SAINIK SCHOOL ENTRANCE EXAM - DETAILED ANSWER SHEET

Class 6 Entrance Exam - Practice Set 01 Section A: Mathematics

Complete solutions with step-by-step explanations for teaching.

Question 1

Which of the following is equivalent to 80.1%?

Options: (a) 8010 | (b) 0.801 | (c) 801 | (d) 8.01

✓ **Correct Answer:** (b) 0.801

Key Concept: Percentage to Decimal Conversion

Explanation: To convert a percentage to a decimal, divide by 100.

Step-by-Step Solution:

1. 80.1% means 80.1 per 100
2. 80.1% = 80.1 ÷ 100
3. = 0.801

Question 2

1/8 part of a drum is filled with milk. It requires 28L more to fill the drum completely. What is the capacity of the drum?

Options: (a) 36 L | (b) 30 L | (c) 38 L | (d) 32 L

✓ **Correct Answer:** (d) 32 L

Key Concept: Fractions and Capacity

Explanation: Find what fraction is empty, then solve for the total capacity.

Step-by-Step Solution:

1. Filled part = 1/8
2. Empty part = 1 - 1/8 = 7/8

3. Empty part requires 28L to fill: 7/8 of capacity = 28L
4. If 7/8 = 28L, then 1/8 = 28 ÷ 7 = 4L
5. Total capacity = 4 × 8 = 32L
6. Verify: Filled = 1/8 of 32 = 4L, Empty = 7/8 of 32 = 28L ✓

Question 3

Five digits greatest number to be formed with the help of 7, 5, 4, 8 and 0 is

Options: (a) 78540 | (b) 87540 | (c) 85740 | (d) 78504

✓ **Correct Answer:** (b) 87540

Key Concept: Number Formation - Descending Order

Explanation: To form the greatest number, arrange the digits in descending (largest to smallest) order.

Step-by-Step Solution:

1. Available digits: 7, 5, 4, 8, 0
2. Arrange in descending order: 8, 7, 5, 4, 0
3. Greatest number = 87540

Question 4

The ratio 7:5 expressed as percent equals

Options: (a) 140% | (b) 120% | (c) 100% | (d) 130%

✓ **Correct Answer:** (a) 140%

Key Concept: Ratio to Percentage Conversion

Explanation: To convert a ratio to percentage, divide the first number by the second and multiply by 100.

Step-by-Step Solution:

1. Ratio 7:5 = 7/5
2. 7 ÷ 5 = 1.4
3. 1.4 × 100 = 140%

Question 5

Following graph represents the number of shoes sold by a shopkeeper in last 4 months. How many shoes were sold in September?

Options: (a) 1130 pairs | (b) 1120 pairs | (c) 1242 pairs | (d) 1232 pairs

✓ **Correct Answer:** (b) 1120 pairs

Key Concept: Pictograph Interpretation and Addition

Explanation: Read the pictograph carefully. Each shoe icon represents 112 pairs of shoes.

Step-by-Step Solution:

1. September: 2 icons × 112 = 224 pairs
2. October: 4 icons × 112 = 448 pairs
3. November: 3 icons × 112 = 336 pairs
4. December: 1 icon × 112 = 112 pairs
5. Total = 224 + 448 + 336 + 112 = 1120 pairs

Question 6

In a hall, 192 children are made to sit in rows and columns and number of rows is more than the number of columns by 4. What is the number of children in each column?

Options: (a) 16 | (b) 12 | (c) 14 | (d) 18

✓ **Correct Answer:** (b) 12

Key Concept: Algebra - Quadratic Equations

Explanation: Use algebra to set up equations and solve.

Step-by-Step Solution:

1. Let number of columns = c
2. Number of rows = c + 4 (4 more than columns)
3. Total children = rows × columns
4. 192 = (c + 4) × c
5. 192 = c^2 + 4c
6. c^2 + 4c - 192 = 0
7. (c + 16)(c - 12) = 0

8. c = 12 (we ignore -16 as negative doesn't make sense)

Question 7

Mr. Deepak invested an amount of ₹21250 for 6 yr. At what rate of simple interest will he obtain the total amount of ₹26350 at the end of 6 yr?

