

Topic 1: Multiplication Tables (0–10)

- 3×4 **Answer:** 12
- 6×7 **Answer:** 42
- 9×8 **Answer:** 72
- 2×5 **Answer:** 10
- 7×7 **Answer:** 49
- 10×6 **Answer:** 60
- 4×9 **Answer:** 36
- 5×5 **Answer:** 25
- 8×3 **Answer:** 24
- 6×6 **Answer:** 36
- 9×9 **Answer:** 81
- 7×4 **Answer:** 28
- 3×8 **Answer:** 24
- 10×9 **Answer:** 90
- 2×9 **Answer:** 18
- 5×8 **Answer:** 40
- 4×4 **Answer:** 16
- 6×9 **Answer:** 54
- 7×8 **Answer:** 56
- 8×8 **Answer:** 64
- 3×6 **Answer:** 18
- 9×5 **Answer:** 45
- 10×10 **Answer:** 100
- 2×7 **Answer:** 14
- 6×4 **Answer:** 24
- 5×9 **Answer:** 45
- 8×6 **Answer:** 48
- 7×3 **Answer:** 21
- 9×6 **Answer:** 54
- 4×7 **Answer:** 28

Topic 2: Mental Addition & Subtraction

- $25 + 17$ **Answer:** 42
- $48 - 19$ **Answer:** 29
- $36 + 45$ **Answer:** 81
- $90 - 37$ **Answer:** 53
- $63 + 28$ **Answer:** 91
- $100 - 45$ **Answer:** 55
- $74 + 16$ **Answer:** 90
- $55 - 28$ **Answer:** 27
- $82 + 9$ **Answer:** 91
- $120 - 65$ **Answer:** 55
- $47 + 33$ **Answer:** 80
- $99 - 44$ **Answer:** 55
- $18 + 27$ **Answer:** 45
- $200 - 85$ **Answer:** 115
- $56 + 44$ **Answer:** 100
- $73 - 29$ **Answer:** 44
- $65 + 35$ **Answer:** 100
- $88 - 39$ **Answer:** 49
- $29 + 41$ **Answer:** 70
- $150 - 75$ **Answer:** 75
- $34 + 66$ **Answer:** 100
- $92 - 47$ **Answer:** 45
- $15 + 85$ **Answer:** 100
- $175 - 90$ **Answer:** 85
- $27 + 38$ **Answer:** 65
- $60 - 24$ **Answer:** 36
- $49 + 51$ **Answer:** 100
- $130 - 65$ **Answer:** 65
- $22 + 78$ **Answer:** 100
- $101 - 51$ **Answer:** 50

Topic 3: Number Sense (Place Value, Odd/Even, Rounding)

- Is 47 odd or even? **Answer:** Odd
- Round 68 to nearest 10 **Answer:** 70
- Tens digit in 5,382? **Answer:** 8
- Is 120 odd or even? **Answer:** Even
- Round 245 to nearest 100 **Answer:** 200
- Hundreds digit in 4,721? **Answer:** 7
- Which is greater: 302 or 320? **Answer:** 320
- Round 91 to nearest 10 **Answer:** 90
- Is 0 odd or even? **Answer:** Even
- What comes just before 1000? **Answer:** 999
- Round 555 to nearest 100 **Answer:** 600
- Place value of 7 in 4,700? **Answer:** Hundreds (700)
- Is 999 odd or even? **Answer:** Odd
- Which is smaller: 89 or 98? **Answer:** 89

- Round 34 to nearest 10 **Answer:** 30
- Ones digit in 3,456? **Answer:** 6
- Is 256 odd or even? **Answer:** Even
- Round 780 to nearest 100 **Answer:** 800
- What number is 10 more than 290? **Answer:** 300
- What number is 100 less than 1,000? **Answer:** 900
- Is 1001 odd or even? **Answer:** Odd
- Which is greater: 5,000 or 500? **Answer:** 5,000
- Round 15 to nearest 10 **Answer:** 20
- Thousands digit in 8,234? **Answer:** 8
- Is 64 odd or even? **Answer:** Even
- What number is 1 less than 500? **Answer:** 499
- Round 449 to nearest 100 **Answer:** 400
- Which is smaller: 0.5 or 0.05? **Answer:** 0.05
- Is 81 odd or even? **Answer:** Odd
- What comes just after 999? **Answer:** 1000

