# QUESTION BANK

## EXERCISE - 1

**Q.1** Show that the angles of an equilateral triangle are 60° each.

**Q.2** Show that of all line segments drawn from a given point not on it, the perpendicular line segment is the shortest.

**Q.3** Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of Δ PQR (fig. Q.3) Show that (i) Δ ABM ≅ Δ PQN (ii) Δ ABC ≅ Δ PQR

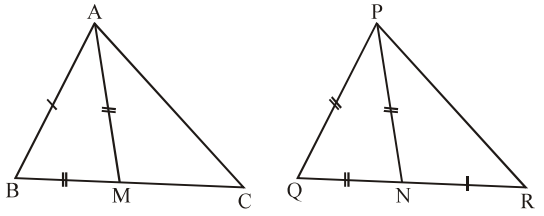



**Figure Q.3**

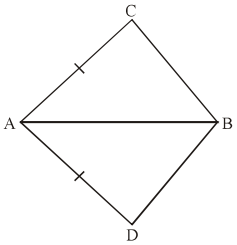



**Figure Q.5**

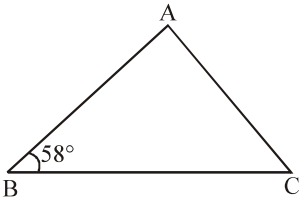



**Figure Q.7**

**Q.4** In triangle ABC, the external bisector of vertical angle A is parallel BC. Prove that the triangle APQ is an isosceles.

**Q.5** In Quadrilateral ABCD, AC = AD and AB bisects ∠ A (figure Q.5).
Show that Δ ABC ≅ Δ ABD. What can you say about BC and BD ?

**Q.6** Show that in a right angled triangle, the hypotenuse is the longest side.

**Q.7** In figure (Q.7), AB = AC and ∠ B = 58° then find ∠ A.

**Q.8** ABCD is a square. E and F are points on sides AD and BC respectively such that AF = BE.
(i) ∠ BAF = ∠ ABE (ii) ∠ BF = ∠ AE

**Q.9** In Δ ABC and Δ DEF, AB = DF, BC = DE, AC = EF and ∠ D = 55°. Find ∠ B.

**Q.10** In a triangle, if one angle is greater then the sum of other two angles, prove that it is an obtuse angled triangle.

**Q.11** In a Δ ABC, AM ⊥ BC and AN is the bisector of ∠ A. If LB = 65° and ∠ C = 33°. Find ∠ MAN.

**Q.12** In each angle of a triangle is less than the sum of the other two, prove that the triangle is acute triangle.

**Q.13** From the adjoining figure, prove that (i) BD = AC (ii) DO = CO

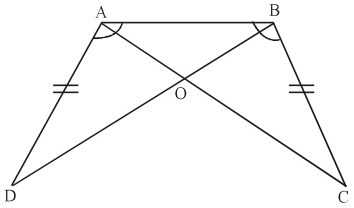



**Figure Q.13**

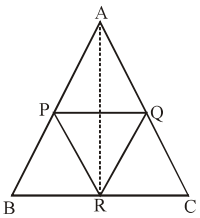



**Figure Q.14**

**Q.14** In the diagram, P, Q and R are the mid-points of AB, AC and BC respectively and AB = AC. Prove that–
(i) Δ PBR and Δ QRC are congruent. (ii) ∠ APR = ∠ AQR (iii) AR and PQ bisect each other at right angles.

## EXERCISE - 2

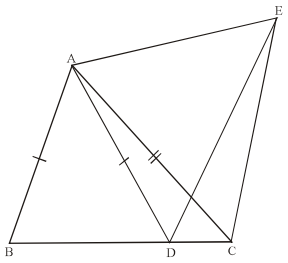



**Figure Q.1**

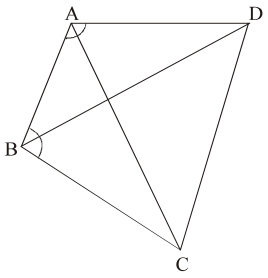



**Figure Q.2**

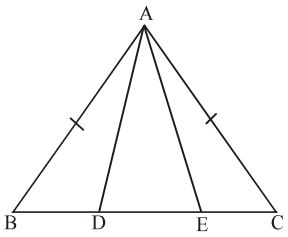



**Figure Q.3**

**Q.1** In figure Q.1, AC = AE, AB = AD and $\angle$ BAD = $\angle$ EAC. Show that BC = DE.

**Q.2** ABCD is a quadrilateral in which AD = BC and $\angle$ DAB = $\angle$ CBA (figure Q.2). Prove that (i) $\Delta$ ABD $\cong$ $\Delta$ BAC (ii) BD = AC (iii) $\angle$ ABD = $\angle$ BAC

**Q.3** In an isosceles triangle ABC with AB = AC, D and E are points on BC such that BE = CD (figure Q.3). Show that AD = AE.

