

CDS 1 2025

LIVE

MATHS

GEOMETRY - 1

MCQS

NAVJYOTI SIR

SSBCrack

Crack
EXAMS



03 Feb 2025 Live Classes Schedule

- ✓ 9:00AM --- 03 FEBRUARY 2025 DAILY DEFENCE UPDATES --- DIVYANSHU SIR
- ✓ 10:00AM --- 03 FEBRUARY 2025 DAILY CURRENT AFFAIRS --- RUBY MA'AM

AFCAT 1 2025 LIVE CLASSES

- 12:30PM --- REASONING - DIRECTION & DISTANCE --- RUBY MA'AM
- 3:00PM --- STATIC GK - RIVERS, DAMS & RESERVOIRS IN INDIA --- DIVYANSHU SIR

NDA 1 2025 LIVE CLASSES

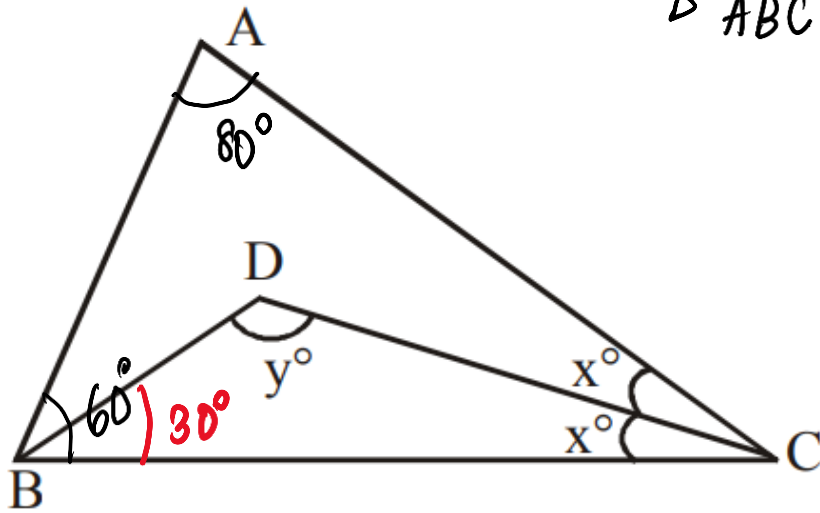
- ✓ 10:00AM --- MATHS - PERMUTATION & COMBINATION - CLASS 1 --- NAVJYOTI SIR
- ✓ 11:30AM --- MODERN HISTORY - CLASS 4 --- RUBY MA'AM
- ✓ 1:00PM --- PHYSICS - GRAVITATION & HYDROSTATICS --- NAVJYOTI SIR

CDS 1 2025 LIVE CLASSES

- ✓ 11:30AM --- MODERN HISTORY - CLASS 4 --- RUBY MA'AM
- ✓ 1:00PM --- PHYSICS - GRAVITATION & HYDROSTATIC --- NAVJYOTI SIR
- ✓ 5:30PM --- MATHS - GEOMETRY - CLASS 1 --- NAVJYOTI SIR



Q) In the figure given below, $\angle A = 80^\circ$ and $\angle ABC = 60^\circ$. BD and CD bisect angles B and C respectively. What are the values of x and y respectively ?



- (a) 10 and 130
- (b) 10 and 125
- (c) 20 and 130
- (d) 20 and 125

$$\triangle ABC, \quad \angle C = 180^\circ - (80^\circ + 60^\circ) \quad (\text{Angle sum property})$$

$$= 40^\circ$$

$$x^\circ = 20^\circ \quad (\text{DC bisects } \angle C)$$

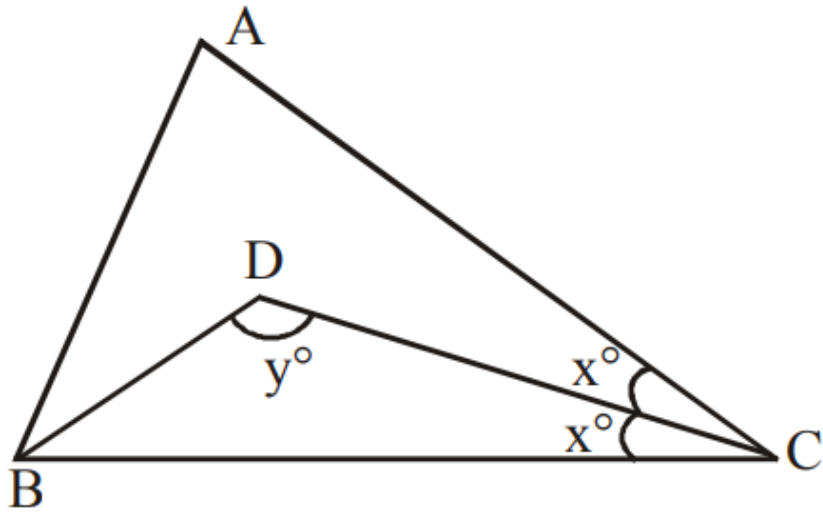
$$\angle DBC = 30^\circ \quad (\text{BD bisects } \angle B)$$

$$\triangle DBC,$$

$$30^\circ + y^\circ + x^\circ = 180^\circ$$

$$y = 180^\circ - (30^\circ + 20^\circ) = 130^\circ$$

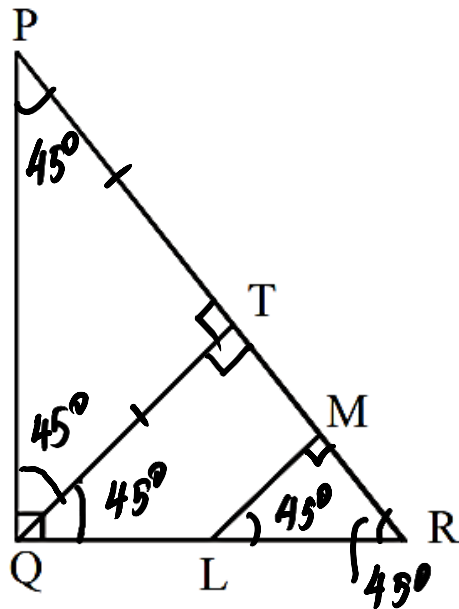
Q) In the figure given below, $\angle A = 80^\circ$ and $\angle ABC = 60^\circ$. BD and CD bisect angles B and C respectively. What are the values of x and y respectively ?



- (a) 10 and 130 (b) 10 and 125
(c) 20 and 130 (d) 20 and 125

Ans: (c)

Q) In the figure given below, PQR is a non-isosceles right-angled triangle, right angled at Q. If LM and QT are parallel and $QT = PT$, then what is $\angle RLM$ equal to ?