Topic 4: Basic Definitions (Factors, Multiples, Prime, LCM/HCF)

- Define: Factor **Answer:** A number that divides another number exactly
- Define: Multiple **Answer:** A number obtained by multiplying a number by another
- Is 7 a prime number? **Answer:** Yes
- Is 9 a prime number? **Answer:** No
- Define: Prime number **Answer:** A number with only two factors, 1 and itself
- Define: Composite number **Answer:** A number with more than two factors
- LCM of 2 and 3? **Answer:** 6
- HCF of 8 and 12? **Answer:** 4
- First 3 multiples of 5 **Answer:** 5, 10, 15
- Is 1 a prime number? **Answer:** No
- Name a factor of 20 (not 1 or 20) **Answer:** 2, 4, 5, or 10
- Define: Even number **Answer:** A number divisible by 2
- Define: Odd number **Answer:** A number not divisible by 2
- Smallest prime number? **Answer:** 2
- Is 15 a multiple of 5? **Answer:** Yes
- Is 4 a factor of 16? **Answer:** Yes
- Name the first 5 prime numbers **Answer:** 2, 3, 5, 7, 11
- LCM of 4 and 6? **Answer:** 12
- HCF of 10 and 15? **Answer:** 5
- Define: Square number **Answer:** A number formed by multiplying a number by itself
- Is 100 a square number? **Answer:** Yes
- Name a common factor of 12 and 18 **Answer:** 2, 3, or 6
- Define: Natural number **Answer:** Numbers 1, 2, 3, ...
- Define: Whole number **Answer:** Numbers 0, 1, 2, 3, ...
- Smallest whole number? **Answer:** 0
- Smallest natural number? **Answer:** 1
- Is 2 the only even prime number? **Answer:** Yes
- Define: Integer **Answer:** A whole number, positive, negative, or zero
- Name two multiples of 7 **Answer:** 7, 14 (any)
- Is 0 a natural number? **Answer:** No

Topic 5: Mental Multiplication Tricks & Percentages

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| <ul style="list-style-type: none"> • 11×12 Answer: 132 • 11×15 Answer: 165 • 15×15 Answer: 225 • 25×25 Answer: 625 • 12×12 Answer: 144 • 9×15 Answer: 135 • 10% of 200 Answer: 20 • 20% of 150 Answer: 30 • 50% of 84 Answer: 42 • 25% of 80 Answer: 20 • 10% of 90 Answer: 9 • 5% of 200 Answer: 10 • 100% of 45 Answer: 45 • 75% of 40 Answer: 30 • 11×20 Answer: 220 | <ul style="list-style-type: none"> • 9×9 Answer: 81 • 35×35 Answer: 1225 • 45×45 Answer: 2025 • 20% of 300 Answer: 60 • 50% of 250 Answer: 125 • 10% of 500 Answer: 50 • 12×15 Answer: 180 • 9×12 Answer: 108 • 11×30 Answer: 330 • 30% of 100 Answer: 30 • 40% of 50 Answer: 20 • 5×15 Answer: 75 • 15×20 Answer: 300 • 10% of 1000 Answer: 100 • 75% of 200 Answer: 150 |
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Topic 6: Definitions (Integers, Ratio, Algebra Terms)

- Define: Integer **Answer:** Whole number (+, – or 0)
- Define: Ratio **Answer:** Comparison of two quantities by division
- Define: Proportion **Answer:** Equality of two ratios
- Define: Variable **Answer:** Symbol for an unknown value
- Define: Constant **Answer:** A fixed value that doesn't change
- Define: Coefficient **Answer:** Number multiplied with a variable
- Define: Algebraic expression **Answer:** Combination of variables, numbers & operations
- Define: Equation **Answer:** Statement that two expressions are equal
- Ratio of 4:8 in simplest form? **Answer:** 1:2
- Define: Rational number **Answer:** Can be written as p/q
- Define: Irrational number **Answer:** Cannot be written as p/q
- Is –5 an integer? **Answer:** Yes
- Define: Term (in algebra) **Answer:** A single part of an expression
- Define: Like terms **Answer:** Terms with the same variable and power
- Coefficient of x in 5x? **Answer:** 5
- Define: Absolute value **Answer:** Distance from zero, always positive
- Is 3/4 rational? **Answer:** Yes
- Define: Numerator **Answer:** Top number of a fraction
- Define: Denominator **Answer:** Bottom number of a fraction
- Simplify 10:20 **Answer:** 1:2
- Define: Positive integer **Answer:** Integer greater than 0
- Define: Negative integer **Answer:** Integer less than 0
- Opposite of +7? **Answer:** –7
- Define: Unit ratio **Answer:** Ratio in the form 1:n
- Define: Direct proportion **Answer:** As one increases, the other increases too
- Define: Inverse proportion **Answer:** As one increases, the other decreases
- Is 0 an integer? **Answer:** Yes
- Define: Whole number **Answer:** Numbers 0, 1, 2, 3, ...
- Value of x in $x + 2 = 5$? **Answer:** 3
- Define: Polynomial **Answer:** Expression with variables & whole-number exponents

