

# Class 10 Maths Chapter-Wise Important Questions with Answers

## Chapter 1: Real Numbers

### Question 1

Find the HCF of 96 and 404 using Euclid's division algorithm.

#### Answer:

Using Euclid's division algorithm:

$$404 = 96 \times 4 + 20$$

$$96 = 20 \times 4 + 16$$

$$20 = 16 \times 1 + 4$$

$$16 = 4 \times 4 + 0$$

Therefore, the HCF of 96 and 404 is 4.



### Question 2

Show that  $3 + 2\sqrt{5}$  is an irrational number.

#### Answer:

We know that  $\sqrt{5}$  is irrational.

$2\sqrt{5}$  is also irrational.

Adding a rational number (3) to an irrational number gives an irrational number.

Therefore,  $3 + 2\sqrt{5}$  is irrational.

## Chapter 2: Polynomials

### Question 1

Find the zeroes of the polynomial  $x^2 - 5x + 6$ .

**Answer:**

Given polynomial:

$$x^2 - 5x + 6 = 0$$

Factorizing:

$$(x - 2)(x - 3) = 0$$

Therefore:

$$x = 2 \text{ and } x = 3$$

Hence, the zeroes are 2 and 3.

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### Question 2

Verify the relationship between zeroes and coefficients.

**Answer:**

For polynomial  $x^2 - 5x + 6$ :

Zeroes = 2 and 3

Sum of zeroes =  $2 + 3 = 5$

$$-b/a = -(-5)/1 = 5$$

Product of zeroes =  $2 \times 3 = 6$

$$c/a = 6/1 = 6$$

Hence verified.

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## Chapter 3: Pair of Linear Equations in Two Variables

### Question 1

Solve:

$$x + y = 5$$

$$x - y = 1$$

### Answer:

Adding both equations:

$$2x = 6$$

$$x = 3$$

Substituting in first equation:

$$3 + y = 5$$

$$y = 2$$

Therefore:

$$x = 3, y = 2$$



### Question 2

Find the value of k if the equations are consistent:

$$2x + 3y = 7$$

$$4x + ky = 14$$

### Answer:

For consistency:

$$a_1/a_2 = b_1/b_2 = c_1/c_2$$

$$2/4 = 3/k = 7/14$$

$$1/2 = 3/k$$

$$k = 6$$

Hence,  $k = 6$ .

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## Chapter 4: Quadratic Equations

### Question 1

Solve the quadratic equation:

$$x^2 - 7x + 12 = 0$$

**Answer:**

Factorizing:

$$x^2 - 7x + 12 = 0$$

$$(x - 3)(x - 4) = 0$$

Therefore:

$$x = 3 \text{ or } x = 4$$



### Question 2

Find the roots using quadratic formula:

$$2x^2 + 3x - 2 = 0$$

**Answer:**

Using formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Here:

$$a = 2, b = 3, c = -2$$

Discriminant:

$$b^2 - 4ac = 9 + 16 = 25$$

$$x = \frac{-3 \pm 5}{4}$$

$$x = \frac{1}{2} \text{ or } x = -2$$

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## Chapter 5: Arithmetic Progressions

### Question 1

Find the 20th term of the AP:

3, 7, 11, 15...

#### Answer:

First term (a) = 3

Common difference (d) = 4

Formula:

$$a_n = a + (n - 1)d$$

$$= 3 + (20 - 1)4$$

$$= 3 + 76$$

$$= 79$$

Therefore, the 20th term is 79.

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### Question 2

Find the sum of first 15 terms of AP:

2, 5, 8, 11...

#### Answer:

Here:

$$a = 2$$

$$d = 3$$

$$n = 15$$

Formula:

$$S_n = n/2 [2a + (n - 1)d]$$

$$= 15/2 [4 + 42]$$

$$= 15/2 \times 46$$

$$= 345$$

Therefore, the sum is 345.

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## Chapter 6: Triangles

### Question 1

State and prove the Basic Proportionality Theorem.

**Answer:**

Statement: If a line is drawn parallel to one side of a triangle intersecting the other two sides, then it divides the two sides in the same ratio.

Proof: Using similarity of triangles:

$$\triangle ADE \sim \triangle ABC$$

Therefore:

$$AD/DB = AE/EC$$

Hence proved.

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### Question 2

In two similar triangles, the ratio of corresponding sides is 3:5. Find the ratio of their areas.

**Answer:**

Ratio of areas = square of ratio of sides

$$= (3/5)^2$$

$$= 9/25$$

Therefore, ratio of areas is 9:25.

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## Chapter 7: Coordinate Geometry

### Question 1

Find the distance between points A(2,3) and B(6,7).