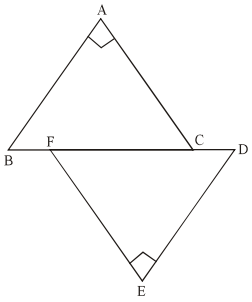



**Figure Q.4**

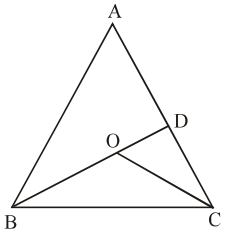



**Figure Q.5**

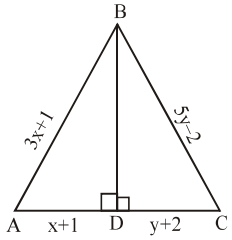



**Figure Q.7**

**Q.4** In figure Q.4, BA $\perp$ AC and DE $\perp$ EF such that BA = DE and BF = DC. Prove that AC = EF.

**Q.5** In figure Q.5, O is any point in the interior of $\Delta$ ABC. Show that AB + AC > OB + OC.

**Q.6** Prove that the sum of three alitutdes of a triangle is less than the perimeter of the triangle.

**Q.7** In the triangle ABC given (figure Q.7), BD bisects angle B and is perpendicular to AC. If the lengths of the sides of the triangle are expressed in terms of x and y as shown, find the values of x and y.

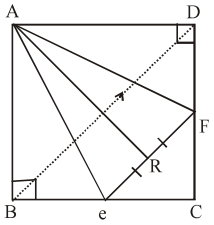



**Figure Q.9**

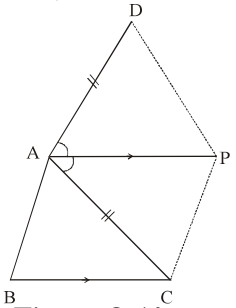



**Figure Q.10**

**Q.8** AD is a median of triangle ABC. Prove that AB + AC > 2AD.

**Q.9** ABCD is a square (figure Q.9) and EF is parallel to BD. R is the mid point of EF. Prove that (i) BE = DF (ii) AR bisects angle BAD (iii) If AR is produced it will pass through C.

**Q.10** P is any point on the bisector of exterior angle A of a triangle ABC (figure Q.10). If AD is cut off, from BA produced, prove that **(i)** PD = PC **(ii)** BP + PC > BD **(iii)** PB + PC > AB + AC.

## EXERCISE - 3

**Fill in the blanks**

**Q.1** In $\Delta$ ABC, $\angle$ A > $\angle$ B and $\angle$ B > $\angle$ C, then smallest side is .....

**Q.2** If $\angle$ C is right angle in $\Delta$ ABC, then larger side is .....

**Q.3** The angles opposite of equal sides of a triangle are .....

**Q.4** Sum of the angles of a quadrilateral is equal to ..... right angles.

**Q.5** Two circles of the same radii are .....

**Q.6** If two angles and the included side of one triangle are equal to two angles and the included side of the other triangle, then the two triangles are .....

**Q.7** Angles opposite to equal sides of a triangle are .....

**Q.8** In a triangle, angle opposite to the longer side is .....

**Q.9** Sum of any two sides of a triangle is greater than the ..... side.

**True-False statements –**

**Q.10** If the sides of triangle are 3, 4 and 5, and 5, then are greatest angle is opposite to the side 5 untis.

**Q.11** If two sides of a triangle are unequal, the greater side has the greater angle opposite to it.

**Q.12** Scalene triangle may be an acute-angled triangle.

**Q.13** An isosceles triangle may be a right angled triangle.

**Q.14** An obtuse angled triangle may be an equilateral triangle.

**Q.15** A right angled triangle may be a scalene triangle.

**Q.16** The angles of a triangle are in the ratio 2 : 1 : 3 triangle is a right angled triangle.

**Q.17** In a triangle ABC, right angled at B, BD is drawn perpendicular to AC. $\angle$ ABD = $\angle$C.

**Q.18** O is a point inside the triangle ABC.
$\angle$ BOC = $\angle$ BAC + $\angle$ ABO + $\angle$ ACO.

## EXERCISE - 4

**Q.1** If the perpendiculars drawn from the midpoint on one side of a triangle to its other two sides are equal, then triangle is –
(A) Equilateral (B) Isosceles (C) Equi angular (D) Scalene

**Q.2** In a isosceles triangle AB = AC and BA is produced to D, such that AB = AD then $\angle$ BCD is –
(A) 70° (B) 90° (C) 60° (D) 45°

**Q.3** If two sides of a triangle are unequal then opposite angle of larger side is –
(A) greater (B) less (C) equal (D) half

**Q.4** The sum of altitudes of a triangle is ..... then the perimeter of the triangle –
(A) greater (B) equal (C) half (D) less