Topic 7: Simple Equations & Profit-Loss

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| <ul style="list-style-type: none"> • $x + 5 = 12$ Answer: $x = 7$ • $x - 3 = 10$ Answer: $x = 13$ • $2x = 16$ Answer: $x = 8$ • $x/2 = 9$ Answer: $x = 18$ • CP=100, SP=120. Profit? Answer: 20 • CP=200, SP=180. Loss? Answer: 20 • Profit% if CP=100, SP=110 Answer: 10% • Loss% if CP=100, SP=90 Answer: 10% • $3x = 30$ Answer: $x = 10$ • $x + 10 = 25$ Answer: $x = 15$ • $5x - 5 = 20$ Answer: $x = 5$ • SP if CP=50, profit=10 Answer: 60 • SP if CP=80, loss=10 Answer: 70 • $x/5 = 4$ Answer: $x = 20$ • $4x = 40$ Answer: $x = 10$ • $x - 8 = 2$ Answer: $x = 10$ | <ul style="list-style-type: none"> • CP=500, SP=550. Profit? Answer: 50 • CP=300, SP=270. Loss? Answer: 30 • $2x + 1 = 9$ Answer: $x = 4$ • $x + x = 10$ Answer: $x = 5$ • Profit% if CP=200, SP=250 Answer: 25% • Loss% if CP=400, SP=360 Answer: 10% • $6x = 18$ Answer: $x = 3$ • $x - 4 = 4$ Answer: $x = 8$ • $x/3 = 6$ Answer: $x = 18$ • CP if SP=110, profit=10 Answer: 100 • CP if SP=90, loss=10 Answer: 100 • $3x + 2 = 11$ Answer: $x = 3$ • $10 - x = 4$ Answer: $x = 6$ • $2x - 3 = 7$ Answer: $x = 5$ |
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Topic 8: Angles, Triangles, Perimeter & Area

- Sum of angles in a triangle? **Answer:** 180°
- Sum of angles in a quadrilateral? **Answer:** 360°
- Angle on a straight line? **Answer:** 180°
- A right angle equals? **Answer:** 90°
- Perimeter of square, side 5? **Answer:** 20
- Area of square, side 4? **Answer:** 16
- Perimeter of rectangle 6×4 ? **Answer:** 20
- Area of rectangle 6×4 ? **Answer:** 24
- Sides in a triangle? **Answer:** 3
- Sides in a pentagon? **Answer:** 5
- Triangle with all sides equal? **Answer:** Equilateral
- Triangle with 2 sides equal? **Answer:** Isosceles
- Angle less than 90° ? **Answer:** Acute
- Angle between 90° and 180° ? **Answer:** Obtuse
- Angle exactly 90° ? **Answer:** Right angle
- Area of triangle, base 10, height 4? **Answer:** 20
- Symbol used for radius? **Answer:** r
- Sides in a hexagon? **Answer:** 6
- Sum of angles in a pentagon? **Answer:** 540°
- Perimeter of equilateral triangle, side 6? **Answer:** 18
- Area of square, side 10? **Answer:** 100
- Perimeter of rectangle 10×5 ? **Answer:** 30
- Triangle with no sides equal? **Answer:** Scalene
- Angle sum of a full circle? **Answer:** 360°
- Area of rectangle 8×3 ? **Answer:** 24
- Perimeter of square, side 12? **Answer:** 48
- Sides in a square? **Answer:** 4
- Vertices in a triangle? **Answer:** 3
- Angle equal to 180° ? **Answer:** Straight angle
- Area of triangle, base 6, height 5? **Answer:** 15

Topic 9: Definitions (Exponents, Polynomials, Sets)