- (a) $\angle PQT$
- (b) $\angle LRM$
- (c) $\angle RML$
- (d) $\angle QPT$

$\triangle PQT$,
 $PT = QT$ ($\angle PQT = 90^\circ$)

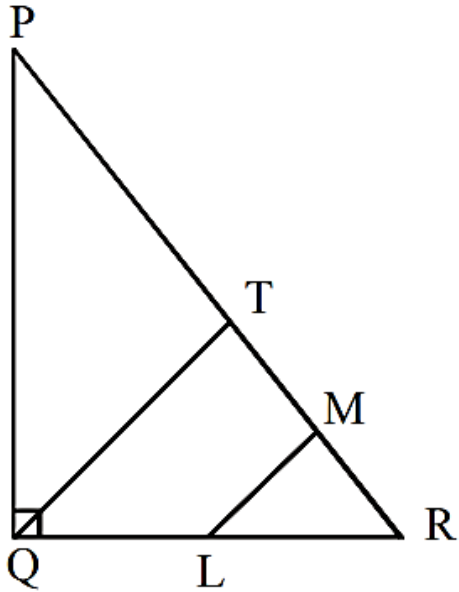
Line segment from vertex having 90° on hypotenuse is perpendicular to it.

$\triangle LMR$

$\angle RLM = 45^\circ =$

Ans. (a) / (b) / (d)

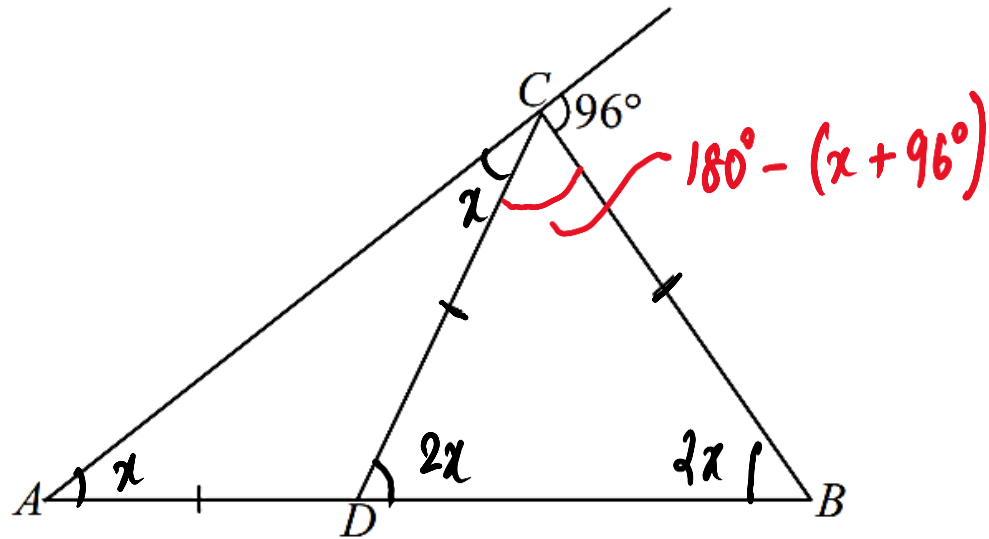
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- (a) $\angle PQT$ (b) $\angle LRM$
(c) $\angle RML$ (d) $\angle QPT$

Ans: (b)

Q)



$$\angle CDB = \angle ACD + \angle CAD$$

$$\angle CDB = x + x = 2x$$

$\triangle CDB$,

$$CD = BC \quad ; \quad \angle CDB = \angle CBD = 2x$$

In the figure given above, $AD = CD = BC$. What is the value of $\angle CDB$

- (a) 32°
- (b) 64°
- (c) 78°

$$2x + 2x + (180^\circ - x - 96^\circ) = 180^\circ$$

$$3x + 84 = 180^\circ$$

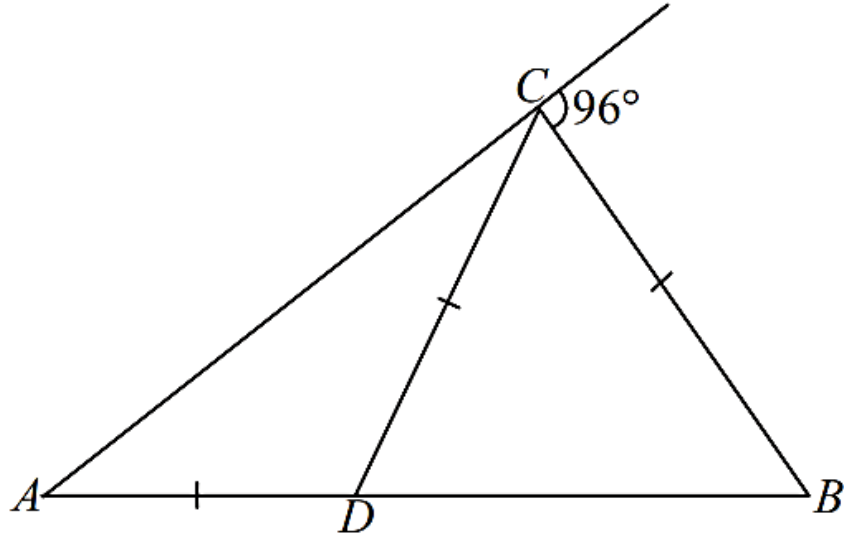
$$3x = 96^\circ \quad \Rightarrow \quad \underline{x = 32^\circ}$$

$$\angle CDB = 2x$$

$$= 2 \times 32^\circ$$

$$= 64^\circ$$

Q)



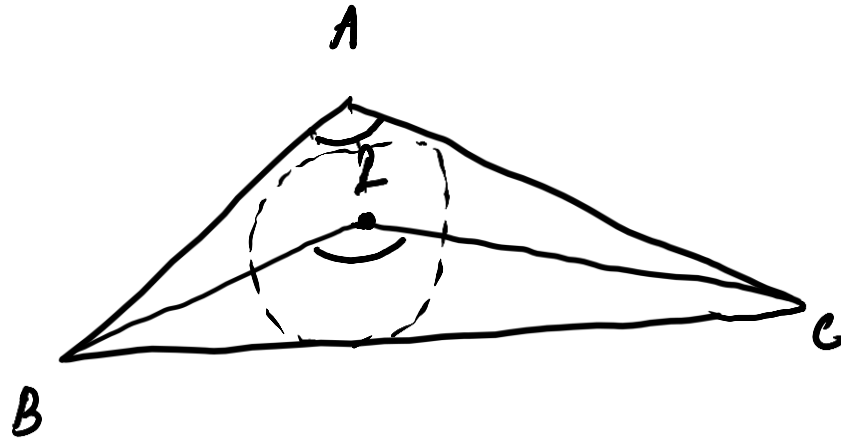
In the figure given above, $AD = CD = BC$. What is the value of $\angle CDB$

- (a) 32°
- (b) 64°
- (c) 78°

Ans: (b)

Q) If the bisectors BI and CI of the angles B and C of a $\triangle ABC$ meet at the point I , then what is $\angle BIC$ equal to?

