

Symbiosis Entrance Test (SET)

Quantitative Aptitude — Sample Paper 10

Total Questions:	16	Maximum Marks:	16
Duration:	16 minutes	Marking Scheme:	+1 per correct answer, no negative marking
Mode:	Online CBT		

Instructions

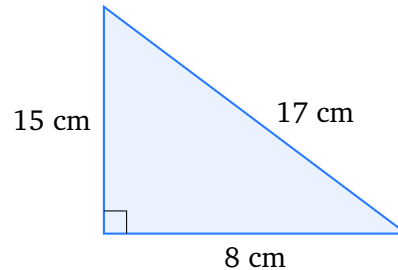
1. This paper contains **16 multiple-choice questions** carrying **1 mark each**.
2. Each question has **four options** (A)–(D). Choose the single best answer.
3. There is **no negative marking** for wrong answers.
4. Attempt all questions within the stipulated time of **16 minutes**.
5. Syllabus: Arithmetic, Algebra, Geometry, Data Interpretation, and Probability — class 9–10 level, as tested in SET (Symbiosis Entrance Test).

SECTION: Quantitative Aptitude (16 Questions × 1 Mark)

- Q1.** Two varieties of rice costing Rs. 40 per kg and Rs. 60 per kg are mixed. The resulting mixture costs Rs. 45 per kg. In what ratio should they be mixed?
- (A) 3 : 1
(B) 1 : 3
(C) 2 : 1
(D) 1 : 2
- Q2.** In how many ways can the letters of the word **BOARD** be arranged so that the two vowels (O and A) always come together?
- (A) 24
(B) 48
(C) 36

(D) 60

Q3. In a right triangle, one leg is 8 cm and the hypotenuse is 17 cm. Find the area of the triangle.



- (A) 48 cm^2
- (B) 56 cm^2
- (C) 60 cm^2
- (D) 68 cm^2

Q4. Find the difference between the compound interest and simple interest on Rs. 10,000 for 2 years at 8% per annum.

- (A) Rs. 48
- (B) Rs. 56
- (C) Rs. 60
- (D) Rs. 64

Q5. A car covers a distance of 450 km in 5 hours. A bus covers the same distance in 9 hours. What is the ratio of the speed of the car to that of the bus?

- (A) 9 : 5
- (B) 5 : 9
- (C) 3 : 2
- (D) 2 : 3

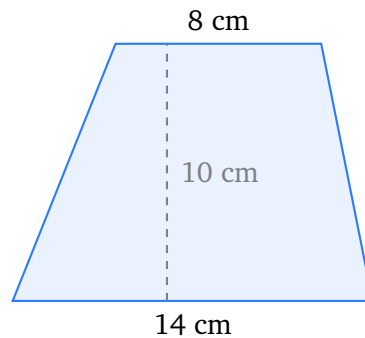
Q6. Rs. 4,800 is divided among A, B, and C in the ratio 5 : 3 : 4. How much does B receive?

- (A) Rs. 1,000



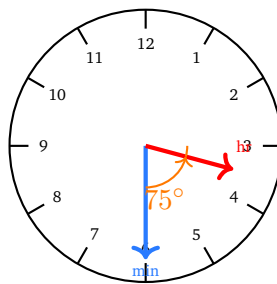
- (B) Rs. 1,200
- (C) Rs. 1,600
- (D) Rs. 2,000

Q7. A trapezium has parallel sides of 8 cm and 14 cm, and a perpendicular height of 10 cm. Find its area.



- (A) 88 cm^2
- (B) 99 cm^2
- (C) 110 cm^2
- (D) 120 cm^2

Q8. What is the angle between the hour hand and the minute hand of a clock at **3:30**?



- (A) 60°
- (B) 65°
- (C) 70°
- (D) 75°

Q9. January 1, 2020 was a Wednesday. What day of the week was January 1, 2021? (2020 was a leap year.)



- (A) Thursday
- (B) Friday
- (C) Saturday
- (D) Sunday

Q10. If $x + \frac{1}{x} = 5$, find the value of $x^2 + \frac{1}{x^2}$.

- (A) 20
- (B) 21
- (C) 23
- (D) 25

Q11. The frequency distribution of marks scored by 20 students is given below.
What is the **mode**?

Marks	10	20	30	40	50
Frequency	3	5	7	2	3

- (A) 20
- (B) 25
- (C) 35
- (D) 30

Q12. Two fair dice are thrown simultaneously. What is the probability that the sum of the numbers on the top faces is 8?

- (A) $\frac{5}{36}$
- (B) $\frac{1}{6}$
- (C) $\frac{7}{36}$
- (D) $\frac{1}{4}$

Q13. What is the remainder when 5^{25} is divided by 6?

- (A) 1
- (B) 3
- (C) 5



(D) 4

Q14. A shopkeeper marks an article 25% above its cost price and then offers a discount of 20% on the marked price. What is his profit or loss percentage?

- (A) 5% profit
- (B) 2% loss
- (C) 3% profit
- (D) No profit, no loss

Q15. Two trains start simultaneously from cities A and B, which are 600 km apart, and travel towards each other. Train 1 travels at 80 km/h and Train 2 at 70 km/h. How far from city A do they meet?



- (A) 320 km
- (B) 280 km
- (C) 300 km
- (D) 350 km

Q16. Simplify: $\frac{2^{10} \times 3^4}{6^4 \times 2^2}$

- (A) 8
- (B) 16
- (C) 32
- (D) 64



DETAILED SOLUTIONS

Sol. 1.