- Define: Exponent **Answer:** Power showing repeated multiplication
- Define: Base (in exponents) **Answer:** Number being raised to a power
- $2^3 = ?$ **Answer:** 8
- $5^2 = ?$ **Answer:** 25
- Define: Polynomial **Answer:** Expression with multiple terms
- Define: Monomial **Answer:** Expression with one term
- Define: Binomial **Answer:** Expression with two terms
- Define: Trinomial **Answer:** Expression with three terms
- Define: Degree of a polynomial **Answer:** Highest power of the variable
- Define: Set **Answer:** A collection of distinct objects
- Define: Subset **Answer:** A set contained in another set
- Define: Union of sets **Answer:** Combining elements of two sets
- Define: Intersection of sets **Answer:** Common elements of two sets
- Define: Empty set **Answer:** A set with no elements
- Define: Universal set **Answer:** Set containing all elements considered
- $10^0 = ?$ **Answer:** 1
- $3^1 = ?$ **Answer:** 3
- Define: Real number **Answer:** Any rational or irrational number
- Define: Rational number **Answer:** p/q form

- Define: Irrational number **Answer:** Non-terminating, non-repeating decimal
- Define: Natural numbers **Answer:** 1, 2, 3, ...
- Define: Whole numbers **Answer:** 0, 1, 2, 3, ...
- $(-2)^2 = ?$ **Answer:** 4
- $2^4 = ?$ **Answer:** 16
- Define: Square root **Answer:** Number that gives the original when multiplied by itself
- Define: Cube root **Answer:** Number that gives the original when cubed
- Degree of $3x^2 + 2x + 1$? **Answer:** 2
- Define: Like terms **Answer:** Terms with same variable & power
- $0^2 = ?$ **Answer:** 0
- Define: Coefficient **Answer:** Numerical factor of a term

Topic 10: Squares, Cubes & Square Roots

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| <ul style="list-style-type: none"> • 1^2 Answer: 1 • 2^2 Answer: 4 • 3^2 Answer: 9 • 4^2 Answer: 16 • 5^2 Answer: 25 • 6^2 Answer: 36 • 7^2 Answer: 49 • 8^2 Answer: 64 • 4^3 Answer: 64 | <ul style="list-style-type: none"> • 13^2 Answer: 169 • 14^2 Answer: 196 • 15^2 Answer: 225 • $\sqrt{16}$ Answer: 4 • $\sqrt{25}$ Answer: 5 • $\sqrt{36}$ Answer: 6 • $\sqrt{49}$ Answer: 7 • $\sqrt{64}$ Answer: 8 • $\sqrt{81}$ Answer: 9 • $\sqrt{100}$ Answer: 10 • 2^3 Answer: 8 | <ul style="list-style-type: none"> • 5^3 Answer: 125 • 1^3 Answer: 1 • 10^3 Answer: 1000 • $\sqrt{144}$ Answer: 12 • $\sqrt{9}$ Answer: 3 • 9^2 Answer: 81 • 10^2 Answer: 100 • 11^2 Answer: 121 • 12^2 Answer: 144 • 3^3 Answer: 27 |
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Topic 11: Linear Equations & Factorization

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| <ul style="list-style-type: none"> • $2x + 3 = 11$ Answer: $x = 4$ • $3x - 4 = 11$ Answer: $x = 5$ • $x + y = 10$, $x = 4$. Find y. Answer: $y = 6$ • Factorize: $x^2 + 5x$ Answer: $x(x + 5)$ • Factorize: $2x + 4$ Answer: $2(x + 2)$ • $5x = 25$ Answer: $x = 5$ • $x/4 = 5$ Answer: $x = 20$ • Factorize: $x^2 - 9$ Answer: $(x - 3)(x + 3)$ • $2(x + 1) = 10$ Answer: $x = 4$ • $4x - 2 = 14$ Answer: $x = 4$ • Factorize: $3x + 6$ Answer: $3(x + 2)$ • $x - 7 = -2$ Answer: $x = 5$ • Factorize: $x^2 - 4$ Answer: $(x - 2)(x + 2)$ • $3x + 1 = 16$ Answer: $x = 5$ • $8x = 0$ Answer: $x = 0$ | <ul style="list-style-type: none"> • $7x = 49$ Answer: $x = 7$ • Factorize: $5x + 10$ Answer: $5(x + 2)$ • $2x - 5 = 9$ Answer: $x = 7$ • $x/3 + 2 = 5$ Answer: $x = 9$ • Factorize: $x^2 + 2x$ Answer: $x(x + 2)$ • $6x + 3 = 21$ Answer: $x = 3$ • $9 - x = 3$ Answer: $x = 6$ • Factorize: $4x^2 - 16$ Answer: $4(x - 2)(x + 2)$ • $2x + 2x = 16$ Answer: $x = 4$ • $5(x - 1) = 20$ Answer: $x = 5$ • Factorize: $x^2 - 1$ Answer: $(x - 1)(x + 1)$ • $x + 3 = -1$ Answer: $x = -4$ • $3x - 9 = 0$ Answer: $x = 3$ • Factorize: $6x + 9$ Answer: $3(2x + 3)$ • $x/2 - 1 = 3$ Answer: $x = 8$ |
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Topic 12: Pythagoras & Basic Trigonometry Ratios

