

SCO INTERNATIONAL OLYMPIAD

CLASS 8 MATHS OLYMPIAD

Official Question Paper Set H for schools, teachers, parents, and students

Designed from Class 8 Mathematics syllabus pathways and aligned with SCO's platform flow for guided preparation, practice, reporting, and future-ready mathematical growth.

- Class 8 / middle-school level mathematical reasoning for global learners
- chapter coverage across algebra, geometry, mensuration, data handling, and number sense
- question blocks with answer keys and explanations for transparent preparation

Maths	English	Science	Mental Ability	Finance Knowledge
AI	Entrepreneurship	GK	Coding	Life Skills

SCO International Maths Olympiad - Class 8

Official Rebranded Question Paper | Set H | Answer Key and Explanations

Guidelines for the Candidate

- Total Questions: 35 | Time: 1 hour | Type: Objective Multiple Choice
- Fill in the OMR/personal information section carefully before starting the test.
- Each question has one correct answer. Select only one option for every question.
- Calculator use is not allowed unless the official invigilator instruction permits it.
- At the end of the test, hand over the answer sheet to the invigilator.

Section A: General Mathematics

Q.1 Linear Equation

Solve the equation $3x - 7 = 2x + 11$.

- A. 12
- B. 16
- C. 18
- D. 20

Answer: C

Explanation: Move $2x$ to the left and -7 to the right: $x = 18$.

Q.2 Algebraic Expressions

The greatest common factor of $18x^2y$, $27xy^2$ and $45x^2y^2$ is:

- A. $9x^2y$
- B. $9xy^2$
- C. $3xy^2$
- D. $9xy$

Answer: D

Explanation: The common numerical factor is 9, and the minimum powers common to all terms are x^1 and y^1 , so the GCF is $9xy$.

Q.3 Identities

If $4x = 96^2 - 92^2$, then the value of x is:

- A. 96
- B. 188
- C. 92
- D. 100

Answer: B

Explanation: $96^2 - 92^2 = (96 - 92)(96 + 92) = 4 \times 188 = 752$. Hence $4x = 752$ and $x = 188$.

Q.4 Cubes

The cube of 0.04 is:

- A. 0.0064
- B. 0.00064
- C. 0.000064
- D. 0.064

Answer: C

Explanation: $0.04^3 = 0.04 \times 0.04 \times 0.04 = 0.000064$.

Q.5 Square Roots

The smallest number by which 1620 must be divided to obtain a perfect square is:

- A. 2
- B. 3
- C. 6
- D. 5

Answer: D

Explanation: $1620 = 2^2 \times 3^4 \times 5$. The factor 5 has odd power, so divide by 5 to get $324 = 18^2$.

Q.6 Solid Shapes

Euler's relation for a polyhedron is:

- A. $F + E - V = 2$
- B. $F - E - V = 2$
- C. $F - E + V = 2$
- D. $V - F + E = 2$

Answer: C

Explanation: Euler's formula is $V - E + F = 2$, equivalently $F - E + V = 2$.

Q.7 Quadrilaterals

In parallelogram ABCD, the bisectors of $\angle A$ and $\angle B$ meet at O. What is $\angle AOB$?

- A. 90°
- B. 180°
- C. 60°
- D. 100°

Answer: A

Explanation: Adjacent angles of a parallelogram are supplementary. The bisectors of supplementary angles are perpendicular, so $\angle AOB = 90^\circ$.

Q.8 Diagonals of Polygons

Match the number of diagonals: Pentagon, Octagon, Hexagon, Quadrilateral.

- A. 9, 20, 5, 2
- B. 5, 20, 9, 2
- C. 20, 9, 5, 2
- D. 5, 9, 20, 2

Answer: B

Explanation: Using $n(n-3)/2$: pentagon 5, octagon 20, hexagon 9, quadrilateral 2.

Q.9 Angles in Parallelogram

Two adjacent angles of a parallelogram are $(5x + 10)^\circ$ and $(3x + 10)^\circ$. Find x .