- (a) $2A$ (b) $90^\circ + \frac{A}{2}$
(c) $90^\circ - \frac{A}{2}$ (d) $90^\circ + A$



When angle bisectors meet,

$$\angle BIC = 90^\circ + \frac{\angle A}{2}$$

I works as in-centre.

Q) If the bisectors BI and CI of the angles B and C of a $\triangle ABC$ meet at the point I , then what is $\angle BIC$ equal to?

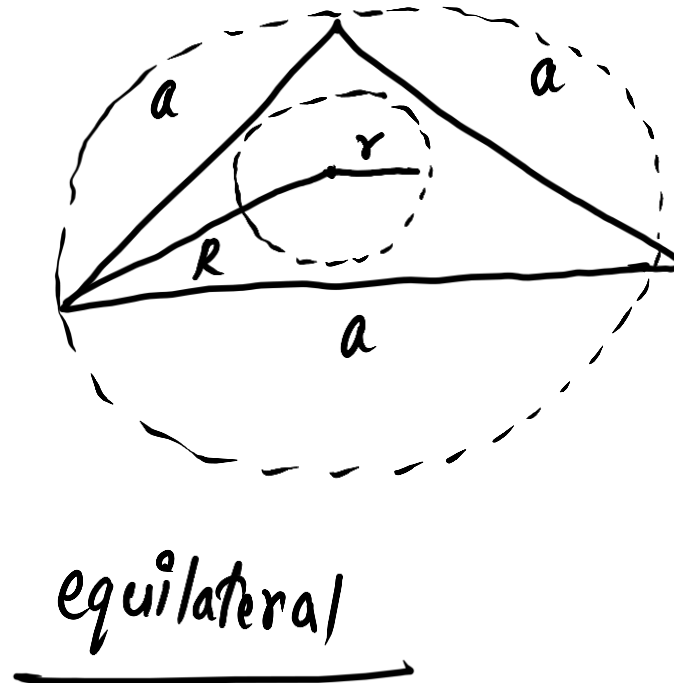
- (a) $2A$ (b) $90^\circ + \frac{A}{2}$
- (c) $90^\circ - \frac{A}{2}$ (d) $90^\circ + A$

Ans: (b)

Q) For a triangle, the radius of the circumcircle is double the radius of the inscribed circle, then which one of the following is correct ?

- (a) The triangle is a right-angled
- (b) The triangle is an isosceles
- (c) The triangle is an equilateral
- (d) None of the above

$$\underline{R = 2r}$$



$$r = \frac{a}{\sqrt{3}} ; R = \frac{2a}{\sqrt{3}}$$

Q) For a triangle, the radius of the circumcircle is double the radius of the inscribed circle, then which one of the following is correct ?

- (a) The triangle is a right-angled
- (b) The triangle is an isosceles
- (c) The triangle is an equilateral
- (d) None of the above

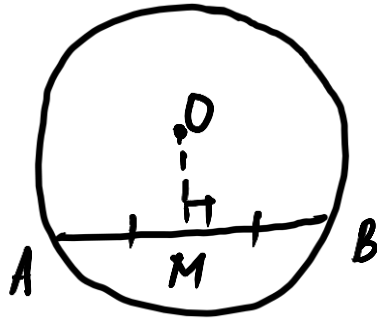
Ans: (c)

Q) Consider the following statements

- I. The perpendicular bisector of a chord of a circle does not pass through the centre of the circle.
- II. The angle in a semi-circle is a right angle.

Which of the statements given above is/are correct?

- | | |
|-------------------|----------------------|
| (a) Only I | (b) Only II |
| (c) Both I and II | (d) Neither I nor II |



Q) Consider the following statements

- I. The perpendicular bisector of a chord of a circle does not pass through the centre of the circle.
- II. The angle in a semi-circle is a right angle.

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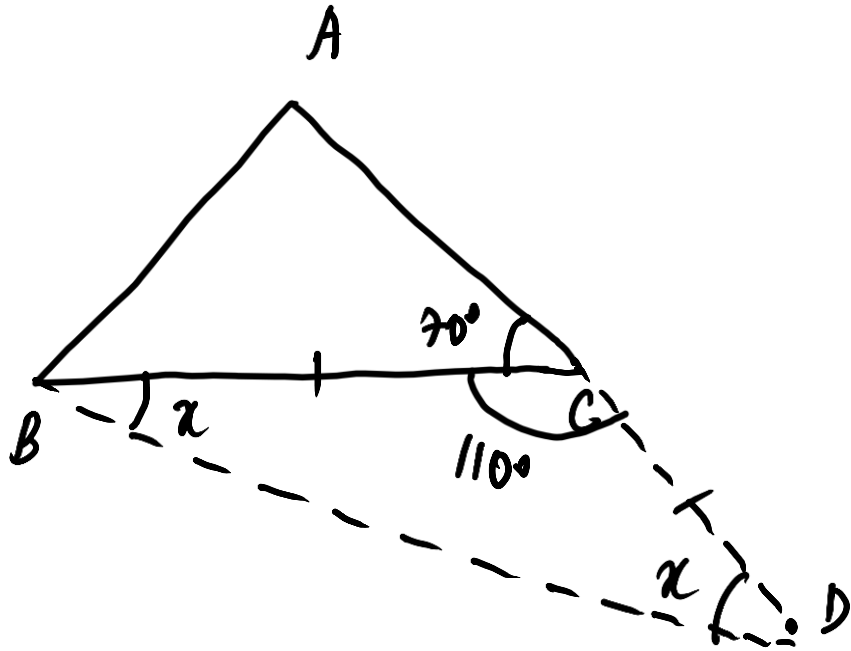
- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

Ans: (b)

Q) The side AC of a $\triangle ABC$ is produced to D such that $BC = CD$. If $\angle ACB$ is 70° , then what is $\angle ADB$ equal to?

- (a) 35°
(c) 70°

- (b) 45°
(d) 110°



$$110^\circ + 2x = 180^\circ$$

$$2x = 70^\circ$$

$$x = \frac{70^\circ}{2} = 35^\circ$$

Q) The side AC of a $\triangle ABC$ is produced to D such that $BC = CD$. If $\angle ACB$ is 70° , then what is $\angle ADB$ equal to?

