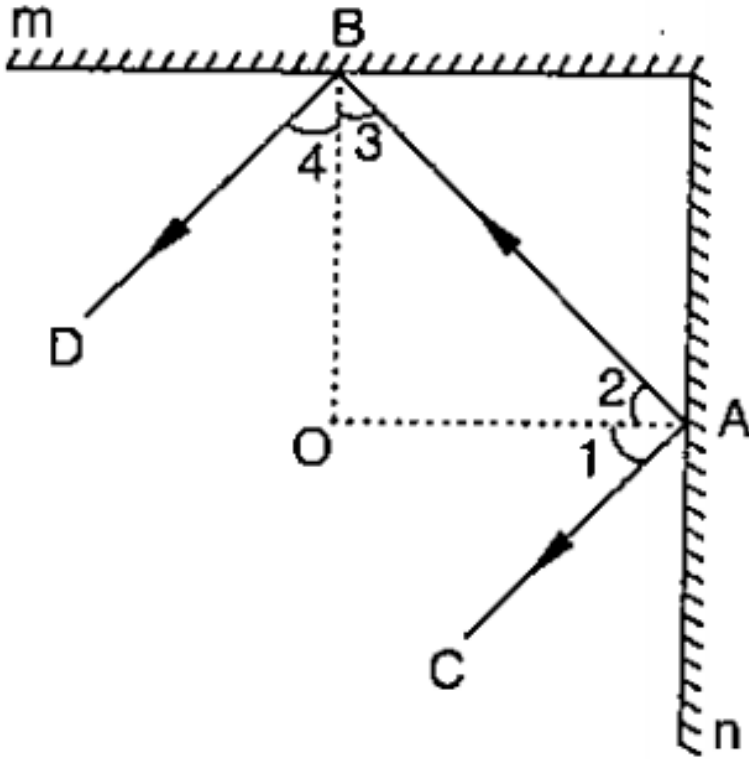
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12. In Figure, TQ and TR are the bisectors of $\angle Q$ and $\angle R$ respectively. If $\angle QPR = 80^0 and \angle PRT = 30^0$, determine $\angle TQR$ and $\angle QTR$

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13. In Figure, m and n are two plane mirrors perpendicular to each other. Show that the incident ray CA is parallel to the reflected ray

BD

14. In ABC, $\angle B = 45^0$, $\angle C = 55^0$ and bisector of $\angle A$ meets BC at a point D. Find $\angle ADB$ and $\angle ADC$

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15. A, B, C, are three angles of a triangle. If $A - B = 15°$, $B - C = 30°$, find $\angle A, \angle B$ and $\angle C$

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16. In a ABC, if $\angle A = 55^0$, $\angle B = 40^0$, find $\angle C$

17. If the angles of a triangle are in the ratio $1:2:3$, determine three angles.

18. The angles of a triangle are $(x - 40)^0$, $(x - 20)^0$ and $\left(\frac{1}{2}x - 10\right)^0$. find the value of x.

19. The angle of a triangle are arranged in ascending order of magnitude. If the difference between two consecutive angles is 10^0, find the three angles.

20. Two angles of a triangle are equal and the third angle is greater than each of those angles by 30^0. Determine all the angles of the triangle.

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21. If one angle of a triangle is equal to the sum of the other two, show that the triangle is a right triangle.

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22. ABC is a triangle in which $\angle A = 72^0$, the internal bisectors of angles $B \, and \, C$ meet in $O.$ Find the magnitude of $\angle BOC$

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

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

25. In a ABC, $\angle ABC = \angle ACB$ and the bisectors of $\angle ABC$ and $\angle ACB$ intersect at O such that $\angle BOC = 120^0$. Show that $\angle A = \angle B = \angle C = 60^0$.

26. Can a triangle have: Two right angles? (ii) Two obtuse angles? Two acute angles (iv) All angles more than 60^0 ? All angles less than 60^0 ? (vi) All angles equal to 60^0

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27. If each angle of a triangle is less than the sum of the other two, show that the triangle is acute angled.

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28. An exterior angle of a triangle is 110^0, and one of the interior opposite angles is 30^0. Find the other two angles of the triangle.

