CHAPTER-8

Quadrilaterals

QUESTION BANK

(1) Three angles of a quadrilateral are 75^0, $90^0$and 75^0. The fourth angle is
(a) 90^0 (b) 95^0
(c) 105^0 (d) 120^0

(2) The side of a quadrilateral are extended in order to form exterior angles. The sum of the exterior angle is
(a) 180^0 (b) 270^0
(c) 90^0 (d) 360^0

(3) Which of the following statements is not true?
(a) A rectangle is a parallelogram
(b) A square is a parallelogram
(c) A rhombus is a rectangle
(d) A rhombus is a parallelogram

(4) If an angle of a parallelogram is two-thirds of its adjacent angle, then the smallest angle of the parallelogram is
(a) 54^0 (b) 72^0
(c) 84^0 (d) 108^0

(5) If the angles of quadrilateral are in the ratio 4 : 7 : 9 : 9 : 10, then the difference between the largest angle and the smallest angle is
(a) 72^0 (b) 54^0
(b) 36^0 (d) 18^0

(6) The consecutive angles of a parallelogram are
(a) equal (b) complimentary
(c) supplementary (d) none of these

(7) Which of the following quadrilateral is not a rhombus?
(a) All four sides are equal.
(b) Diagonals bisect each other.
(c) Diagonals bisects opposite angles.
(d) One of the angles between the two diagonals is acute.

(8) The two diagonals of a quadrilateral are always equal if it is a
(a) rectangle (b) trapezium
(c) rhombus (d) parallelogram

(9) If the opposite angles of a quadrilateral are bisected by the two diagonals, then it must be a

(a) rectangle (b) parallelogram

(c) trapezium (d) square

(10) If one of the angles of a parallelogram is 25^0 less than twice the smallest angle, then the measure of the largest angle of the parallelogram is

(a) 155^0 (b) 134^0

(c) 113^0 (d) 67^0

(11) Which of the following is not true for a parallelogram?

(a) opposite sides are equal

(b) opposite angles are equal

(c) opposite angles are bisected by the diagonals

(d) diagonals bisect each other

(12) The quadrilateral formed by joining the mid-points of the consecutive sides of a quadrilateral is

(a) parallelogram (b) rhombus

(c) rectangle (d) square

(13) The quadrilateral formed by joining the mid-points of the consecutive sides of a rectangle is a

(a) square (b) rhombus

(c) parallelogram (d) trapezium

(14) The figure obtained by joining the mid-points of the sides of a rhombus, taken in order, is

(a) a rhombus (b) a rectangle

(c) a square (d) any parallelogram

(15) The figure obtained by joining the mid-points of the adjacent sides of a square is a

(a) rhombus (b) rectangle

(c) square (d) parallelogram

(16) The figure obtained by joining the mid-points of the adjacent sides of a square is a

(a) rhombus (b) rectangle

(c) square (d) parallelogram

(17) The bisectors of the angles of a parallelogram enclose a

(a) parallelogram (b) square

(c) rectangle (d) rhombus

(18) The quadrilateral formed by joining the mid-points of the sides of a quadrilateral PQRS, taken in order, is a rectangle, if

(a) PQRS is a rectangle

(b) PQRS is a parallelogram

(c) diagonals of PQR are perpendicular

(d) diagonals of PQRS are equal

(19) The quadrilateral formed by joining the mid-points of the sides of a quadrilateral PQRS, taken in order, is a rhombus, if

(a) PQRS is a rhombus

(b) PQRS is a parallelogram

(c) Diagonals of PQRS are perpendicular

(d) Diagonals of PQRS are equal

(20) The figure formed by joining the mid-points of the sides of a quadrilateral ABCD, taken in order, is a square only if,

(a) ABCD is a rhombus

(b) diagonals of ABCD are equal

(c) diagonals of ABCD are equal and perpendicular

(d) diagonals of ABCD are perpendicular

(21) ABCD is a rhombus with $\angle ABC = 40^0$. The measure of $\angle ACD$ is

(a) 90^0 (b) 20^0 (c) 40^0 (d) 70^0

(22) ABCD is a rectangle with $\angle ABC = 32^0$. The measure of $\angle DBC$ is