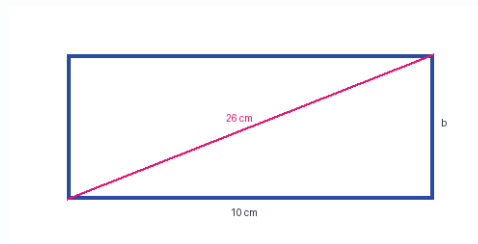
- A. 25
- B. 30
- C. 20
- D. 15

Answer: C

Explanation: Adjacent angles are supplementary, so $(5x+10)+(3x+10)=180$. Thus $8x+20=180$ and $x=20$.

Q.10 Rectangle

The length of a rectangle is 10 cm and its diagonal is 26 cm. Find its breadth.



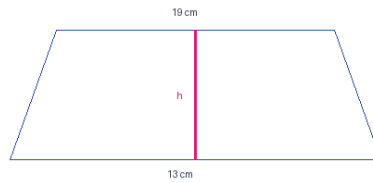
- A. 25 cm
- B. 24 cm
- C. 15 cm
- D. 20 cm

Answer: B

Explanation: By Pythagoras, $\text{breadth}^2 = 26^2 - 10^2 = 676 - 100 = 576$. Hence breadth = 24 cm.

Q.11 Trapezium Area

The parallel sides of a trapezium are 19 cm and 13 cm, and its area is 128 cm^2 . Find the distance between the parallel sides.



- A. 7 cm
- B. 8 cm
- C. 9 cm
- D. 12.5 cm

Answer: B

Explanation: Area = $\frac{1}{2} \times (19+13) \times h = 16h$. Since $16h = 128$, $h = 8 \text{ cm}$.

Q.12 Work and Time

Sonu works twice as fast as Monu. Together they finish a task in 18 hours. How long will Sonu alone take?

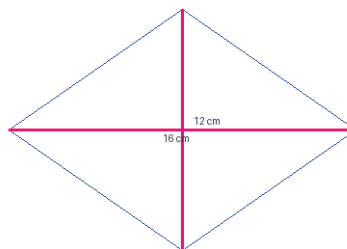
- A. 18 hours
- B. 27 hours
- C. 36 hours
- D. 24 hours

Answer: B

Explanation: If Monu's rate is r , Sonu's rate is $2r$. Together $3r = \frac{1}{18}$, so Sonu's rate = $\frac{2}{54} = \frac{1}{27}$. Sonu alone takes 27 hours.

Q.13 Rhombus

The diagonals of a rhombus are 16 cm and 12 cm. Find the length of each side.



- A. 12 cm
- B. 6 cm
- C. 8 cm
- D. 10 cm

Answer: D

Explanation: Half-diagonals are 8 cm and 6 cm. A side is $\sqrt{8^2+6^2}=\sqrt{100}=10 \text{ cm}$.

Q.14 Quadrilateral Properties

In which quadrilateral do the diagonals not necessarily bisect the angles at the vertices?

- A. Square
- B. Rhombus
- C. Rectangle
- D. All of these

Answer: C

Explanation: In a rectangle, diagonals bisect each other but do not necessarily bisect the interior angles, unless it is a square.

Q.15 Compound Interest

If the compound interest on a certain sum for 2 years at 10% per annum is ₹1050, find the principal.

- A. ₹3000
- B. ₹4000
- C. ₹5000
- D. ₹6000

Answer: C

Explanation: $CI = P[(1.1)^2 - 1] = 0.21P$. Hence $0.21P = 1050$ and $P = ₹5000$.

Q.16 Profit and Loss

Apples are bought at 5 for ₹10 and sold at 6 for ₹20. Find the gain percentage.

- A. 40%
- B. 35%
- C. $66\frac{2}{3}\%$
- D. 25%

Answer: C

Explanation: Cost per apple = ₹2. Selling price per apple = ₹20/6 = ₹ $3\frac{1}{3}$. Profit per apple = ₹ $1\frac{1}{3}$. Gain % = $(\frac{1\frac{1}{3}}{2}) \times 100 = 66\frac{2}{3}\%$.

Q.17 Factorisation

Factorise $6a^2 - 24b^2$.