Pythagoras theorem formula? **Answer:** $a^2 + b^2 = c^2$
 Sides 3, 4 $\rightarrow$ hypotenuse? **Answer:** 5
 Sides 6, 8 $\rightarrow$ hypotenuse? **Answer:** 10
 Hypotenuse 5, one side 3 $\rightarrow$ other side? **Answer:** 4
 Hypotenuse 13, one side 5 $\rightarrow$ other side? **Answer:** 12

$\sin 90^\circ$? **Answer:** 1

$\cos 0^\circ$? **Answer:** 1

$\sin 0^\circ$? **Answer:** 0

$\cos 90^\circ$? **Answer:** 0

$\tan 45^\circ$? **Answer:** 1

$\sin 30^\circ$? **Answer:** $1/2$

$\cos 60^\circ$? **Answer:** $1/2$

$\sin 45^\circ$? **Answer:** $1/\sqrt{2}$

$\cos 45^\circ$? **Answer:** $1/\sqrt{2}$

$\tan 0^\circ$? **Answer:** 0

$\sin 60^\circ$? **Answer:** $\sqrt{3}/2$

$\cos 30^\circ$? **Answer:** $\sqrt{3}/2$

$\tan 90^\circ$? **Answer:** Undefined

- Is 3-4-5 a right triangle? **Answer:** Yes
- Is 5-12-13 a right triangle? **Answer:** Yes
- Formula for $\tan \theta$? **Answer:** opposite/adjacent
- Formula for $\sin \theta$? **Answer:** opposite/hypotenuse
- Formula for $\cos \theta$? **Answer:** adjacent/hypotenuse
- Longest side in a right triangle? **Answer:** Hypotenuse
- Hypotenuse 10, one side 6 $\rightarrow$ other side? **Answer:** 8
- Sides 9, 12 $\rightarrow$ hypotenuse? **Answer:** 15
- $\sin 90^\circ + \cos 0^\circ$? **Answer:** 2
- $\tan 45^\circ \times \sin 90^\circ$? **Answer:** 1
- $\cos 90^\circ + \sin 0^\circ$? **Answer:** 0
- Hypotenuse 25, one side 7 $\rightarrow$ other side? **Answer:** 24

Topic 13: Statistics (Mean, Median, Mode)

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| <ul style="list-style-type: none"> • Mean of 2, 4, 6 Answer: 4 • Mean of 10, 20, 30 Answer: 20 • Median of 3, 5, 7 Answer: 5 • Median of 2, 4, 6, 8 Answer: 5 • Mode of 2, 2, 3, 4 Answer: 2 • Mode of 5, 5, 5, 6, 6 Answer: 5 • Mean of 1, 2, 3, 4, 5 Answer: 3 • Median of 1, 3, 5, 7, 9 Answer: 5 • Range of 2, 8, 5, 10 Answer: 8 • Range of 1, 9, 3, 7 Answer: 8 • Mean of 100, 200, 300 Answer: 200 • Median of 4, 4, 5, 6, 7 Answer: 5 • Mode of 1, 2, 2, 3, 3, 3 Answer: 3 • Mean of 5, 10, 15, 20 Answer: 12.5 • Mean of 10, 10, 10 Answer: 10 | <ul style="list-style-type: none"> • Median of 10, 20, 30 Answer: 20 • Mean of 0, 0, 0, 10 Answer: 2.5 • Mode of 7, 8, 9 Answer: No mode • Range of 15, 20, 25 Answer: 10 • Median of 6, 2, 8, 4, 10 Answer: 6 • Mean of 2, 2, 2, 2 Answer: 2 • Mode of 10, 10, 20, 30 Answer: 10 • Range of 100, 50, 75 Answer: 50 • Median of 5, 5, 5, 5 Answer: 5 • Mean of 3, 6, 9 Answer: 6 • Mode of 1, 1, 2, 2, 3 Answer: 1 and 2 (bimodal) • Median of 2, 4, 6, 8, 10 Answer: 6 • Mean of 4, 8, 12, 16 Answer: 10 • Range of 5, 5, 5 Answer: 0 • Mode of 4, 5, 6, 7 Answer: No mode |
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Topic 14: Definitions (Quadratic, Functions, Probability)