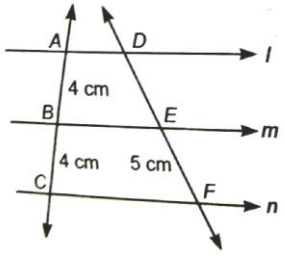
(a) 68^0 (b) 32^0 (c) 112^0 (d) 75^0

(23) ABCD is a square. The measure of $\angle BCA$ is

(a) 30^0 (b) 45^0 (c) 60^0 (d) 75^0

(24) In the given figure, *l, m, n* are three lines parallel to each other, ABC and DEF are transversal such that AB = BC = 4 cm. If EF = 5cm, then DE is

(a) 3 cm. (b) 4 cm. (c) 5 cm. (d) 6 cm.



(25) ΔABC is an isosceles triangle with BC = AC. If AC =5 cm and AB =8 cm, then length of the segment joining mid-points of AB and AC is equal to

(a) 4 cm. (b) 10 cm. (c) 6.5 cm. (d) 2.5 cm.

(26) A diagonal of a rectangle is inclined to one side of the rectangle at 25^0. The acute angle between the diagonals is

(a) 55^0 (b) 50^0 (c) 40^0 (d)25^0

(27) In a quadrilateral PQRS, diagonals PR and QS intersect at O. In which of the following cases, PQRS is a parallelogram?

(a) $\angle P = 80^0$, $\angle Q = 100^0$, $\angle R = 80^0$

(b) $\angle P = 80^0$, $\angle Q = 80^0$, $\angle R = 100^0$

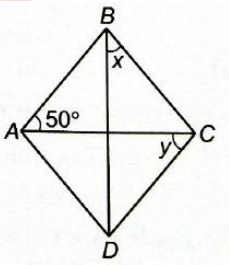
(c) PQ = 6 cm, QR = 6 cm, RS = 8 cm, SP = 8 cm.

(d) OP = 6 cm, OQ = 6 cm, OR = 5 cm, OS = 5 cm.

(28) ABCD is a rhombus such that $\angle ACB = 40^0$. Then $\angle ADB$ is

(a) 40^0 (b) 45^0 (c) 50^0 (d) 60^0

(29) In the given figure, ABCD is a rhombus with one angle $\angle BAD = 50^0$. The value of x and y respectively are



(a) $40^0, 50^0$ (b) $50^0, 40^0$ (c) $65^0, 25^0$ (d) $25^0, 65^0$

(30) If angles A, B, C and D of the quadrilateral ABCD, taken in order, are in the ratio 3 : 7 : 6 : 4, then ABCD is a

(a) rhombus (b) parallelogram

(c) trapezium (d) kite

(31) The diagonals AC and BD of a parallelogram ABCD intersect each other at the point O. if $\angle DAC = 32^0$ and $\angle AOB = 70^0$, then $\angle DBC$ is equal to

(a) 24^0 (b) 86^0 (c) 38^0 (d) 32^0

(32) D and E are the mid-points of the sides AB and AC respectively of ΔABC. DE is produced to F. To prove that CF is equal and parallel to DA, we need an additional information which is

(a) $\angle DAE = \angle EFC$ (b) AE = EF

(c) DE = EF (d) $\angle ADE = \angle ECF$

(33) If bisectors of $\angle A$ and $\angle B$ of a quadrilateral ABCD intersect each other at P, of $\angle B$ and $\angle C$ at Q of $\angle C$ and $\angle D$ at R and of $\angle D$ and $\angle A$ at S, then PQRS is a

(a) rectangle (b) rhombus

(c) parallelogram

(d) quadrilateral whose opposite angles are supplementary.