- (a) 35°
(c) 70°

- (b) 45°
(d) 110°

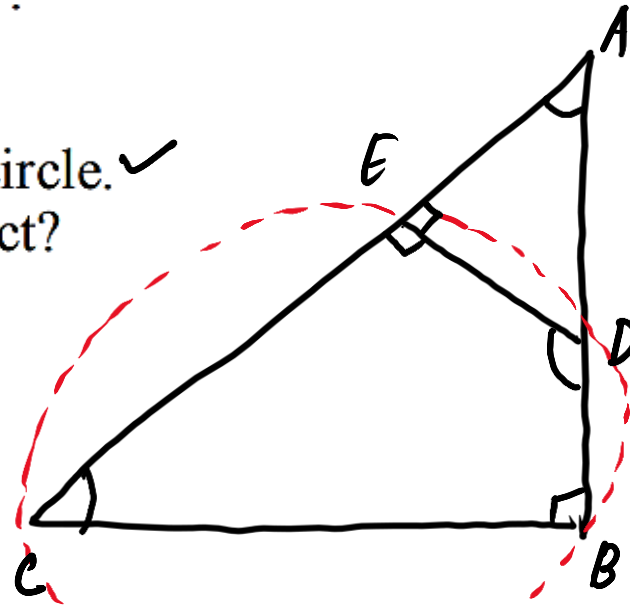
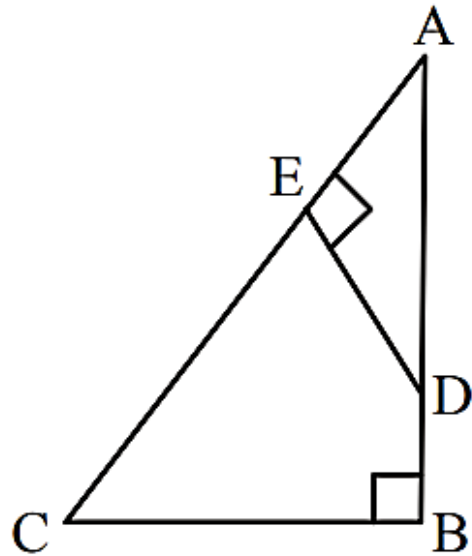
Ans: (a)

Q) In the figure given below $\angle ABC = \angle AED = 90^\circ$.

Consider the following statements

- I. ABC and ADE are similar triangles. ✓
- II. The four points B, C, E and D may lie on a circle. ✓

Which of the above statements is/are correct?



$\triangle ABC$ and $\triangle ADE$

$\angle A = \angle A$
 $\angle AED = \angle ABC$ } by AA similarity

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

1.) BCDE is a cyclic quadrilateral,

as $\angle B + \angle E = 90^\circ + 90^\circ = 180^\circ$

$\Rightarrow \angle C + \angle D = 360^\circ - 180^\circ = 180^\circ$

sum of opposite

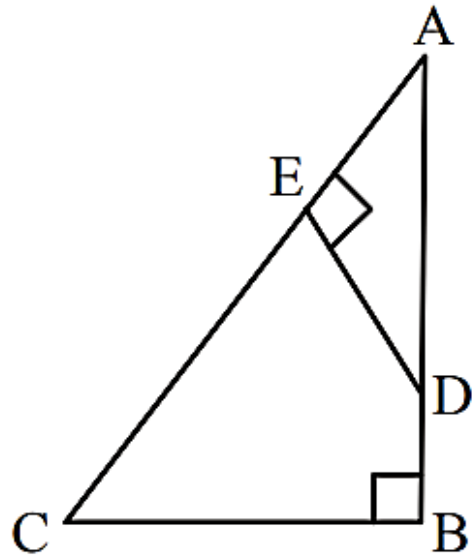
angles = 180°

Q) In the figure given below $\angle ABC = \angle AED = 90^\circ$.

Consider the following statements

- I. ABC and ADE are similar triangles.
- II. The four points B, C, E and D may lie on a circle.

Which of the above statements is/are correct?



- | | |
|-------------------|----------------------|
| (a) Only I | (b) Only II |
| (c) Both I and II | (d) Neither I nor II |

Ans: (c)

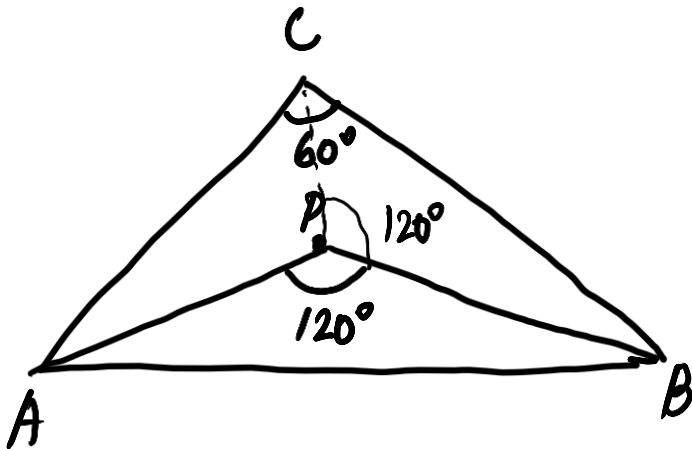
Q) Consider the following statement in respect of an equilateral $\triangle ABC$.

- I. There is a point P inside the $\triangle ABC$ such that each of its sides subtends an angle of 120° at P .
- II. There is a point P inside the $\triangle ABC$ such that the $\triangle PBC$ is obtuse angled and A is the orthocentre of $\triangle PBC$.

✓ point P will act as orthocentre

Which of the above statements is/are correct?

- (a) Only I (b) Only II
(c) Both I and II (d) Neither I nor II



If P acts as incentre, $\angle APB = 120^\circ$
 (same as circumcentre/orthocentre.)

Q) Consider the following statement in respect of an equilateral ΔABC .