Define: Quadratic equation **Answer:** Equation with highest power 2

Standard form of a quadratic equation? **Answer:** $ax^2 + bx + c = 0$

Define: Function **Answer:** Relation where each input has exactly one output

Define: Domain **Answer:** Set of all input values

Define: Range (functions) **Answer:** Set of all output values

Define: Probability **Answer:** Likelihood of an event occurring

Formula for probability? **Answer:** Favorable outcomes $\div$ Total outcomes

Probability of a certain event? **Answer:** 1

Probability of an impossible event? **Answer:** 0

Define: Discriminant **Answer:** $b^2 - 4ac$

Formula for discriminant? **Answer:** $b^2 - 4ac$

Define: Roots of an equation **Answer:** Values of x that satisfy the equation

Define: Linear function **Answer:** Function whose graph is a straight line

Define: Coordinate **Answer:** Pair of numbers locating a point (x,y)

Define: Origin **Answer:** Point (0,0)

Define: X-axis **Answer:** Horizontal axis

Define: Y-axis **Answer:** Vertical axis

Define: Matrix **Answer:** Rectangular array of numbers

Define: Determinant **Answer:** A value calculated from a square matrix

Define: Variable (in functions) **Answer:** Quantity that can change

Define: Independent variable **Answer:** Input variable (x)

Define: Dependent variable **Answer:** Output variable (y)

Degree of a quadratic equation? **Answer:** 2
 Define: Vertex (of a parabola) **Answer:** Turning point of a parabola
 Define: Sample space **Answer:** Set of all possible outcomes
 Define: Event (probability) **Answer:** Subset of outcomes
 Define: Trial **Answer:** A single performance of an experiment
 Define: Outcome **Answer:** Result of a trial
 Total outcomes of a coin toss? **Answer:** 2
 Total outcomes of a die roll? **Answer:** 6

Topic 15: Quadratic Equations & Trig Values

- $x^2 = 9$ **Answer:** $x = \pm 3$
- $x^2 = 16$ **Answer:** $x = \pm 4$
- $x^2 = 25$ **Answer:** $x = \pm 5$
- $x^2 - 4 = 0$ **Answer:** $x = \pm 2$
- $x^2 - 1 = 0$ **Answer:** $x = \pm 1$
- $\sin 0^\circ$ **Answer:** 0
- $\cos 0^\circ$ **Answer:** 1
- $\sin 90^\circ$ **Answer:** 1
- $\cos 90^\circ$ **Answer:** 0
- $\tan 45^\circ$ **Answer:** 1
- $\sin 30^\circ$ **Answer:** $1/2$
- $\cos 60^\circ$ **Answer:** $1/2$
- $\sin 45^\circ$ **Answer:** $1/\sqrt{2}$
- $\cos 45^\circ$ **Answer:** $1/\sqrt{2}$
- $\sin 60^\circ$ **Answer:** $\sqrt{3}/2$

- $x^2 + 2x = 0$ **Answer:** $x = 0, -2$
- $x^2 - 5x = 0$ **Answer:** $x = 0, 5$
- Product of roots of $x^2 - 5x + 6 = 0$? **Answer:** 6
- Sum of roots of $x^2 - 5x + 6 = 0$? **Answer:** 5
- $x^2 = 36$ **Answer:** $x = \pm 6$
- $x^2 = 49$ **Answer:** $x = \pm 7$
- $x^2 = 100$ **Answer:** $x = \pm 10$
- Discriminant of $x^2 - 4x + 4 = 0$ **Answer:** 0
- Discriminant of $x^2 + 2x + 1 = 0$ **Answer:** 0
- $x^2 - 9 = 0$ **Answer:** $x = \pm 3$
- $2x^2 = 8$ **Answer:** $x = \pm 2$
- $3x^2 = 27$ **Answer:** $x = \pm 3$
- $\tan 0^\circ$ **Answer:** 0
- $\tan 60^\circ$ **Answer:** $\sqrt{3}$ (≈ 1.7)
- $\cos 30^\circ$ **Answer:** $\sqrt{3}/2$