(34) If APB and CQD are two parallel lines, then the bisectors of the angles APQ, BPQ, CQP and POD from

(a) a square (b) a rhombus

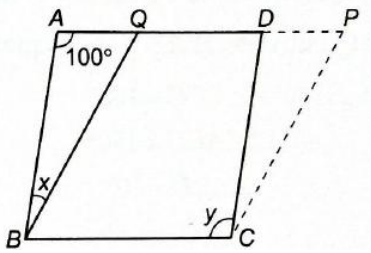
(c) a rectangle (d) any other parallelogram

(35) D and E are the mid-points of the sides AB and AC of Δ ABC and O is any point on side BC. O is joined to A. If P and Q are the mid-points of OB and OC respectively, then DEQP is

(a) a square (b) a rectangle

(c) a rhombus (d) a parallelogram

(36) In the given figure, BCPQ and BCDA are two parallelogram on the same base BC. The value of (x + y) is



(a) 130^0 (b) 140^0

(c) 115^0 (d) 120^0

(37) The sum of the angles of a quadrilateral is _____.

(38) A diagonal of a parallelogram divides it into two _____triangles.

(39) A quadrilateral is a _____if a pair of opposite sides is equal and parallel.

(40) A quadrilateral in which a pair of opposite sides is parallel is called a _____.

(41) If one angle of a parallelogram is a right angle, then it is a _____.

(42) If the consecutive sides of a parallelogram are equal, then it is a _____.

(43) If opposite angles of a quadrilateral are equal, then it is a _____.

(44) The diagonals of a rectangle are _____.

(45) The diagonals of a rhombus bisect each other at _____.

(46) The diagonals of a square are _____ and perpendicular to each other.

(47) If the diagonals of a parallelogram are equal, then it is a _____.

(48) If the diagonals of a parallelogram are perpendicular to each other, then it is a _____.

(49) If the diagonals of a parallelogram are equal and perpendicular to each other, then it is a _____.

(50) The line-segment joining the midpoints of any two sides of a triangle is _____to the third side and is _____ of it.

(51) A line drawn through the midpoint of a side of a triangle parallel to another side _____ the third side.

(52) The quadrilateral formed by joining the midpoints of the sides of quadrilateral, in order , is _____.

(53) The angle bisectors of a parallelogram enclose a _____.

(54) The line segments joining the midpoints of opposite sides of a quadrilateral _____ each other.

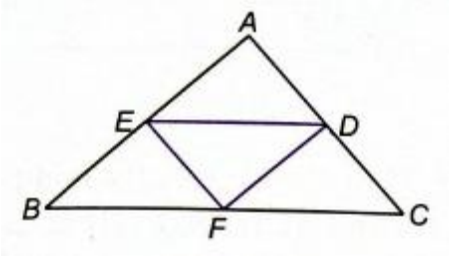
(55) The quadrilateral formed by joining the midpoints of the consecutive sides of a rectangle is a _____.

(56) A quadrilateral is a _____if a pair of opposite sides is equal and parallel.

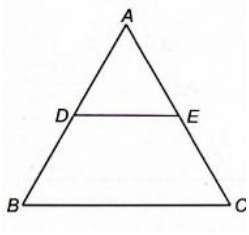
(57) A quadrilateral in which a pair of opposite sides is parallel is called a _____.

(58) The opposite angles of an isosceles trapezium are _____.

(59) In figure D, E and F are the mid-points of the sides AC, AB and BC of a ΔABC. If AB = 4.2 cm, BC = 5.6 cm and AC = 3.6 cm, then find the perimeter of ΔDEF.



(60) In ΔABC, AD = DB and AE = EC. If BC = 5.6 cm, then find DE.



(61) The angles of quadrilateral are in the ratio 1 : 3 : 5 : 6. Find its smallest angle.

(62) Can the angles 110^0, 80^0, 70^0 and 95^0 be the angles of a quadrilateral? Why or why not?

(63) Can all the four angles of a quadrilateral be obtuse angles? Give reason for your answer.

(64) Can all the angles of a quadrilateral be acute angles? Give reason for your answer.