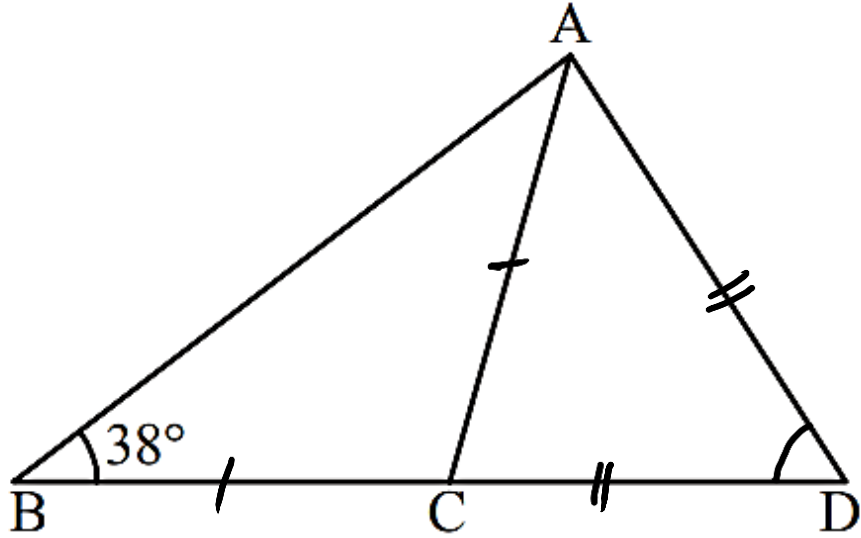
- I. There is a point P inside the ΔABC such that each of its sides subtends an angle of 120° at P .
- II. There is a point P inside the ΔABC such that the ΔPBC is obtuse angled and A is the orthocentre of ΔPBC .

Which of the above statements is/are correct?

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

Ans: (a)

Q)



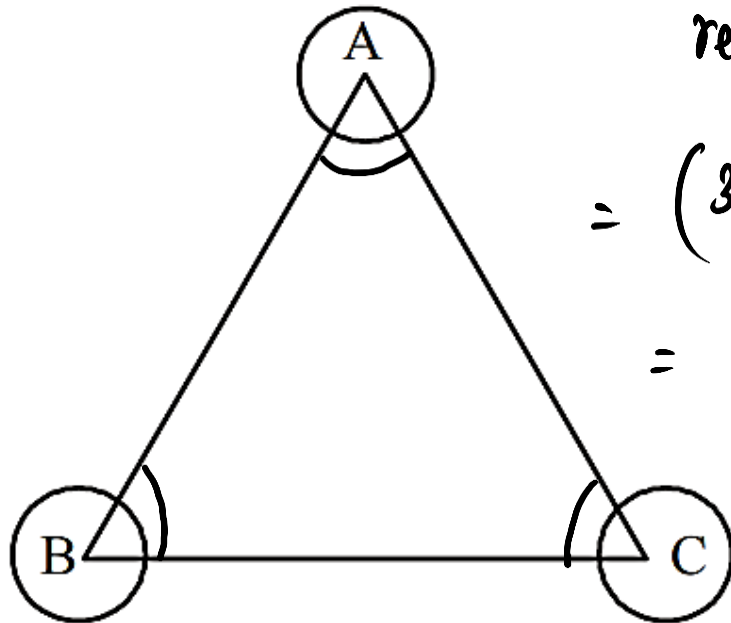
In the figure given, $\angle B = 38^\circ$, $AC = BC$ and $AD = CD$. What is $\angle D$ equal to?

(a) 26°
(c) 38°

(b) 28°
(d) 52°

HW

Q) In the figure given below, what is the sum of the angles formed around A, B, C except the angles of the $\triangle ABC$?



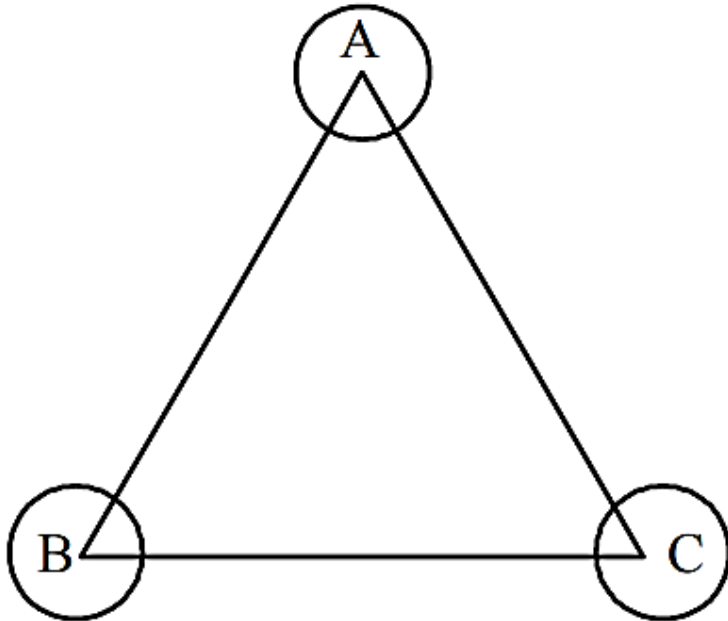
$$\begin{aligned} & \text{reflex } \angle A + \text{reflex } \angle B + \text{reflex } \angle C \\ &= (360^\circ - A) + (360^\circ - B) + (360^\circ - C) \\ &= 360^\circ + 360^\circ + 360^\circ - (A + B + C) \end{aligned}$$

$$\begin{aligned} &= 360^\circ + 360^\circ + 180^\circ \quad (A + B + C = 180^\circ) \\ &= \boxed{900^\circ} \end{aligned}$$

- (a) 360°
- (c) 900°

- (b) 720°
- (d) 1000°

Q) In the figure given below, what is the sum of the angles formed around A, B, C except the angles of the $\triangle ABC$?



(a) 360°
(c) 900°

(b) 720°
(d) 1000°

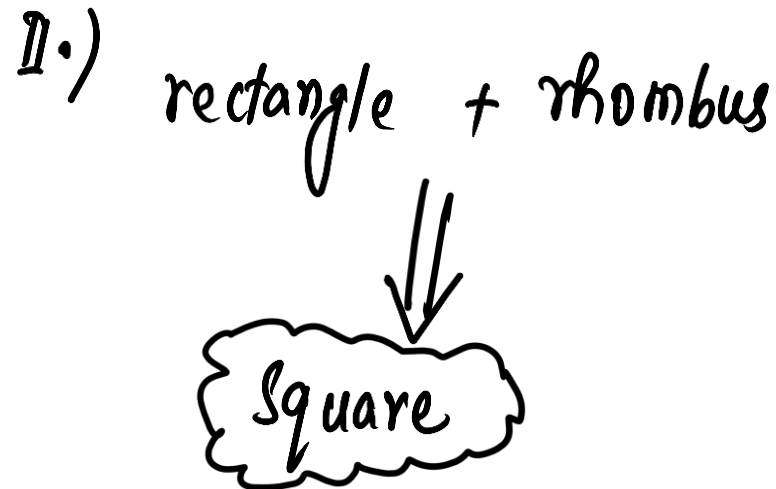
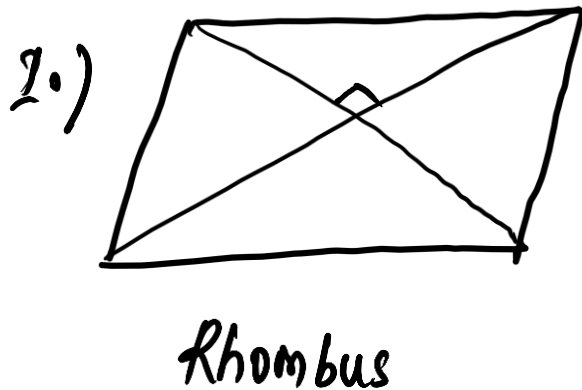
Ans: (c)

Q) Consider the following statements

- I. If the diagonals of a parallelogram $ABCD$ are perpendicular, then $ABCD$ may be a rhombus. ✓
- II. If the diagonals of a quadrilateral $ABCD$ are equal and perpendicular, then $ABCD$ is a square.