**Q.5** In ABC, BD $\perp$ AC and CE $\perp$ AB. If BD and CE intersect at O, then $\angle$ BOC =
(A) $\angle$ A (B) 90 + A (C) 180 + $\angle$ A (D) 180 – $\angle$ A

**Q.6** If the three altitudes of a $\Delta$ are equal then triangle is
(A) isosceles (B) equilateral (C) right angled (D) none

**Q.7** In a $\Delta$ XYZ, LM || YZ and bisectors YN and ZN of $\angle$Y and $\angle$ Z respectively meet at N on $\angle$ M then YL+ZM=
(A) YZ (B) XY (C) XZ (D) LM

**Q.8** If D is any point on the side BC of a $\Delta$ ABC, then –
(A) AB + BC + CA > 2 AD (B) AB+ BC + CA < 2AD
(C) AB + BC + CA > 3AD (D) None

**Q.9** In a right angled triangle. One acute angle is double the other then the hypotenuse is –
(A) Equal to smallest side (B) Double the smallest side
(C) Triple the smallest side (D) None of these

**Q.10** P and Q are the mid-points of the sies AB and BC respectively of the triangle ABC, right angled at B. Then –
(A) $AQ^2 + CP^2 = AC^2$ (B) $AQ^2 + CP^2 = (4/5)\,AC^2$
(C) $AQ^2 + CP^2 = (4/3)\,AC^2$ (D) $AQ^2 + CP^2 = (5/4)\,AC^2$

**Q.11** Each angle of an equilateral triangle is –
(A) 60° (B) 45° (C) 90° (D) 30°

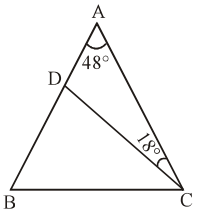


**Figure Q.12**

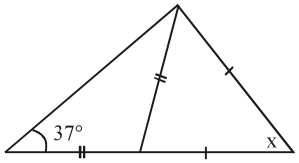


**Figure Q.13**

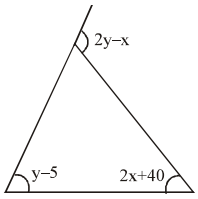


**Figure Q.14**

**Q.12** In the figure, AB = AC, ∠ A = 48 and ∠ ACD =18°. BC equal to –
(A) AC (B) CD (C) BD (D) AB

**Q.13** x, in figure, shown is –
(A) 25° (B) 45° (C) 32° (D) 38°

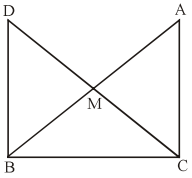
**Q.14** In figure, value y, if x = 5° is –
(A) 50° (B) 60° (C) 65° (D) 45°

**Q.15** In a triangle ABC, ∠ A + ∠ B = 144° and ∠ A + ∠ C = 124° ∠ B = ?
(A) 56° (B) 60° (C) 65° (D) 45°

## EXERCISE - 5

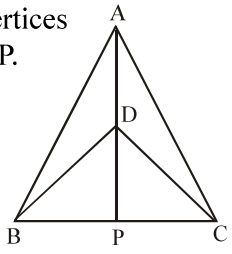
**Match the column–**Statements (A,B,C,D) in **column I** have to be matched with statements (p, q, r, s) in **column II**.

**Q.1** In right triangle ABC, right angled at C, M is the mid-point of hypotenuse AB. C is joined to M and produced to a point D such that DM = CM. Point D is joined to point B (fig.), match them correctly.




| **Column I** | **Column II** |
|---|---|
| (A) Δ AMC | (p) congruent Δ BMD |
| (B) ∠ DBC | (q) a right angle |
| (C) Δ DBC | (r) congruent Δ ACB |
| (D) CM | (s) (1/2) AB |

**Q.2** Δ ABC and Δ DBC are two isosceles triangles on the same base BC and vertices A and D are on the same side of BC (fig). If AD is extended to intersect BC at P.




| **Column I** | **Column II** |
|---|---|
| (A) Δ ABD | (p) congruent Δ ACD |
| (B) Δ AMP | (q) congruent Δ ACP |
| (C) AP bisects | (r) ∠ A |
| (D) AP is the perpendicular bisector | (s) BC |

## ANSWER KEY

**EXERCISE 1 : (7)** 64° **(9)** 55° **(11)** 16° **EXERCISE 2 : (7)** x = 4, y = 3

**EXERCISE 3 : (1)** AB **(2)** AB **(3)** Equal **(4)** 4 **(5)** Congruent **(6)** Congruent **(7)** equal
**(8)** larger **(9)** third **(10)** True **(11)** True **(12)** True **(13)** True
**(14)** False **(15)** True **(16)** True **(17)** True **(18)** True

**EXERCISE - 4**

| Q | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | B | A | D | D | B | D | A | B | D | A | B | C | A | A |

**EXERCISE 5 : (1)** (A) → p (B) → q (C) → r (D) → s ; **(2)** (A) → p (B) → q (C) → r (D) → s