(65) Can all the angles of a quadrilateral be right angles? Give reason for your answer.

(66) Diagonals of a parallelogram are perpendicular to each other. Is this statement true? Give reason for your answer.

(67) ABCD is a parallelogram. If its diagonals are equal, then find the value of $\angle ABC$.

(68) Diagonals of a rhombus are equal and perpendicular to each other. Is this statement true? Give reason for your answer.

(69) Three angles of a quadrilateral ABCD are equal. Is it a parallelogram?

(70) Diagonals AC and BD of a quadrilateral ABCD intersect each other at O such that OA : OC = 3 : 2. Is ABCD a parallelogram? Why or why not?

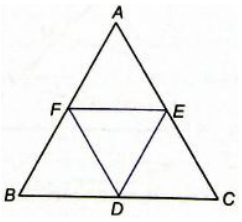
(71) Diagonals AC and BD of a parallelogram ABCD intersect each other at O. If OA = 3 cm and OD = 2 cm, determine the lengths of AC and BD.

(72) Diagonals of a quadrilateral ABCD bisect each other. If $\angle A = 36^0$, determine $\angle B$.

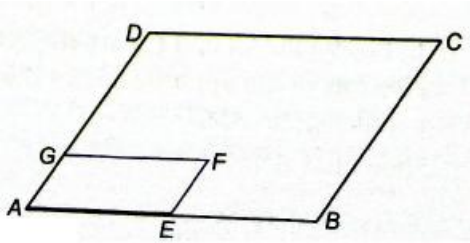
(73) Opposite angles of a quadrilateral ABCD are equal. If AB = 4 cm, determine CD.

(74) In ΔABC, AB = 5 cm, BC = 8cm and CA = 7 cm. If D and E are respectively the mid-points of AB and BC, determine the length of DE.

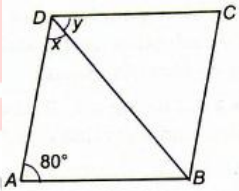
(75) In figure, it is given that BDEF and FDCE are parallelograms. Can you say that BD=CD? Why or why not?



(76) In Figure ABCD and AEFG are two parallelogram. If $\angle C = 55^0$, determine $\angle F$.

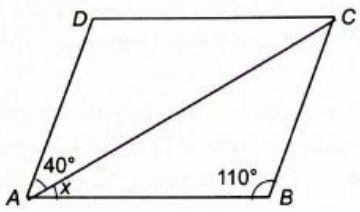


(77) In figure, ABCD is a rhombus. Find the values of x and y.

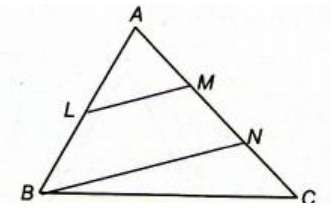


(78) The angles of quadrilateral are in the ratio 1 : 3 : 5 : 6. Find its smallest angle.

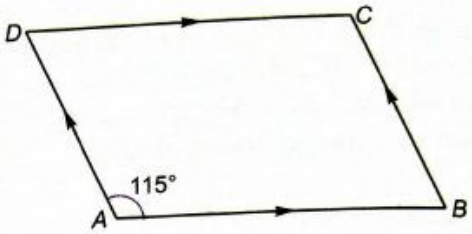
(79) In figure, ABCD is a parallelogram with $\angle B = 110^0$. Find the value of x.



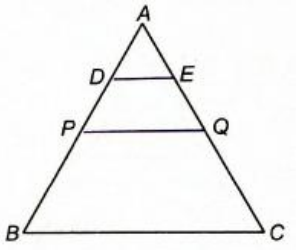
(80) In figure, ABC is a triangle in which L is the mid-point of AB and N is a point on AC such that AN = 2CN. A line through L, parallel to BN, meets AC at M. Prove that AM = CN.