Options: (a) 6% | (b) 5% | (c) 8% | (d) 4%

✓ **Correct Answer:** (d) 4%

Key Concept: Simple Interest

Explanation: Use the simple interest formula: SI = (P × R × T) / 100

Step-by-Step Solution:

1. Principal (P) = ₹21250
2. Time (T) = 6 years
3. Total Amount (A) = ₹26350
4. Simple Interest (SI) = A - P = 26350 - 21250 = ₹5100
5. Using SI = (P × R × T) / 100
6. 5100 = (21250 × R × 6) / 100
7. 5100 = 1275R
8. R = 5100 ÷ 1275 = 4%

Question 8

Find the least number which when divided by 9, 12, 16 and 30 leaves in each case remainder 3.

Options: (a) 723 | (b) 717 | (c) 720 | (d) 727

✓ **Correct Answer:** (a) 723

Key Concept: LCM with Remainder

Explanation: Find the LCM (Least Common Multiple) of the divisors and add the remainder.

Step-by-Step Solution:

1. We need a number that leaves remainder 3 when divided by 9, 12, 16, and 30
2. First, find LCM of 9, 12, 16, 30

3. $9 = 3^2$
4. $12 = 2^2 \times 3$
5. $16 = 2^4$
6. $30 = 2 \times 3 \times 5$
7. LCM = $2^4 \times 3^2 \times 5 = 16 \times 9 \times 5 = 720$
8. The required number = LCM + remainder = 720 + 3 = 723

Question 9

If the length of a rectangle is increased by 40% and the breadth is reduced by 20%, what will be the effect on its area?

Options: (a) Increase by 8% | (b) Increase by 20% | (c) Increase by 12% | (d) Increase by 16%

✓ **Correct Answer:** (c) Increase by 12%

Key Concept: Percentage Change in Area

Explanation: Calculate the new area as a percentage of the original area.

Step-by-Step Solution:

1. Let original length = L and breadth = B
2. Original area = L × B
3. New length = L + 40% of L = 1.4L
4. New breadth = B - 20% of B = 0.8B
5. New area = 1.4L × 0.8B = 1.12LB
6. Increase in area = 1.12LB - LB = 0.12LB
7. Percentage increase = (0.12LB / LB) × 100 = 12%

Question 10

A and B together can do a piece of work in 4 days. If A alone can do work in 6 days. In how many days B can alone complete the same piece of work?

Options: (a) 12 | (b) 8 | (c) 9 | (d) 16

✓ **Correct Answer:** (a) 12

Key Concept: Work and Time

Explanation: Use the work formula: 1/A + 1/B = 1/(A+B)

Step-by-Step Solution:

1. A alone completes work in 6 days → A's 1 day work = 1/6
2. A and B together complete in 4 days → (A+B)'s 1 day work = 1/4
3. B's 1 day work = (A+B)'s work - A's work
4. B's 1 day work = 1/4 - 1/6
5. = (3 - 2)/12 = 1/12
6. If B does 1/12 work in 1 day, B completes full work in 12 days

---

Question 11

The sides of a triangle are 2:3:4. If the perimeter of the triangle is 45 cm, find its third sides.

Options: (a) 6 cm | (b) 9 cm | (c) 10 cm | (d) 20 cm

✓ **Correct Answer:** (d) 20 cm

Key Concept: Ratio and Perimeter

Explanation: Use the ratio to set up an equation with the perimeter.

Step-by-Step Solution:

1. Ratio of sides = 2:3:4
2. Let the sides be 2x, 3x, and 4x
3. Perimeter = 2x + 3x + 4x = 45 cm
4. 9x = 45
5. x = 5
6. Third side = 4x = 4 × 5 = 20 cm

Question 12

Find the simple interest on ₹72000 for 4 yr at 12% p.a.