- A. $(6a - 4b)(6a + 4b)$
- B. $(6a - 4b)(4a - 6b)$
- C. $6(a - 2b)(a + 2b)$
- D. $4(a - 2b)(a + 2b)$

Answer: C

Explanation: $6a^2 - 24b^2 = 6(a^2 - 4b^2) = 6(a - 2b)(a + 2b)$.

Q.18 Perfect Squares

Which of the following is not a perfect square?

- A. 36000
- B. 8100
- C. 6400
- D. 490000

Answer: A

Explanation: $8100=90^2$, $6400=80^2$, and $490000=700^2$. 36000 is not a perfect square.

Q.19 Square Roots

What is $\sqrt{0.0064}$?

- A. 0.8
- B. 0.08
- C. 8.0
- D. 0.008

Answer: B

Explanation: $0.08 \times 0.08 = 0.0064$, so the square root is 0.08.

Q.20 Rational Numbers

The product of two rational numbers is $\frac{3}{5}$. If one number is $\frac{9}{10}$, find the other number.

- A. $\frac{2}{3}$
- B. $\frac{3}{2}$
- C. $\frac{5}{6}$
- D. $\frac{1}{3}$

Answer: A

Explanation: Other number = $(\frac{3}{5}) \div (\frac{9}{10}) = (\frac{3}{5}) \times (\frac{10}{9}) = \frac{2}{3}$.

Q.21 Mensuration

A rectangular sheet is 25 cm long and 16 cm wide. From its four corners, quadrants of radius 7 cm are cut. Find the remaining area using $\pi = \frac{22}{7}$.

- A. 256 cm^2
- B. 246 cm^2
- C. 200 cm^2
- D. 236 cm^2

Answer: B

Explanation: Original area = $25 \times 16 = 400 \text{ cm}^2$. Four quadrants make one full circle of radius 7, area = 154 cm^2 . Remaining area = $400 - 154 = 246 \text{ cm}^2$.

Q.22 Area of Quadrilateral

The area of a quadrilateral is found using a diagonal of 24 m and perpendiculars of 10 m and 12 m from opposite vertices. Find the area.

- A. 254 m²
- B. 264 m²
- C. 234 m²
- D. 250 m²

Answer: B

Explanation: Area = $\frac{1}{2} \times \text{diagonal} \times (\text{sum of perpendiculars}) = \frac{1}{2} \times 24 \times (10+12) = 264 \text{ m}^2$.

Q.23 Cube Volume

If the edge of a cube is doubled, its volume becomes:

- A. 4 times
- B. 8 times
- C. 6 times
- D. Same

Answer: B

Explanation: Volume of a cube is side³. Doubling the side multiplies volume by $2^3 = 8$.

Q.24 Discount

An article marked at ₹200 is sold for ₹150. What is the discount rate?

- A. 20%
- B. 30%
- C. 35%
- D. 25%

Answer: D

Explanation: Discount = ₹50. Discount % = $\frac{50}{200} \times 100 = 25\%$.

Q.25 Regular Polygon

The exterior angle of a regular polygon is 45°. How many sides does it have?

- A. 9
- B. 8
- C. 6
- D. 5

Answer: B

Explanation: Number of sides = $\frac{360^\circ}{\text{exterior angle}} = \frac{360}{45} = 8$.

Section B: Reason and Assertion

Q.26 Reason and Assertion

Assertion (A): If the 5th term of an AP is 18 and the 10th term is 38, the common difference is 4. Reason (R): The nth term of an AP is $a + (n - 1)d$.

- A. Both A and R are true, and R explains A.
- B. Both A and R are true, but R does not explain A.
- C. A is true, but R is false.
- D. A is false, but R is true.

Answer: A

Explanation: $T_{10} - T_5 = 5d = 38 - 18 = 20$, so $d = 4$. The nth-term formula explains the calculation.

Q.27 Reason and Assertion

Assertion (A): A rectangle of length 10 cm and breadth 24 cm has diagonal 26 cm. Reason (R): In a right triangle, $\text{hypotenuse}^2 = \text{base}^2 + \text{height}^2$.

- A. Both A and R are true, and R explains A.
- B. Both A and R are true, but R does not explain A.
- C. A is true, but R is false.
- D. A is false, but R is true.