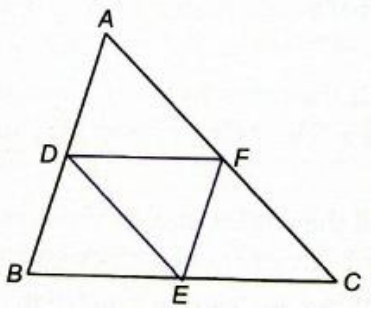
(81) In figure, ABCD is a parallelogram in which $\angle A = 115^0$. Find $\angle B$, $\angle C$ and $\angle D$.



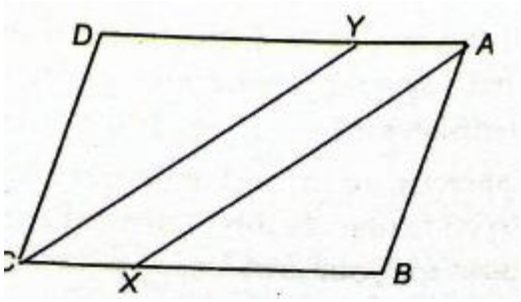
(82) In figure, P and Q are the mid-point of the sides AB and AC respectively of ΔABC. Also, D and E are the mid-points of AP and AQ respectively. If DE = 2.3 cm, then find the length of BC.



(83) In Δ ABC of figure, D, E and F are mid-points of sides AB, BC and CA. If AB = 6 cm, BC = 7.2 cm and AC = 7.8 cm, find the perimeter of ΔDEF.

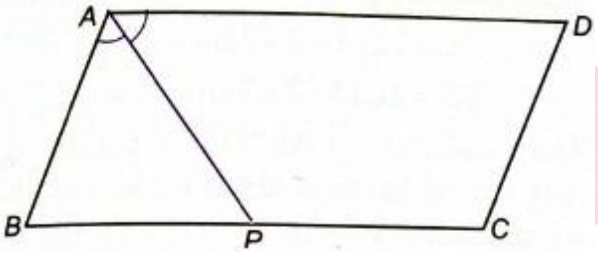


(84) In figure AX and CY are respectively the bisectors of the opposite angles A and C of a parallelogram ABCD. Show that AX ||CY.



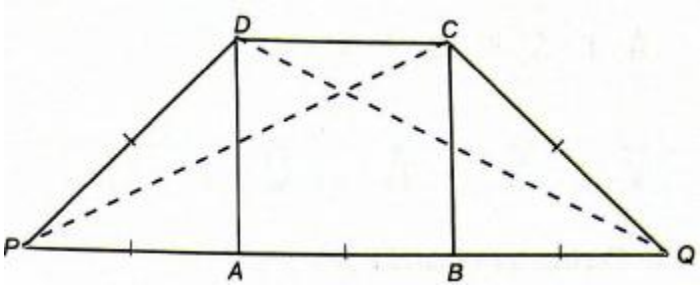
(85) E and F are points on diagonal AC of a parallelogram ABCD such that AE = CF. Show that BFDE is a parallelogram.

(86) In figure. P is the mid-point of side BC of a parallelogram ABCD such that ∠BAP = ∠DAP. Prove that AD = 2 CD.

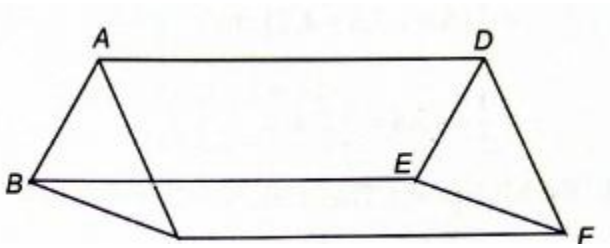


(87) ABCD is a quadrilateral in which AB||DC and AD = BC. Prove that ∠A = ∠B and ∠C = ∠D.

(88) In figure, ABCD is a square. Side AB is produced to points P and Q in such a way that PA = AB = BQ. Prove that DQ = CP.



(89) In figure. AB||DE, AB = DE, AC||DF and AC=DF. Prove that BC||EF and BC= EF.



(90) A diagonal of a parallelogram bisects one of its angles. Show that it is a rhombus.