Which of the statements given above is/are correct?

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II



Q) Consider the following statements

- I. If the diagonals of a parallelogram $ABCD$ are perpendicular, then $ABCD$ may be a rhombus.
- II. If the diagonals of a quadrilateral $ABCD$ are equal and perpendicular, then $ABCD$ is a square.

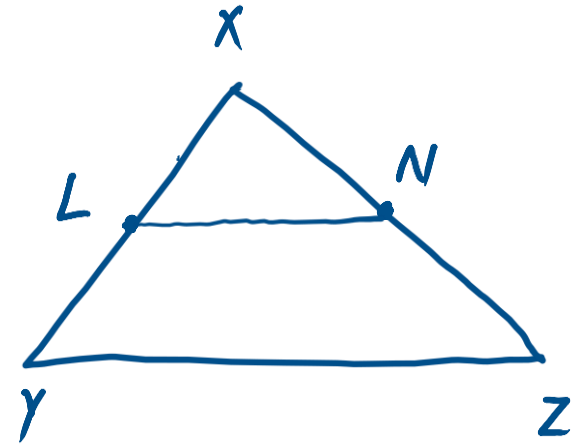
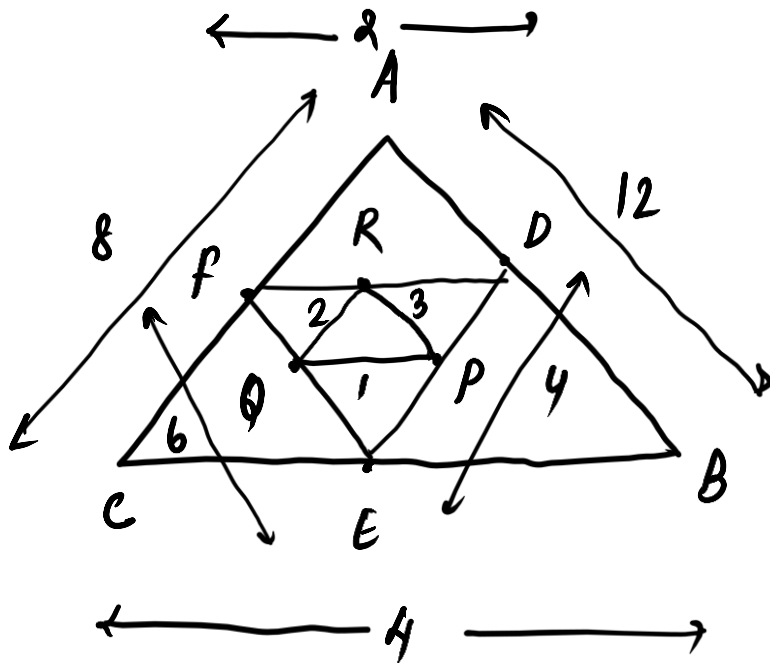
Which of the statements given above is/are correct?

- (a) Only I
- (b) Only II
- (c) Both I and II
- (d) Neither I nor II

Ans: (c)

Q) A ΔDEF is formed by joining the mid-points of the sides of ΔABC . Similarly, a ΔPQR is formed by joining the mid-points of the sides of the ΔDEF . If the sides of the ΔPQR are of lengths 1, 2 and 3 units, what is the perimeter of the ΔABC ?

- (a) 18 units
- (b) 24 units
- (c) 48 units
- (d) Cannot be determined



$LN \parallel YZ$

$$12 + 4 + 8 = \underline{24 \text{ units}}$$

$$LN = \frac{1}{2} YZ$$

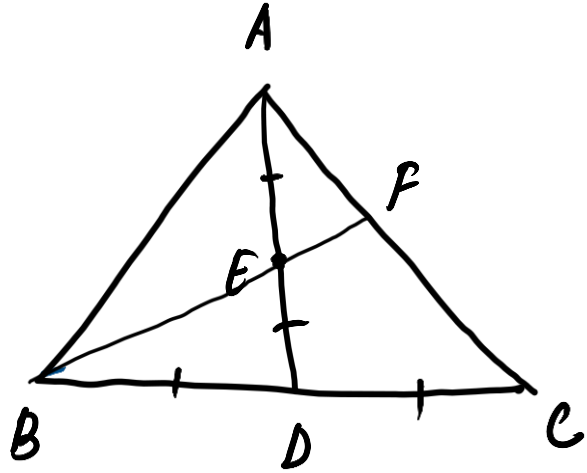
Mid-point formula.

- Q) A $\triangle DEF$ is formed by joining the mid-points of the sides of $\triangle ABC$. Similarly, a $\triangle PQR$ is formed by joining the mid-points of the sides of the $\triangle DEF$. If the sides of the $\triangle PQR$ are of lengths 1, 2 and 3 units, what is the perimeter of the $\triangle ABC$?
- (a) 18 units (b) 24 units
(c) 48 units (d) Cannot be determined

Ans: (b)

Q) In a $\triangle ABC$, AD is the median through A and E is the mid-point of AD and BE produced meets AC at F . Then, AF is equal to

- (a) $AC/5$ (b) $AC/4$
(c) $AC/3$ (d) $AC/2$



Q) In a ΔABC , AD is the median through A and E is the mid-point of AD and BE produced meets AC at F . Then, AF is equal to

(a) $AC/5$

(b) $AC/4$

(c) $AC/3$

(d) $AC/2$

Ans: (c)

Q) The angles of a triangle are in the ratio 4 : 1 : 1. Then the ratio of the largest side to the perimeter is

(a) $\frac{2}{3}$

(b) $\frac{1}{2 + \sqrt{3}}$

(c) $\frac{\sqrt{3}}{2 + \sqrt{3}}$

(d) $\frac{2}{1 + \sqrt{3}}$

$$4x + x + x = 180^\circ$$

$$6x = 180^\circ$$

$$\underline{x = 30^\circ}$$

$$4x = 4 \times 30^\circ = 120^\circ$$

$$120^\circ, 30^\circ, 30^\circ$$

$$\frac{a}{\sin 120^\circ} = \frac{b}{\sin 30^\circ} = \frac{c}{\sin 30^\circ} = k$$