Answer: A

Explanation: The diagonal forms a right triangle with sides 10 and 24, so diagonal = $\sqrt{10^2 + 24^2} = \sqrt{676} = 26$.

Q.28 Reason and Assertion

Assertion (A): 36000 is a perfect square. Reason (R): A number is a perfect square if all prime factors have even powers.

- A. Both A and R are true, and R explains A.
- B. Both A and R are true, but R does not explain A.
- C. A is true, but R is false.
- D. A is false, but R is true.

Answer: D

Explanation: 36000 has prime factorisation $2^5 \times 3^2 \times 5^3$, so not all exponents are even. The reason is true but the assertion is false.

Q.29 Reason and Assertion

Assertion (A): The diagonals of a rhombus bisect each other at right angles. Reason (R): A rhombus has all sides equal.

- A. Both A and R are true, and R explains A.
- B. Both A and R are true, but R does not explain A.
- C. A is true, but R is false.
- D. A is false, but R is true.

Answer: B

Explanation: Both statements are true, but the equal-side property alone does not fully explain the perpendicular bisection of diagonals.

Q.30 Reason and Assertion

Assertion (A): If one quantity doubles and the other becomes half, the product remains constant. Reason (R): This is an example of inverse proportion.

- A. Both A and R are true, and R explains A.
- B. Both A and R are true, but R does not explain A.
- C. A is true, but R is false.
- D. A is false, but R is true.

Answer: A

Explanation: In inverse proportion, xy is constant. If x doubles, y must halve for the product to remain unchanged.

Section C: Achievers Section

Q.31 Achievers - Algebra

If $x + 1/x = 5$, find $x^2 + 1/x^2$.

- A. 23
- B. 25
- C. 27
- D. 21

Answer: A

Explanation: Square both sides: $x^2 + 2 + 1/x^2 = 25$, so $x^2 + 1/x^2 = 23$.

Q.32 Achievers - Probability

A box contains 4 red, 5 green, and 1 blue ball. One ball is selected at random. Find the probability of selecting a red ball.

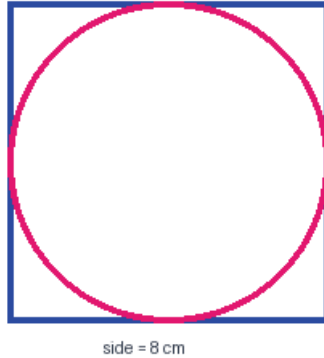
- A. $2/5$
- B. $1/2$
- C. $4/9$
- D. $3/10$

Answer: A

Explanation: Total balls = 10; red balls = 4. Probability = $4/10 = 2/5$.

Q.33 Achievers - Mensuration

A circle is inscribed in a square of area 64 cm^2 . Find the area of the circle using $\pi = 22/7$.



- A. $352/7 \text{ cm}^2$
- B. $128/7 \text{ cm}^2$
- C. $64/7 \text{ cm}^2$
- D. $88/7 \text{ cm}^2$

Answer: A

Explanation: Square side = 8 cm, so circle diameter = 8 and radius = 4. Area = $\pi r^2 = 22/7 \times 16 = 352/7 \text{ cm}^2$.

Q.34 Achievers - Numbers

A two-digit number is 8 times the sum of its digits. If reversing its digits gives a number 45 less than the original, find the number.

- A. 72
- B. 81
- C. 54
- D. 63

Answer: A

Explanation: Let the number be $10a+b$. From $10a+b = 8(a+b)$, we get $2a = 7b$. The reverse is 45 less, so $9(a-b)=45$ and $a-b=5$. Solving gives $b=2$ and $a=7$. Hence the number is 72.

Q.35 Achievers - Graphs

The points (1, 3), (2, 5), (3, 7), and (4, 9) lie on which line?

- A. $y = x + 2$
- B. $y = 2x + 1$
- C. $y = 3x$
- D. $y = x - 1$

Answer: B

Explanation: Each point satisfies $y = 2x + 1$: for $x=1$, $y=3$; for $x=4$, $y=9$.