29. The sides BC, CA and AB of a ABC, are produced in order, forming exterior angles $\angle ACD$, $\angle BAE$ and $\angle CBF$. Show that $\angle ACD + \angle BAE + \angle CBF = 360^0$
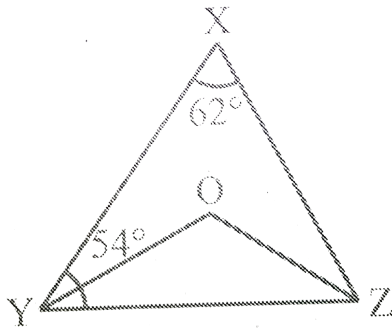
30. In Figure, if $QT \perp PR$, $\angle TQR = 40^0$ and $\angle SPR = 30^0$, find x and y.

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31. In Figure, side $QP\, and\, RQ$ of PQR are produced to point $S\, and\, T$ respectively. If $\angle SPR = 135^0 and \angle PQT = 110^0$, $f \in d \angle PRQ$

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32. In Fig. 6.40, $\angle X = 62°$, $\angle XYZ = 54°$. If YO and ZO are the bisectors of $\angle XYZ$ and $\angle XZY$ respectively of $\triangle XYZ$, find $\angle OZY$

and $\angle YOZ$.

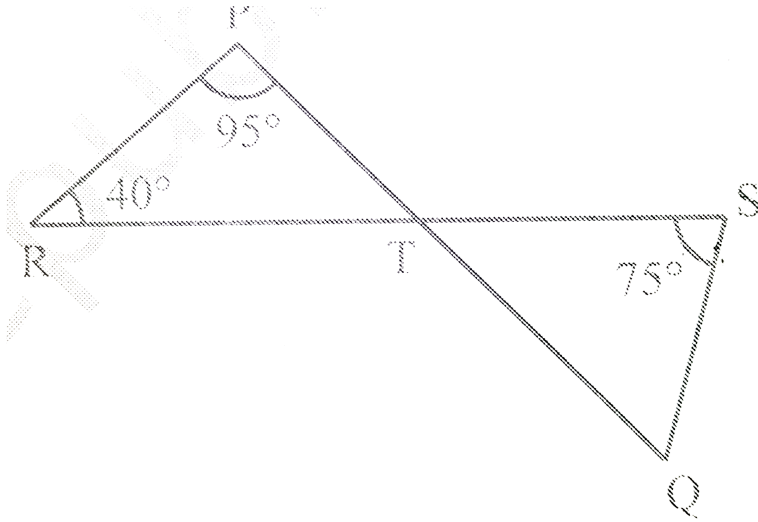> ▶ Watch Video Solution

33. In Figure, if

$AB\,DE$, $\angle BAC = 35^0\,and\,\angle CDE = 53^0$,

find $\angle DCE$.

34. In Fig. 6.42, if lines PQ and RS intersect at point T, such that $\angle PRT = 40°$, $\angle RPT = 95°$ and $\angle TSQ = 75°$, find $\angle SQT$
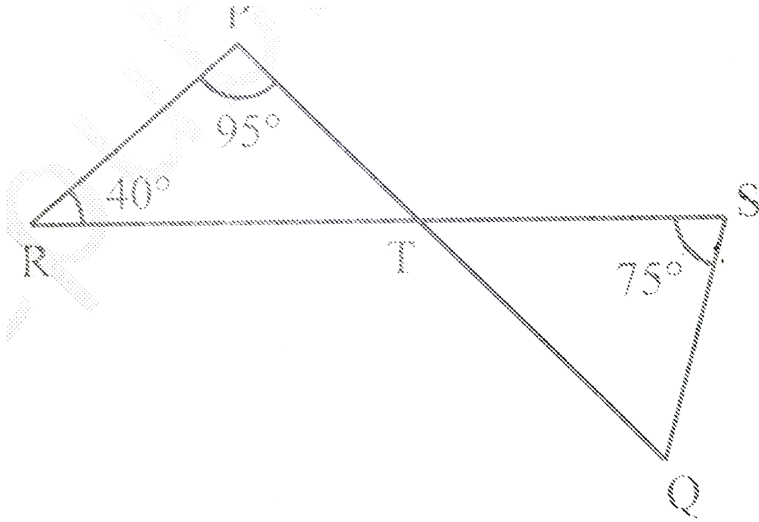
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35. In Fig. 6.42, if lines PQ and RS intersect at point T, such that $\angle PRT = 40°$, $\angle RPT = 95°$ and $\angle TSQ = 75°$, find $\angle SQT$

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36. The side BC of a ABC is produced on

both sides. Show that the sum of the exterior

angles so formed is greater than $\angle A$ by two right angles.