Options: (a) ₹34660 | (b) ₹34560 | (c) ₹37602 | (d) ₹34360

✓ **Correct Answer:** (b) ₹34560

Key Concept: Simple Interest

Explanation: Use the simple interest formula.

Step-by-Step Solution:

1. Principal (P) = ₹72000
2. Rate (R) = 12% per annum
3. Time (T) = 4 years
4. SI = (P × R × T) / 100
5. SI = (72000 × 12 × 4) / 100
6. SI = 3456000 / 100
7. SI = ₹34560

Question 13

One side of a square garden is 135 m. What is the cost of fencing it at the rate of ₹0.40/m?

Options: (a) ₹216 | (b) ₹116 | (c) ₹158 | (d) ₹220

✓ **Correct Answer:** (a) ₹216

Key Concept: Perimeter and Cost Calculation

Explanation: Find the perimeter of the square and multiply by the rate.

Step-by-Step Solution:

1. Side of square = 135 m
2. Perimeter of square = 4 × side = 4 × 135 = 540 m
3. Rate of fencing = ₹0.40 per meter
4. Total cost = 540 × 0.40 = ₹216

Question 14

A seller sold a fan at a profit of 3%. If the cost price of the fan was ₹700, what was its selling price?

Options: (a) 721 | (b) 624 | (c) 110 | (d) 214

✓ **Correct Answer:** (a) 721

Key Concept: Profit and Loss

Explanation: Use the profit formula to find selling price.

Step-by-Step Solution:

1. Cost Price (CP) = ₹700
2. Profit = 3%
3. Profit amount = 3% of 700 = (3/100) × 700 = ₹21
4. Selling Price (SP) = CP + Profit
5. SP = 700 + 21 = ₹721

Question 15

The one that is divisible by 15, from the following is

Options: (a) 17325 | (b) 23751 | (c) 29915 | (d) 305600

✓ **Correct Answer:** (a) 17325

Key Concept: Divisibility Rules

Explanation: A number is divisible by 15 if it's divisible by both 3 and 5.

Step-by-Step Solution:

1. For divisibility by 15, number must be divisible by both 3 and 5
2. Divisibility by 5: number must end in 0 or 5
3. Divisibility by 3: sum of digits must be divisible by 3
4. Check (a) 17325: ends in 5 ✓
5. Sum = 1+7+3+2+5 = 18 (divisible by 3) ✓
6. 17325 ÷ 15 = 1155 (exactly divisible)

Question 16

On sports day, if 30 children were made to stand in a row, then 16 rows were formed. If 24 children are made to stand in a row, then how many rows can be formed?

Options: (a) 22 | (b) 20 | (c) 18 | (d) 24

✓ **Correct Answer:** (b) 20

Key Concept: Multiplication and Division

Explanation: Total children remains constant, so use multiplication and division.

Step-by-Step Solution:

1. Initially: 30 children per row × 16 rows

2. Total children = 30 × 16 = 480
3. Now: 24 children per row
4. Number of rows = Total children ÷ children per row
5. Number of rows = 480 ÷ 24 = 20 rows

Question 17

If x * y = x + y + √(xy), the value of 6 * 24 is

Options: (a) 60 | (b) 36 | (c) 42 | (d) 44

✓ **Correct Answer:** (c) 42

Key Concept: Custom Operations with Special Symbols

Explanation: This is a CUSTOM OPERATION. The symbol '*' does NOT mean regular multiplication. Instead, it means: "add the two numbers and then add the square root of their product".

Step-by-Step Solution:

1. The * symbol is a custom operation defined as: x * y = x + y + √(xy)
2. We need to find: 6 * 24
3. First, substitute x = 6 and y = 24
4. Calculate the product: 6 × 24 = 144
5. Calculate the square root: √144 = 12
6. Apply the formula: 6 * 24 = 6 + 24 + 12
7. Add them up: 30 + 12 = 42

Teaching Tip: sometimes in math, we create special symbols with special rules. Here, the * means: "take the two numbers, add them, then add the square root of their product."