(sine formula)

$$\frac{a}{\sin 120^\circ} = \frac{b}{\sin 30^\circ} = \frac{c}{\sin 30^\circ} = k$$

$$\frac{a}{\sin(180^\circ - 60^\circ)} = \frac{b}{\left(\frac{1}{2}\right)} = \frac{c}{\left(\frac{1}{2}\right)} = k$$

$$a = \frac{\sqrt{3}}{2}k \quad ; \quad b = \frac{1}{2}k \quad ; \quad c = \frac{1}{2}k$$

Largest side

$$\frac{a}{a+b+c}$$

$$\frac{\frac{\sqrt{3}}{2}k}{2}$$

$$\frac{\sqrt{3}}{2}k + \frac{1}{2}k + \frac{1}{2}k$$

$$\left(\frac{\sqrt{3}}{2+\sqrt{3}} \right)$$

Q) The angles of a triangle are in the ratio 4 : 1 : 1. Then the ratio of the largest side to the perimeter is

(a) $\frac{2}{3}$

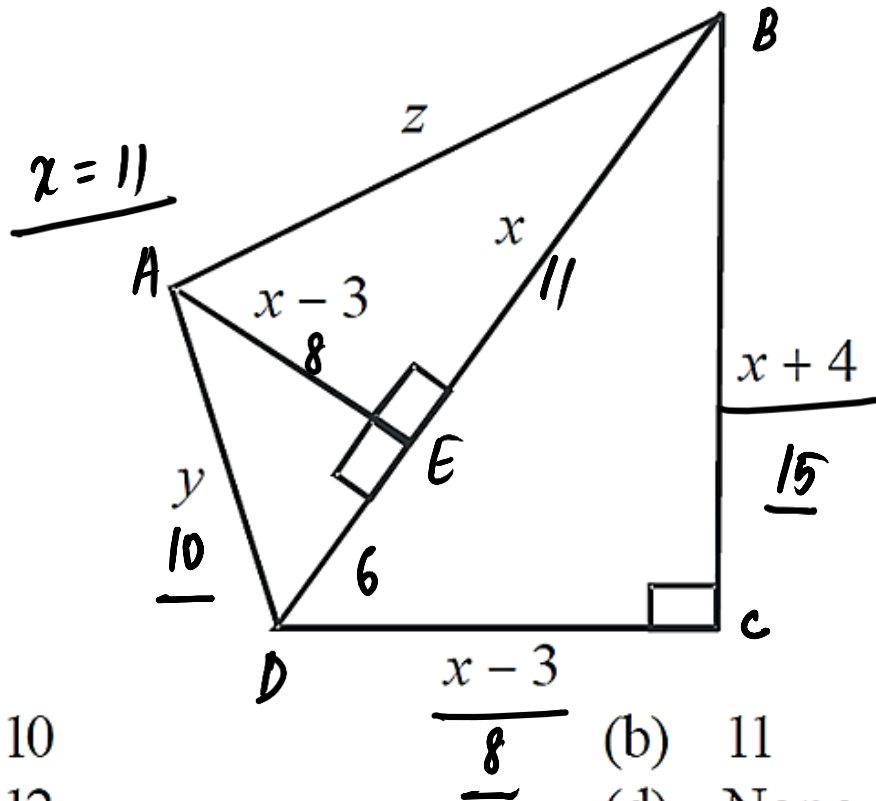
(b) $\frac{1}{2 + \sqrt{3}}$

(c) $\frac{\sqrt{3}}{2 + \sqrt{3}}$

(d) $\frac{2}{1 + \sqrt{3}}$

Ans: (c)

Q) Based on the figure below, what is the value of x , if $y = 10$



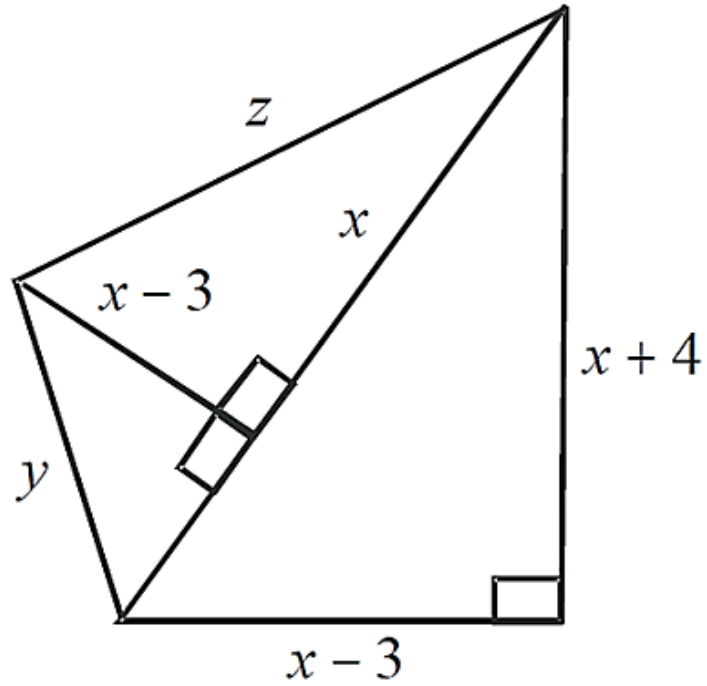
$(6, 8, 10)$ — Pythagorean triplet

$\Delta BCD,$
 $15^2 + 8^2 = 17^2$

- (a) 10
- (b) 11
- (c) 12
- (d) None of these

$x = 11$

Q) Based on the figure below, what is the value of x , if $y = 10$



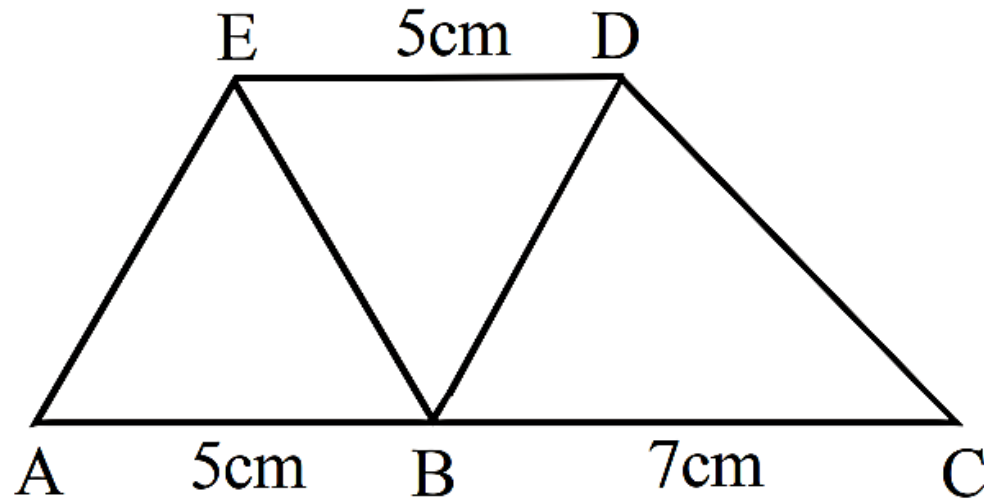
- (a) 10 (b) 11
(c) 12 (d) None of these

Ans: (b)

Q) A closed polygon has six sides and one of its angles is 30° greater than each of the other five equal angles. What is the value of one of the equal angles?