37. Sides BC, CA and BA of a triangle ABC are produced to D, Q, P respectively as shown in Figure. If $\angle ACD = 100^0$ and $\angle QAP = 35^0$, find all the angles of the triangle.

38. In Figure, the side BC of ABC is produced to form ray BD as shown. Ray CE is drawn parallel to BA . Show directly, without using the angle sum property of a triangle that $ACD = \angle A + \angle b$ and deduced that $\angle A + \angle B + \angle C = 180^0$.

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39. Prove that the angle between internal bisector of one base angle and the external

bisector of the other base angle of a triangle

is equal to one-half of the vertical angle.

40.   If   in   a

$\text{Delta}ABC, \dfrac{\cos A}{a} = \dfrac{\cos B}{b} = \dfrac{\cos C}{c},$ then

find the measures of angles $A, \ B, \ C.$

41. The exterior angles, obtained on producing the base of a triangle both ways are $104^0 and 136^0$. Find all the angles of the triangle.

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42. An exterior angle of a triangle is 110^0 , and one of the interior opposite angles is 30^0. Find the other two angles of the triangle.

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43. An exterior angle of a triangle is 110^0, and one of the interior opposite angles is 30^0. Find the other two angles of the triangle.

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44. Compute the value of x in each of the following figures: (ii) (iv)

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45. In Figure, AB divides $\angle DAC$ in the ratio $1 : 3 \; and \; AB = DB.$ Determine the value of x

46. ABC is a triangle. The bisector of the exterior angle at B and the bisector of $\angle C$ intersect each other at $D.$ Prove that $\angle D = \dfrac{1}{2}\angle A$

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

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48. 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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49. In Figure, AE bisects $\angle CAD$ and $\angle B = \angle C$. Prove that $AE \mid \mid BC$

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50. In a parallelogram, the bisectors of any two consecutive angles intersect at right angle.

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51. Fill in the blanks to make the following statements true: Sum of the angles of a triangle is .... An exterior angle of a triangle is equal to the two .... opposite angles. An exterior angle of a triangle is always .... than either of the interior opposite angles. A triangle cannot have more than .... right angles. A triangles cannot have more than .... obtuse angles.

52. Fill in the blanks to make the following statements true: Sum of the angles of a triangle is .... An exterior angle of a triangle is equal to the two .... opposite angles. An exterior angle of a triangle is always .... than either of the interior opposite angles. A triangle cannot have more than .... right angles. A triangles cannot have more than .... obtuse angles.

53. Define a triangle.

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54. Write the sum of the angles of an obtuse triangle.

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55. Can the sum of the two angles of a triangle be less than the third angles?

56. If the angle of a triangle are in the ratio $2:1:3$, then find the measure of smallest angle.

57. If $ABCD$ is a rectangle with $\angle BAC = 32°$, find the measure of $\angle DBC$

58. In a parallelogram $ABCD$ diagonals AC and BD intersect at O and $AC = 6.8cm$ and $BD = 13.6cm.$ Find the measures of OC and $OD.$

59. State exterior angle theorem

60. If the side BC of ABC is produced on both sides, then write the difference between the sum of the exterior angles so formed and $\angle A$

61. In a triangle ABC, if $AB = AC$ and AB is produced to D such that $BD = BC$, find $\angle ACD : \angle ADC$

62. The sum of two angles of a triangle is equal to its third angle. Determine the measure of the third angle.

63. In a rhombus $ABCD$, if $\angle ACB = 40°$, then $\angle ADB =$ (a) $70°$ (b) $45°$ (c) $50°$ (d) $60°$

64. if $ABDE$ and $BDFG$ such that $\angle FGH = 125^0$ and $\angle B = 55^0$, find $x \ and \ y$

65. side BC of ABC is produced to point D such that bisectors of $\angle ABC \ and \ \angle ACD$ meet at a point $E.$ If $\angle BAC = 68^0$, find $\angle BEC$