Topic 16: Coordinate Geometry & Mensuration

Coordinates of the origin? **Answer:** (0,0)
 In which quadrant is (2,3)? **Answer:** Quadrant I
 In which quadrant is (-2,3)? **Answer:** Quadrant II
 In which quadrant is (-2,-3)? **Answer:** Quadrant III
 In which quadrant is (2,-3)? **Answer:** Quadrant IV
 What formula uses Pythagoras to find distance between 2 points? **Answer:** Distance formula
 Midpoint of (0,0) and (4,4)? **Answer:** (2,2)
 Midpoint of (2,0) and (0,2)? **Answer:** (1,1)
 Volume of cube, side 2? **Answer:** 8
 Volume of cube, side 3? **Answer:** 27
 Volume of cuboid $2 \times 3 \times 4$? **Answer:** 24
 Surface area of cube, side 2? **Answer:** 24
 Volume formula of a sphere? **Answer:** $(4/3)\pi r^3$
 Distance between (0,0) and (3,4)? **Answer:** 5
 Volume of cube, side 4? **Answer:** 64

Area of circle formula? **Answer:** πr^2
 Circumference of circle formula? **Answer:** $2\pi r$
 Volume of cylinder formula? **Answer:** $\pi r^2 h$
 Area of circle, radius 7 ($\pi \approx 22/7$)? **Answer:** 154
 Circumference of circle, radius 7 ($\pi \approx 22/7$)? **Answer:** 44
 Volume of cube, side 5? **Answer:** 125
 Surface area of cube, side 3? **Answer:** 54
 Midpoint of (1,1) and (3,3)? **Answer:** (2,2)
 $y = 0$ lies on which axis? **Answer:** X-axis
 $x = 0$ lies on which axis? **Answer:** Y-axis
 Slope formula? **Answer:** $(y_2 - y_1)/(x_2 - x_1)$
 Volume of cuboid $5 \times 2 \times 2$? **Answer:** 20
 Area of a square plot, 20 m side? **Answer:** 400 sq.m
 Perimeter of a circle also called? **Answer:** Circumference
 Surface area formula of a sphere? **Answer:** $4\pi r^2$

Topic 17: Real-Life Money & Quantity Problems

- Apples cost Rs 250 per kg. How much for 2.5 kg? **Method:** Rate $\times$ Quantity $\rightarrow 250 \times 2.5$ **Answer:** Rs 625
- Sugar costs Rs 120 per kg. How much for 3 kg? **Method:** 120×3 **Answer:** Rs 360
- Rice costs Rs 90 per kg. How much for 5 kg? **Method:** 90×5 **Answer:** Rs 450
- Milk costs Rs 150 per litre. How much for 2.5 litres? **Method:** 150×2.5 **Answer:** Rs 375
- Petrol costs Rs 280 per litre. How much for 4 litres? **Method:** 280×4 **Answer:** Rs 1120
- A notebook costs Rs 50. How much for 6 notebooks? **Method:** 50×6 **Answer:** Rs 300
- A pencil costs Rs 10. How much for 12 pencils? **Method:** 10×12 **Answer:** Rs 120