Question 18

The average weight of A, B and C is 45 kg. If the average weight of A and B is 46 kg., C's weight is

Options: (a) 41 kg | (b) 41 kg | (c) 42 kg | (d) 43 kg

✓ **Correct Answer:** (d) 43 kg

Key Concept: Average

Explanation: Use the average formula to find the unknown weight.

Step-by-Step Solution:

1. Average of A, B, C = 45 kg
2. A + B + C = 45 × 3 = 135 kg
3. Average of A and B = 46 kg
4. A + B = 46 × 2 = 92 kg
5. C = (A + B + C) - (A + B)
6. C = 135 - 92 = 43 kg

Question 19

The average of first four multiples of 7 is

Options: (a) 17.5 | (b) 17 | (c) 16.5 | (d) 16

✓ **Correct Answer:** (a) 17.5

Key Concept: Average and Multiples

Explanation: Find the multiples and calculate their average.

Step-by-Step Solution:

1. First four multiples of 7 are: 7, 14, 21, 28
2. Sum = 7 + 14 + 21 + 28 = 70
3. Average = Sum ÷ Number of terms
4. Average = 70 ÷ 4 = 17.5

Question 20

What per cent of ₹2650 is ₹1987.50?

Options: (a) 80% | (b) 75% | (c) 70% | (d) 85%

✓ **Correct Answer:** (b) 75%

Key Concept: Percentage Calculation

Explanation: Use the percentage formula.

Step-by-Step Solution:

1. We need to find what % of 2650 is 1987.50

2. Percentage = (Part / Whole) × 100
3. Percentage = (1987.50 / 2650) × 100
4. = 0.75 × 100
5. = 75%

Question 21

5% of A's income is equal to 15% of B's income. If B's income is ₹4000, what is A's income?

Options: (a) ₹10000 | (b) ₹11000 | (c) ₹12000 | (d) ₹12500

✓ **Correct Answer:** (c) ₹12000

Key Concept: Percentage Equations

Explanation: Set up an equation from the given relationship.

Step-by-Step Solution:

1. Given: 5% of A = 15% of B
2. B's income = ₹4000
3. 5% of A = 15% of 4000
4. 0.05 × A = 0.15 × 4000
5. 0.05A = 600
6. A = 600 ÷ 0.05
7. A = ₹12000

Question 22

A radio is bought for ₹980 and sold for ₹931. Find the loss per cent.

Options: (a) 2 | (b) 3 | (c) 6 | (d) 5

✓ **Correct Answer:** (d) 5

Key Concept: Loss Percentage

Explanation: Calculate loss and then find loss percentage.

Step-by-Step Solution:

1. Cost Price (CP) = ₹980
2. Selling Price (SP) = ₹931

3. Loss = CP - SP = 980 - 931 = ₹49
4. Loss % = (Loss / CP) × 100
5. Loss % = (49 / 980) × 100
6. = 0.05 × 100 = 5%

Question 23

A man bought toffees at 9 for ₹10. How many toffees should be sold to gain 50%?

Options: (a) 6 | (b) 5 | (c) 4 | (d) 8

✓ **Correct Answer:** (a) 6

Key Concept: Profit Percentage

Explanation: Calculate the selling price needed for 50% profit.

Step-by-Step Solution:

1. Cost Price of 9 toffees = ₹10
2. To gain 50%, Selling Price should be 150% of CP
3. SP of 9 toffees = 10 × 1.5 = ₹15
4. This means 9 toffees should be sold for ₹15
5. To get ₹10, number of toffees = 9 × (10/15)
6. = 9 × (2/3) = 6 toffees

Question 26 ☆ CORRECTED

Simplify: [(1/4 ÷ 1/8) + 1]

Options: (a) 3 | (b) 5 | (c) 2 | (d) 4

✓ **Correct Answer:** (a) 3

Key Concept: Division of Fractions with Order of Operations (BODMAS)

Explanation: The blurry symbol is DIVISION (÷), not addition. Follow order of operations: do the bracket first, then add 1.