(91) ABCD is a rectangle in which diagonal BD bisects ∠B. Show that ABCD is a square.

(92) Prove that the diagonal of a parallelogram divides it into two congruent triangles.

(93) The angle between two altitudes of a parallelogram through the vertex of an obtuse angles of the parallelogram is 60^0. Find the angles of the parallelogram.

(94) ABCD is a rhombus in which altitude from D to side AB bisects AB. Find the angles of the rhombus.

(95) A square is inscribed in an isosceles right triangle so that the square and the triangle have one angle common. Show that the vertex of the square opposite the vertex of the common angle bisects the hypotenuse.

(96) In a parallelogram ABCD, AB = 10cm and AD = 6 cm. The bisector ∠A meet DC is E. AE and BC produced meet at F. Find the length of CF.

(97) PQRS is a quadrilateral whose diagonals bisect each other at right angles. Prove that PQRS is a rhombus.

(98) P, Q, R and S are respectively the mid-points of the sides AB, BC, CD and DA of a quadrilateral ABCD in which AC = BD. Prove that PQRS is a rhombus.

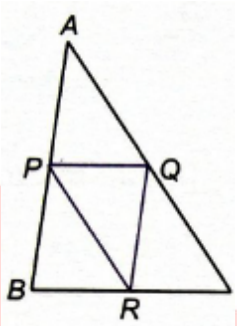
(99) P, Q, R and S are respectively the mid-points of the side AB, BC, CD and DA of a quadrilateral ABCD such that AC ⊥ BD. Prove that PQRS is a rectangle.

(100) P, Q, R and S are respectively the mid-points of side AB, BC, CD and DA of quadrilateral ABCD in which AC = BD and AC ⊥ BD. Prove that PQRS is a square.

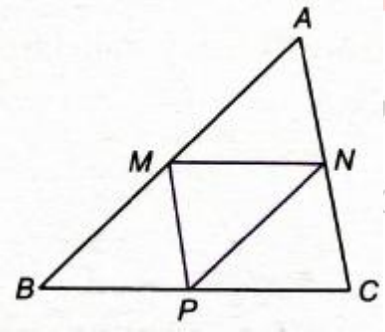
(101) PQ and RS are two equal and Parallel line-segments. Any point M not lying on PQ or RS is joined to Q and S and lines through P parallel to QM and through R parallel to SM meet at N. Prove that line segments MN and PQ are equal and parallel to each other.

(102) Prove that the diagonal of a parallelogram divides it into two congruent triangles.

(103) In figure, P, Q, R are the mid points of AB, BC and AC respectively. If AB = 10 cm, BC = 8 cm and AC = 12 cm, find the perimeter of ΔPQR.

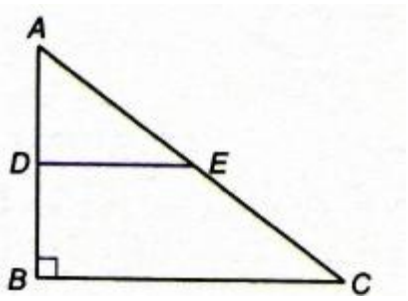


(104) In figure, M, N and P are the mid points of AB, AC and BC respectively. If MN = 3cm, NP = 3.5 cm and MP = 2.5 cm, calculate AB, BC and AC.



(105) In ΔABC, P, Q and R are the mid points of sides BC, CA and AB respectively. If AC = 21 cm, BC = 29 cm, and AB = 30 cm, find the perimeter of the quadrilateral ARPQ.

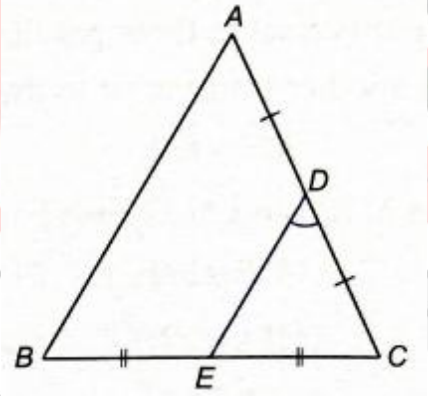
(106) In figure, ΔABC is right angled at B. If AB = 9 cm, AC= 15 cm and D, E are the mid points of AB and AC respectively, find (i) length of BC (ii) area of ΔADE.