- Cloth costs Rs 300 per metre. How much for 3.5 metres? **Method:** 300×3.5 **Answer:** Rs 1050
- A cement bag costs Rs 950. How much for 4 bags? **Method:** 950×4 **Answer:** Rs 3800
- Chicken costs Rs 400 per kg. How much for 1.5 kg? **Method:** 400×1.5 **Answer:** Rs 600
- A person's monthly salary is Rs 20,000 (30 days). How much per day? **Method:** Salary $\div$ Number of days $\rightarrow 20000 \div 30$ **Answer:** $\approx$ Rs 667 per day
- Monthly salary is Rs 30,000 (30 days). How much per day? **Method:** $30000 \div 30$ **Answer:** Rs 1000 per day
- Monthly salary is Rs 45,000 (30 days). How much per day? **Method:** $45000 \div 30$ **Answer:** Rs 1500 per day
- Daily wage is Rs 800. How much for 6 working days (a week)? **Method:** 800×6 **Answer:** Rs 4800
- Monthly salary is Rs 24,000. How much per week (4 weeks)? **Method:** $24000 \div 4$ **Answer:** Rs 6000 per week
- Hourly wage is Rs 100. How much for 8 hours of work? **Method:** 100×8 **Answer:** Rs 800
- Monthly salary is Rs 60,000 (30 days). How much per day? **Method:** $60000 \div 30$ **Answer:** Rs 2000 per day
- Daily wage is Rs 1,200. How much for 25 working days? **Method:** 1200×25 **Answer:** Rs 30,000
- One book costs Rs 1,000. How many books can you buy with Rs 5,000? **Method:** Total money $\div$ Price of one $\rightarrow 5000 \div 1000$ **Answer:** 5 books
- One pen costs Rs 20. How many pens can you buy with Rs 200? **Method:** $200 \div 20$ **Answer:** 10 pens
- Apples cost Rs 250 per kg. How many kg can you buy with Rs 1,000? **Method:** $1000 \div 250$ **Answer:** 4 kg
- A shirt costs Rs 800. How many shirts can you buy with Rs 4,000? **Method:** $4000 \div 800$ **Answer:** 5 shirts
- A chocolate costs Rs 50. How many can you buy with Rs 500? **Method:** $500 \div 50$ **Answer:** 10 chocolates
- A movie ticket costs Rs 150. How many tickets can you buy with Rs 1,500? **Method:** $1500 \div 150$ **Answer:** 10 tickets
- A notebook costs Rs 60. How many can you buy with Rs 900? **Method:** $900 \div 60$ **Answer:** 15 notebooks
- If 5 apples cost Rs 100, what is the price of 1 apple? **Method:** Total $\div$ Number of items $\rightarrow 100 \div 5$ **Answer:** Rs 20 per apple
- An item's price is Rs 1,000, with a 10% discount. What is the final price? **Method:** Discount = 10% of 1000 = 100 $\rightarrow$ Final = $1000 - 100$ **Answer:** Rs 900
- An item's price is Rs 2,000, with a 25% discount. What is the final price? **Method:** Discount = 25% of 2000 = 500 $\rightarrow$ Final = $2000 - 500$ **Answer:** Rs 1500
- An item's price is Rs 500, with a 20% discount. How much do you save? **Method:** 20% of 500 **Answer:** Rs 100
- Original price Rs 800, sale price Rs 640. What is the discount %? **Method:** Discount amount = $800 - 640 = 160 \rightarrow \% = (160 \div 800) \times 100$ **Answer:** 20%
- A shop gives 15% discount on Rs 1,200. What is the final price? **Method:** Discount = 15% of 1200 = 180 $\rightarrow$ Final = $1200 - 180$ **Answer:** Rs 1020
- A bill is Rs 3,000, with 5% tax added. What is the total? **Method:** Tax = 5% of 3000 = 150 $\rightarrow$ Total = $3000 + 150$ **Answer:** Rs 3150
- Price Rs 1,500 increases by 10%. What is the new price? **Method:** Increase = 10% of 1500 = 150 $\rightarrow$ New price = $1500 + 150$ **Answer:** Rs 1650
- A bus covers 60 km in 1 hour. How far will it go in 2.5 hours (same speed)? **Method:** Speed $\times$ Time $\rightarrow 60 \times 2.5$ **Answer:** 150 km
- A car travels 300 km in 5 hours. What is its speed per hour? **Method:** Distance $\div$ Time $\rightarrow 300 \div 5$ **Answer:** 60 km/h
- Walking speed is 5 km/h. What distance is covered in 30 minutes? **Method:** Half an hour = half the distance $\rightarrow 5 \div 2$ **Answer:** 2.5 km
- A rickshaw covers 10 km in 20 minutes. At the same speed, how long for 25 km? **Method:** Find time per km ($20 \div 10 = 2$ min/km) $\rightarrow 25 \times 2$ **Answer:** 50 minutes
- If Rs 1,000 is saved every month, how much is saved in 6 months? **Method:** 1000×6 **Answer:** Rs 6000
- Rs 10,000 is deposited and earns 5% interest in 1 year. How much interest is earned? **Method:** 5% of 10000 **Answer:** Rs 500
- If Rs 200 is saved daily, how much is saved in 10 days? **Method:** 200×10 **Answer:** Rs 2000