

Sample written test -1

1. Which of the following statements is **not** correct in accordance to the Euclid's postulates?

- A) If a circle is cut off by the diameter of the circle, then the figure obtained is a semicircle.
- B) Trilateral figures are contained by three straight lines.
- C) If a triangle has an obtuse angle, then it is an obtuse angled triangle.
- D) If all the sides of a triangle are equal, then it is an isosceles triangle.

Answer:

D

Solution:

According to Euclid, an equilateral triangle is a triangle whose all sides are equal and an isosceles triangle is a triangle whose two sides are equal.

Thus, the definition given in the **alternative D** is incorrect.

The correct answer is D.

2. Use the following information to answer the next question.

The semi-perimeter of an isosceles triangle is 12 cm. The length of its unequal side is 10 cm.

What is the length of each equal side of the triangle?

- A) 6 cm
- B) 7 cm
- C) 8 cm
- D) 9 cm

Answer:

B

Solution:

Length of the unequal side of the triangle = 10 cm

Let the length of each equal side be a .

$$\therefore \text{Semi-perimeter of the triangle} = \frac{a + a + 10 \text{ cm}}{2} = 12 \text{ cm}$$

$$\Rightarrow \frac{2a + 10 \text{ cm}}{2} = 12 \text{ cm}$$

$$\Rightarrow 2a + 10 \text{ cm} = 24 \text{ cm}$$

$$\Rightarrow 2a = 24 \text{ cm} - 10 \text{ cm}$$

$$\Rightarrow 2a = 14 \text{ cm}$$

$$\Rightarrow a = \frac{14}{2} \text{ cm} = 7 \text{ cm}$$

Thus, the length of each equal side of the triangle is 7 cm.

3. What is the semi-perimeter of a right-angled triangle the lengths of whose adjacent sides at right angle are 8 cm and 15 cm?

A) 11.5 cm

B) 16.5 cm

C) 19 cm

D) 20 cm

Answer:

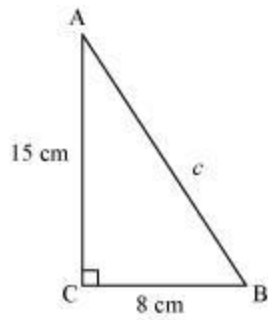
D

Solution:

Let a and b be the adjacent sides of $\triangle ABC$, which is right-angled at C.

Let the length of the hypotenuse be c .

Let $a = 8 \text{ cm}$ and $b = 15 \text{ cm}$.



On applying Pythagoras theorem to $\triangle ABC$, we obtain

$$c^2 = a^2 + b^2$$

$$c^2 = (8 \text{ cm})^2 + (15 \text{ cm})^2$$

$$c^2 = 64 \text{ cm}^2 + 225 \text{ cm}^2$$

$$c^2 = 289 \text{ cm}^2$$

$$c = 17 \text{ cm}$$

The semi-perimeter(s) of a triangle with sides a , b , and c is given by

$$s = \frac{a+b+c}{2}$$

$$\therefore s = \frac{8 \text{ cm} + 15 \text{ cm} + 17 \text{ cm}}{2} = \frac{40}{2} \text{ cm} = 20 \text{ cm}$$

Thus, the semi-perimeter of the given right triangle is 20 cm.

The correct answer is D.

4. According to Euclid's axioms, which of the following statements is **incorrect**?

A) 1 is less than $\frac{1}{4}$

B) If $x = y$, then $x - 8 = y - 8$

C) Things which coincide with one another are equal to one another.

D) Things which are double of the same things are equal to one another.

Answer:

A

Solution:

Consider the statement given in alternative **A**.

It is known that the whole is greater than the part.

$$\therefore 1 > \frac{1}{4}$$

Thus, the statement given in alternative **A** is incorrect.

The correct answer is A.

5. Which of the following polynomials is **not** cubic?

A) $3y^3 + 1$

B) y^3

C) $y^3 + 3y^2 + 3$

D) $3y + 3$

Answer:

D

Solution:

A polynomial of degree 1 is known as linear polynomial.

A polynomial of degree 2 is known as quadratic polynomial.

A polynomial of degree 3 is known as cubic polynomial.

A polynomial of degree 0 is known as constant polynomial.

Number 0 is known as zero polynomial.

Since the degree of the polynomial $3y + 3$ is 1, it is not a cubic polynomial. It is a linear polynomial.

The correct answer is D.

6. What is the difference between the degrees of the polynomials $2x^3(x^5 + 3) + 2$ and $3t^3 + t + 9$?

A) 0

B) 2

C) 5

D) 8

Answer:

C

Solution:

The highest power of the variable in a polynomial is called the degree of the polynomial.

$$2x^3(x^5 + 3) + 2 = 2x^8 + 6x^3 + 2$$

Here, the highest power of the variable x in the polynomial $2x^3(x^5 + 3) + 2$ or $2x^8 + 6x^3 + 2$ is 8. Hence, the degree of this polynomial is 8.

The highest power of the variable t in the polynomial $3t^3 + t + 9$ is 3. Hence, the degree of this polynomial is 3.

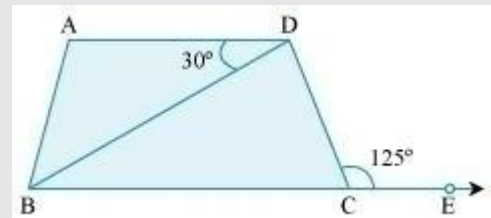
$$\text{Difference} = 8 - 3 = 5$$

Thus, the difference between the degrees of the two given polynomials is 5.

The correct answer is C

7. Use the following information to answer the next question.

The given figure shows a trapezium ABCD. Sides AD and BC of the trapezium are parallel and BD is the diagonal. The measures of $\angle ADB$ and $\angle DCE$ are 30° and 125° respectively.



The measure of $\angle BDC$ is

A) 150°

B) 120°

C) 95°

D) 85

Answer:

C

Solution:

Sides AD and BC are parallel and diagonal BD acts as the transversal.

Thus, $\angle DBC = \angle ADB = 30^\circ$ (alternate interior angles)

In a triangle, an exterior angle equals the sum of the two opposite interior angles.

Thus, in $\triangle BCD$,

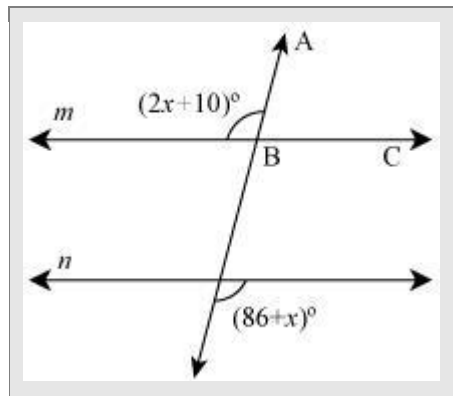
$$\angle DCE = \angle DBC + \angle BDC$$

$$125^\circ = 30^\circ + \angle BDC$$

$$\angle BDC = 125^\circ - 30^\circ = 95^\circ$$

The correct answer is C.

8. Use the following information to answer the next question.



The value of x is

A) 40°

B) 46°

C) 70°

D) 76°

Answer:

D

Solution:

$$2x + 10^\circ = x + 86^\circ \text{ (alternate external angles are of equal magnitudes)}$$

$$2x - x = 86^\circ - 10^\circ$$

$$x = 76^\circ$$

The correct answer is D.