66. If all the three angles of a triangle are equal, then each one of them is equal to: 90^0 (b) 45^0 (c) 60^0 (d) 30^0

67. If two acute angles of a right triangle are equal, then each acute is equal to 30^0 (b) 45^0 (c) 60^0 (d) 90^0

68. An exterior angle of a triangle is equal to 100^0 and two interior opposite angles are equal. Each of these angles is equal to 75^0 (b) 80^0 (c) 40^0 (d) 50^0

69. If one angle of a triangle is equal to the sum of the other two angles, then the triangle is an isosceles triangle (b) an obtuse triangle an equilateral triangle (d) a right triangle

70. Side BC of a triangle ABC has been produced to a point D such that $\angle 120^0$. If $\angle B = \frac{1}{2}\angle A$, then $\angle A$ is equal to 80^0 (b) 75^0 (c) 60^0 (d) 90^0

71. In ABC, $\angle B = \angle C$ and ray AX bisects the exterior angle

$\angle DAC$ If $\angle DAX = 70^0$, then $\angle ACB =$

35^0 (b) 90^0 (c) 70^0 (d) 55^0

72. In a triangle, an exterior angle at a vertex is 95^0 and its one of the interior opposite angle is 55^0, then the measure of the other interior angle is 55^0 (b) 85^0 (c) 40^0 (d) 90^0

73. If the sides of a triangle are produced in order, then the sum of the three exterior angles so formed is 90^0 (b) 180^0 (c) 270^0 (d) 360^0

74. In ABC, if $\angle A = 100^0$, AD bisects $\angle A$ and $\angle AD \perp BC$. Then, $\angle B = 50^0$ (b) 90^0 (c) 40^0 (d) 100^0

75. An exterior angle of a triangle is 108^0 and its interior opposite angles are in the ratio 4:5. The angles of the triangle are 48^0, 60^0, 72^0 (b) 50^0, 60^0, 70^0 52^0, 56^0, 72^0 (d) 42^0, 60^0, 76^0

76. In a ABC, if $\angle A = 60^0$, $\angle B = 80^0$ and the bisectors of $\angle B$ and $\angle C$ meet at O, then $\angle BOC = 60^0$ (b) 120^0 (c) 150^0 (d) 30^0

77. If the bisectors of the acute angles of a right triangle meet at O, then the angle at O between the two bisectors is 45^0 (b) 95^0 (c) 135^0 (d) 90^0

78. Line segments AB and CD intersect at O such that $AC | | DB.$ If

$\angle CAB = 45^0 and \angle CDB = 55^0,$ then

$\angle BOD = 100^0$ (b) 80^0 (c) 90^0 (d) 135^0

79. The bisectors of exterior angles at B and C of $\angle ABC$ meet at O. If $\angle A = x^0$, then $\angle BOC = 90^0 + \dfrac{x^0}{2}$ (b) $90^0 - \dfrac{x^0}{2}$ $180^0 + \dfrac{x^0}{2}$ (d) $180^0 - \dfrac{x^0}{2}$

80. In a ABC, $\angle A = 50^0$ and BC is produced to a point D. If the bisectors of $\angle ABC$ and $\angle ACD$ meet at E, then $\angle E =$ 25^0 (b) 50^0 (c) 100^0 (d) 75^0

81. The side BC of ABC is produced to a point D. The bisector of $\angle A$ meets side BC in L. If $\angle ABC = 30^0$ and $\angle ACD = 115^0$, then

$\angle ALC = $ 85⁰ (b) $72\dfrac{1}{2^0}$ (c) 145⁰ (d) none of these

82. In Figure, if

$EC \mid \mid AB,\ \angle ECD = 70^0 AND \angle BDO = 20^0$

, then $\angle OBD$ is: 20⁰ (b) 50⁰ (c) 60⁰ (d) 70⁰

83. If the measures of angles of a triangle are in the ratio of $3:4:5$, what is the measure of the smallest angle of the triangle? 25^0 (b) 30^0 (c) 45^0 (d) 60^0

84. The base BC of triangle ABC is produced both ways and the measure of exterior angles formed are $94^0 and\ 126^0$. Then $\angle BAC = 94^0$ (b) 54^0 (c) 40^0 (d) 44^0