- | | |
|-----------------|-----------------|
| (a) 55° | (b) 115° |
| (c) 150° | (d) 175° |

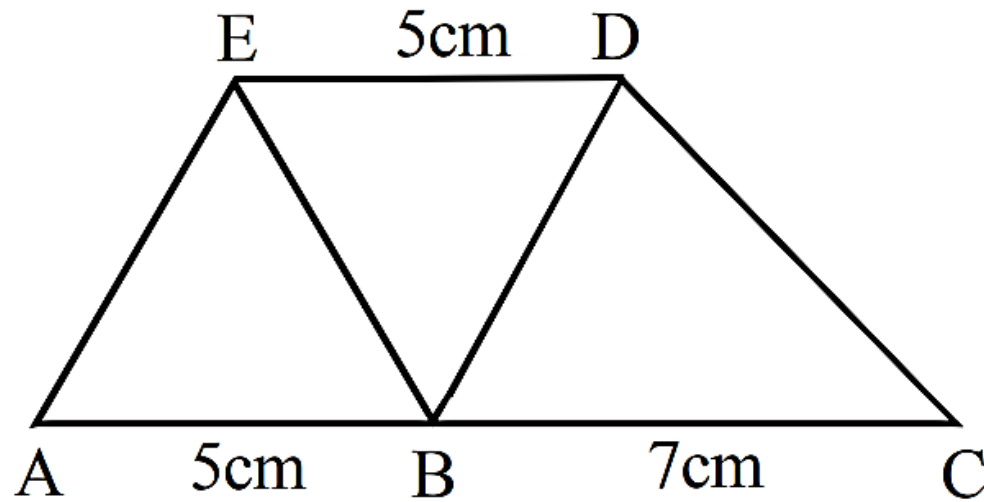
Q) In the figure given below, AC is parallel to ED and $AB = DE = 5$ cm and $BC = 7$ cm. What is the area $ABDE$: area BDE : area BCD equal to ?



- (a) 10 : 5 : 7
(c) 2 : 1 : 2

- (b) 8 : 4 : 7
(d) 8 : 4 : 5

Q) In the figure given below, AC is parallel to ED and $AB = DE = 5$ cm and $BC = 7$ cm. What is the area ABDE : area BDE : area BCD equal to ?



- (a) 10 : 5 : 7
(c) 2 : 1 : 2

- (b) 8 : 4 : 7
(d) 8 : 4 : 5

Ans: (a)

- Q) Let ABCD be a rectangle. Let P, Q, R, S be the mid-points of sides AB, BC, CD, DA respectively. Then the quadrilateral PQRS is a
- (a) Square
 - (b) Rectangle, but need not be a square
 - (c) Rhombus, but need not be a square
 - (d) Parallelogram, but need not be a rhombus

- Q) Let ABCD be a rectangle. Let P, Q, R, S be the mid-points of sides AB, BC, CD, DA respectively. Then the quadrilateral PQRS is a
- (a) Square
 - (b) Rectangle, but need not be a square
 - (c) Rhombus, but need not be a square
 - (d) Parallelogram, but need not be a rhombus

Ans: (c)

- Q) If a quadrilateral has an inscribed circle, then the sum of a pair of opposite sides equals
- (a) Half the sum of the diagonals
 - (b) Sum of the other pair of opposite sides
 - (c) Sum of two adjacent sides
 - (d) None of the above

- Q) If a quadrilateral has an inscribed circle, then the sum of a pair of opposite sides equals
- (a) Half the sum of the diagonals
 - (b) Sum of the other pair of opposite sides
 - (c) Sum of two adjacent sides
 - (d) None of the above

Ans: (b)

Q) A square is inscribed in a right-angled triangle with legs p and q , and has a common right angle with the triangle. The diagonal of the square is given by

(a) $\frac{pq}{p+2q}$

(b) $\frac{pq}{2p+q}$

(c) $\frac{\sqrt{2}pq}{p+q}$

(d) $\frac{2pq}{p+q}$

Q) A square is inscribed in a right-angled triangle with legs p and q , and has a common right angle with the triangle. The diagonal of the square is given by

(a) $\frac{pq}{p+2q}$

(b) $\frac{pq}{2p+q}$

(c) $\frac{\sqrt{2}pq}{p+q}$

(d) $\frac{2pq}{p+q}$

Ans: (c)

- Q) A rhombus is formed by joining midpoints of the sides of a rectangle in the suitable order. If the area of the rhombus is 2 square units, then the area of the rectangle is
- (a) $2\sqrt{2}$ square units (b) 4 square units
(c) $4\sqrt{2}$ square units (d) 8 square units

- Q) A rhombus is formed by joining midpoints of the sides of a rectangle in the suitable order. If the area of the rhombus is 2 square units, then the area of the rectangle is
- (a) $2\sqrt{2}$ square units (b) 4 square units
(c) $4\sqrt{2}$ square units (d) 8 square units

Ans: (b)

Q) ABCD is a parallelogram with AB and AD as adjacent sides.
If $\angle A = 60^\circ$ and $AB = 2AD$, then the diagonal BD will be equal to

(a) $\sqrt{2}AD$

(b) $\sqrt{3}AD$

(c) $2AD$

(d) $3AD$

Q) ABCD is a parallelogram with AB and AD as adjacent sides.
If $\angle A = 60^\circ$ and $AB = 2AD$, then the diagonal BD will be equal to

(a) $\sqrt{2}AD$

(b) $\sqrt{3}AD$

(c) $2AD$

(d) $3AD$

Ans: (b)

Q) In the figure given below, PQRS is a parallelogram. PA bisects angle P and SA bisects angle S. What is angle PAS equal to ?



- (a) 60°
(c) 90°

- (b) 75°
(d) 100°

Ans: (c)

CDS 1 2025

LIVE

MATHS

GEOMETRY - 2

MCQS

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