(107) In ΔABC, $\angle A = 50^0$, $\angle B = 60^0$ and $\angle C = 70^0$. Let D, E and F be the mid-points of the sides BC, CA and AB respectively. Find the measures of the angles of ΔDEF.

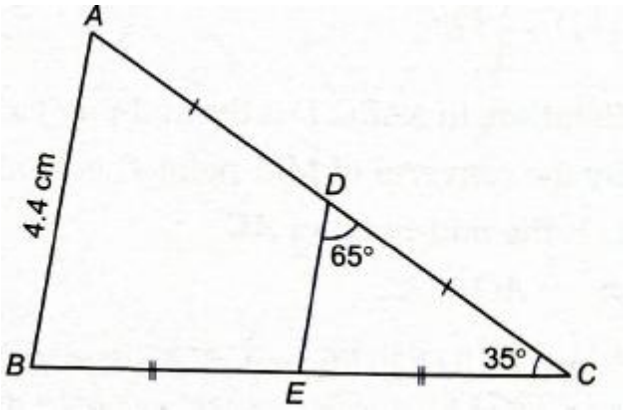
(108) In figure. $\angle CDE = 55^0$ and DE = 2.1 cm. Find

(i) $\angle BAC$ (ii) length of AB.



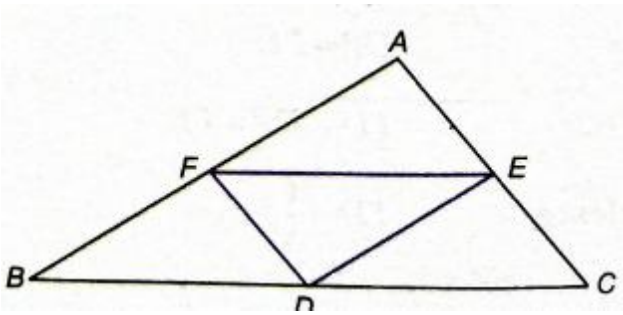
(109) In figure, in ΔABC, D and E are the mid-points of AC and BC respectively. Find

(i) $\angle ABC$ (ii) length DE.

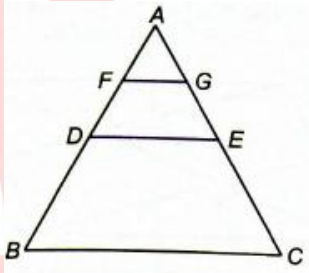


(110) In Fig. in ΔABC, D, E and F are the mid-points of BC, CA and AB respectively. Given BD = 3.5 cm, AC = 3.8 cm and DE=2.7 cm, find the lengths of

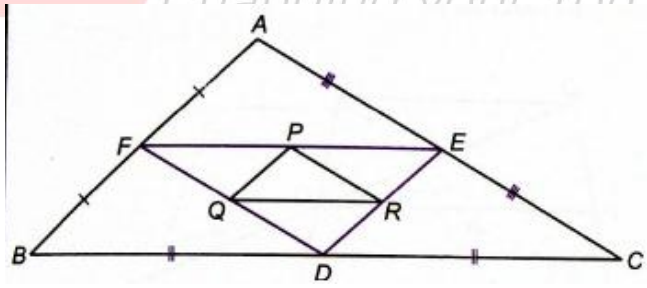
(i) FE (ii) FD (iii) AF (iv) AB



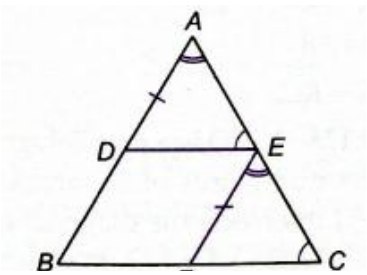
(111) In figure, in ΔABC, D and E are the mid-points of AB and AC respectively. F and G are the mid-points of AD and AE respectively. If BC= 6.4 cm, find FG.