Step-by-Step Solution:

1. Simplify: [(1/4 ÷ 1/8) + 1]
2. **STEP 1: Do the round bracket first** - divide 1/4 ÷ 1/8

3. Rule for dividing fractions: a/b ÷ c/d = a/b × d/c (flip the second fraction)
4. 1/4 ÷ 1/8 = 1/4 × 8/1
5. = (1 × 8)/(4 × 1) = 8/4 = 2
6. **STEP 2: Now add 1** to the bracket result
7. 2 + 1 = 3

Teaching Tip:

When dividing fractions, remember **"Keep, Change, Flip"**:

- **Keep** the first fraction: 1/4
- **Change** division to multiplication: ÷ → ×
- **Flip** the second fraction: 1/8 → 8/1
- Then multiply: 1/4 × 8/1 = 8/4 = 2

Question 27

How many 4 cm long cubes can be made out of a cuboid 20 × 8 × 4 cm³?

Options: (a) 9 | (b) 8 | (c) 10 | (d) 7

✓ **Correct Answer:** (c) 10

Key Concept: Volume and Division

Explanation: Divide the volume of cuboid by volume of cube.

Step-by-Step Solution:

1. Volume of cuboid = length × width × height
2. = 20 × 8 × 4 = 640 cm³
3. Volume of one cube = side³ = 4³ = 64 cm³
4. Number of cubes = Volume of cuboid / Volume of cube
5. = 640 / 64 = 10 cubes

Quick Reference: All Correct Answers

Q	Answer	Topic	Difficulty
1	(b)	Percentage	Easy

2	(d)	Fractions	Medium
3	(b)	Numbers	Easy
4	(a)	Ratio	Easy
5	(b)	Pictograph	Easy
6	(b)	Algebra	Medium
7	(d)	Simple Interest	Medium
8	(a)	LCM	Medium
9	(c)	Area %	Medium
10	(a)	Work-Time	Medium
11	(d)	Ratio	Medium
12	(b)	Simple Interest	Medium
13	(a)	Perimeter	Easy
14	(a)	Profit	Easy
15	(a)	Divisibility	Medium
16	(b)	Division	Easy
17	(c)	Custom Op.	Hard
18	(d)	Average	Medium
19	(a)	Average	Medium
20	(b)	Percentage	Medium
21	(c)	Percentage	Medium
22	(d)	Loss %	Medium

23	(a)	Profit %	Medium
26	(a)	Fraction Division	Hard
27	(c)	Volume	Medium

Teaching Strategy for Your Daughter

Daily Practice Routine (20-25 minutes)

Day 1: Questions 1, 3, 4 (Easy - Build confidence)

Day 2: Questions 5, 5(b), 2 (Pictographs & Fractions)

Day 3: Questions 6, 7, 8, 9 (Medium - Multiple concepts)

Day 4: Questions 10, 11, 12, 13 (Work-Time, Ratios, SI)

Day 5: Questions 14, 15, 16, 18, 19 (Profit-Loss, Average)

Day 6: Questions 20, 21, 22, 23 (Percentages)

Day 7: Questions 17, 26, 27 (Hard topics - Custom ops, Fractions, Volume)

How to Explain Key Concepts

1. Dividing Fractions - "Keep, Change, Flip"

```
1/4 ÷ 1/8
= 1/4 × 8/1        (Keep 1/4, Change ÷ to ×, Flip 1/8 to 8/1)
= 8/4
= 2
```

2. Custom Operations

When you see a special symbol with a definition, follow EXACTLY what's defined.

Example: $x * y = x + y + \sqrt{(xy)}$

- Always apply the given formula, not standard operations

3. Finding Capacity from Fractions

If 1/8 is filled and 7/8 (the empty part) = 28L:

- 1/8 = 28 ÷ 7 = 4L
- Total = 4 × 8 = 32L