**Answer:**

Using distance formula:

$$d = \sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2]}$$

$$= \sqrt{[(6 - 2)^2 + (7 - 3)^2]}$$

$$= \sqrt{[16 + 16]}$$

$$= \sqrt{32}$$

$$= 4\sqrt{2}$$



### Question 2

Find the midpoint of line segment joining (4,6) and (8,10).

**Answer:**

Using midpoint formula:

$$\text{Midpoint} = ((x_1 + x_2)/2, (y_1 + y_2)/2)$$

$$= ((4 + 8)/2, (6 + 10)/2)$$

$$= (6, 8)$$

Therefore, midpoint is (6,8).

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## Chapter 8: Introduction to Trigonometry

### Question 1

Prove:

$$\sin^2\theta + \cos^2\theta = 1$$

### Answer:

Using trigonometric identities:

$$\sin^2\theta + \cos^2\theta = 1$$

Hence proved.

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### Question 2

Evaluate:

$$\sin 30^\circ + \cos 60^\circ$$

### Answer:

$$\sin 30^\circ = 1/2$$

$$\cos 60^\circ = 1/2$$

Therefore:

$$1/2 + 1/2 = 1$$

Hence, answer is 1.

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## Chapter 9: Applications of Trigonometry

### Question 1

A pole is 10 m high. Find the angle of elevation from a point  $10\sqrt{3}$  m away.

**Answer:**

Using:

$$\tan\theta = \text{Perpendicular} / \text{Base}$$

$$= 10 / 10\sqrt{3}$$

$$= 1/\sqrt{3}$$

$$\theta = 30^\circ$$

Therefore, angle of elevation is  $30^\circ$ .

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## Chapter 10: Circles

### Question 1

Prove that tangent at any point of a circle is perpendicular to the radius through the point of contact.

**Answer:**

The tangent touches the circle at one point only.

Radius drawn to the point of contact makes an angle of  $90^\circ$  with the tangent.

Hence proved.



## Chapter 11: Areas Related to Circles

### Question 1

Find the area of a circle whose radius is 7 cm.

**Answer:**

Using formula:

$$\text{Area of Circle} = \pi r^2$$

$$= 22/7 \times 7 \times 7$$

$$= 154 \text{ cm}^2$$

Therefore, area is  $154 \text{ cm}^2$ .

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### Question 2

Find the circumference of a circle with radius 14 cm.

**Answer:**

Using formula:

$$\text{Circumference} = 2\pi r$$

$$= 2 \times \frac{22}{7} \times 14$$

$$= 88 \text{ cm}$$

Hence, circumference is 88 cm.

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## Chapter 12: Surface Areas and Volumes

### Question 1

Find the volume of a cylinder with radius 7 cm and height 10 cm.

**Answer:**

Using formula:

$$\text{Volume} = \pi r^2 h$$

$$= \frac{22}{7} \times 7 \times 7 \times 10$$

$$= 1540 \text{ cm}^3$$

Therefore, volume is  $1540 \text{ cm}^3$ .

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### Question 2

Find the curved surface area of a cone with radius 7 cm and slant height 10 cm.

**Answer:**

Using formula:

$$CSA = \pi rl$$

$$= 22/7 \times 7 \times 10$$

$$= 220 \text{ cm}^2$$

Therefore, curved surface area is 220 cm<sup>2</sup>.

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## Chapter 13: Statistics

### Question 1

Find the mean of 5, 10, 15, 20, 25.

**Answer:**

Mean = Sum of observations / Number of observations

$$= 75 / 5$$

$$= 15$$

Therefore, mean is 15.

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### Question 2

Find the median of:

2, 4, 6, 8, 10

**Answer:**

Number of observations = 5

Median = middle term

$$= 6$$

Therefore, median is 6.

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## Chapter 14: Probability

### Question 1

A coin is tossed once. Find probability of getting a head.

#### Answer:

Total outcomes = 2

Favourable outcomes = 1

Probability =  $\frac{1}{2}$

Therefore, probability is  $\frac{1}{2}$ .

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### Question 2

A die is thrown once. Find probability of getting an even number.

#### Answer:

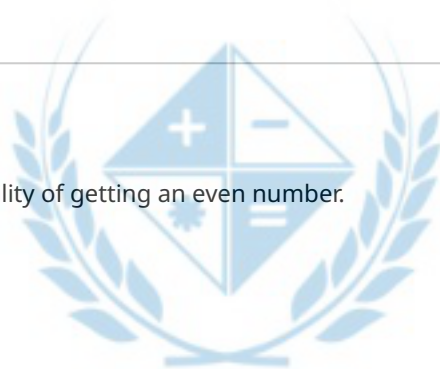
Even numbers = 2, 4, 6

Favourable outcomes = 3

Total outcomes = 6

Probability =  $\frac{3}{6} = \frac{1}{2}$

Therefore, probability is  $\frac{1}{2}$ .



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