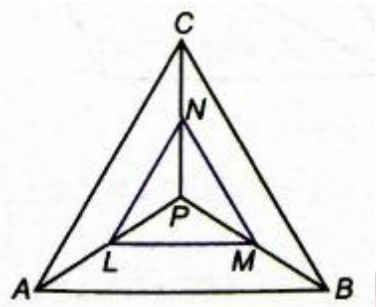
(112) In figure, in ΔABC, D, E and F are the mid-points of BC, CA and AB respectively. P, Q an R are the mid-points of EF, FD and DE respectively. If AB = 3.6 cm, BC= 6.8 cm and CA = 4.8 cm, find the sides of the ΔPQR.



(113) In figure, D is the mid point of AB. DE || BC and EF||AB. Prove that DE = $\frac{1}{2}$ BC and CE = AE.

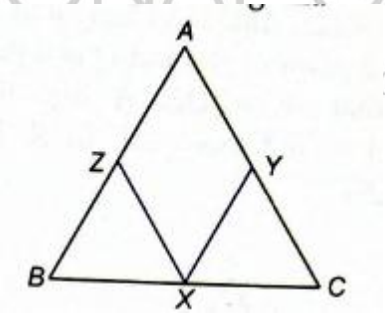


(114) In figure L, M and N are the mid-points of AP, BP and CP respectively. Prove that the triangle ABC and LMN are equiangular.

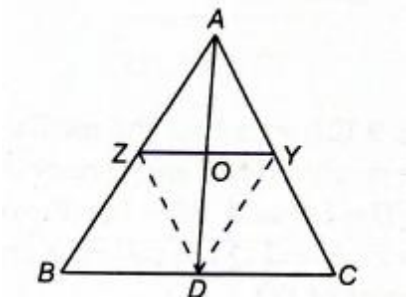


(115) Prove that in a right angled triangle, mid-point of the hypotenuse is equidistant from the vertices.

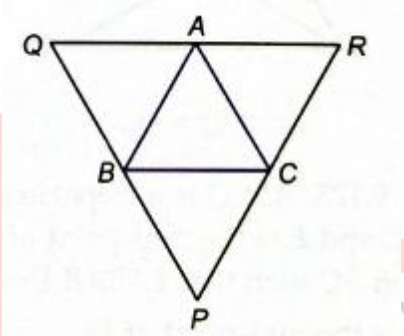
(116) X,Y, Z are mid-points of the sides BC, CA and AB of ΔABC as shown figure. Prove that AZXY is a parallelogram.



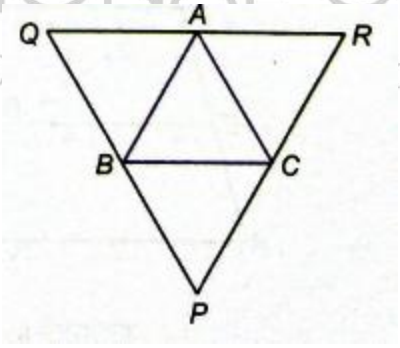
(117) Y and Z are the mid-points of the sides CA and AB of a ΔABC as shown figure. If AD is the median, prove that ZO= YO.



(118) Given ΔABC, lines are drawn through A, B and C respectively parallel to the sides BC, CA and AB forming ΔPQR. Show that BC = $\frac{1}{2}$ QR.



(119) In figure, ABC is a triangle and through A, B, C lines are drawn parallel to BC, CA and AB respectively intersecting at P, Q and R. Prove that perimeter of ΔPQR is double the perimeter of ΔABC.



(120) In a ΔABC, points M and N on sides AB and AC respectively are taken so that AM = $\frac{1}{4}$ AB and AN = $\frac{1}{4}$ AC. Prove that MN = $\frac{1}{4}$ BC.