Solution

Topic: Alligation and Mixture

By the alligation rule, the ratio in which the two varieties should be mixed is:

$$\text{Ratio} = \frac{\text{Price of dearer} - \text{Mean price}}{\text{Mean price} - \text{Price of cheaper}} = \frac{60 - 45}{45 - 40} = \frac{15}{5} = 3 : 1.$$

Answer: (A) [Go Back to Q 1](#)

Sol. 2.

Solution

Topic: Permutations / Letters Arrangement

Treat the two vowels O and A as a single unit {OA}. We now have 4 units: B, R, D, {OA}.

Number of ways to arrange 4 units = $4! = 24$.The two vowels within the unit can be arranged in $2! = 2$ ways.Total arrangements = $24 \times 2 = 48$.Answer: (B) [Go Back to Q 2](#)

Sol. 3.

Solution

Topic: Geometry / Right Triangle AreaLet the unknown leg be a . By the Pythagorean theorem:

$$a^2 + 8^2 = 17^2 \Rightarrow a^2 = 289 - 64 = 225 \Rightarrow a = 15 \text{ cm.}$$

$$\text{Area of the right triangle} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 8 \times 15 = 60 \text{ cm}^2.$$

Answer: (C) [Go Back to Q 3](#)

Sol. 4.

Solution

Topic: Simple Interest vs. Compound Interest

$$\text{SI} = \frac{P \times r \times t}{100} = \frac{10000 \times 8 \times 2}{100} = \text{Rs. } 1600.$$

$$\text{CI} = P[(1 + r/100)^t - 1] = 10000 \times [(1.08)^2 - 1] = 10000 \times 0.1664 = \text{Rs. } 1664.$$



Difference = $1664 - 1600 = \text{Rs. } 64$.

(This equals $P \times r^2/100^2 = 10000 \times 64/10000 = 64$.✓)

Answer: (D) [Go Back to Q 4](#)

Sol. 5.

Solution

Topic: Speed, Distance, Time / Ratio of Speeds

Speed of car = $\frac{450}{5} = 90 \text{ km/h}$. Speed of bus = $\frac{450}{9} = 50 \text{ km/h}$.

Ratio of car speed to bus speed = $90 : 50 = 9 : 5$.

Answer: (A) [Go Back to Q 5](#)

Sol. 6.

Solution

Topic: Ratio and Proportion / Division in a Given Ratio

Total parts = $5 + 3 + 4 = 12$.

B's share = $\frac{3}{12} \times 4800 = \frac{1}{4} \times 4800 = \text{Rs. } 1,200$.

Answer: (B) [Go Back to Q 6](#)

Sol. 7.

Solution

Topic: Mensuration / Area of Trapezium

Area of trapezium = $\frac{1}{2} \times (\text{sum of parallel sides}) \times \text{height}$

$$= \frac{1}{2} \times (8 + 14) \times 10 = \frac{1}{2} \times 22 \times 10 = 110 \text{ cm}^2.$$

Answer: (C) [Go Back to Q 7](#)

Sol. 8.

Solution

Topic: Clocks / Angle Between Hands

At 3:30:

Minute hand position: $30 \times 6^\circ = 180^\circ$ from 12 (pointing to 6).

Hour hand position: $3 \times 30^\circ + 30 \times \frac{1^\circ}{2} = 90^\circ + 15^\circ = 105^\circ$ from 12.

Angle between the hands = $|180^\circ - 105^\circ| = 75^\circ$.



Answer: (D) [Go Back to Q 8](#)

Sol. 9.

Solution

Topic: Calendar / Day of the Week

2020 was a leap year, so it had 366 days = 52 weeks + 2 days.

January 1, 2021 is 2 days after Wednesday = **Friday**.

Answer: (B) [Go Back to Q 9](#)

Sol. 10.

Solution

Topic: Algebra / Algebraic Identity

Square both sides of $x + \frac{1}{x} = 5$:

$$\left(x + \frac{1}{x}\right)^2 = x^2 + 2 + \frac{1}{x^2} = 25.$$

Therefore $x^2 + \frac{1}{x^2} = 25 - 2 = \mathbf{23}$.

Answer: (C) [Go Back to Q 10](#)

Solution

Topic: Statistics / Mode

The mode is the value with the highest frequency.

Sol. 11.

Marks	Frequency
10	3
20	5
30	7
40	2
50	3

Highest frequency = 7, corresponding to marks = 30.

Mode = 30.

Answer: (D) [Go Back to Q 11](#)

Sol. 12.



Solution**Topic: Probability / Two Dice**Total outcomes when two dice are thrown = $6 \times 6 = 36$.Outcomes with sum = 8: (2, 6), (3, 5), (4, 4), (5, 3), (6, 2) $\Rightarrow$ 5 outcomes.

$$P(\text{sum} = 8) = \frac{5}{36}.$$

Answer: (A) [Go Back to Q 12](#)

Sol. 13.

Solution**Topic: Number Theory / Remainder and Pattern**

$$5^1 \equiv 5 \pmod{6}; \quad 5^2 = 25 \equiv 1 \pmod{6}; \quad 5^3 \equiv 5 \pmod{6}; \dots$$

The remainders alternate: odd powers $\equiv 5$, even powers $\equiv 1 \pmod{6}$.Since 25 is odd: $5^{25} \equiv 5 \pmod{6}$.**Answer: (C)** [Go Back to Q 13](#)

Sol. 14.

Solution**Topic: Profit and Loss / Marked Price and Discount**

Let CP = Rs. 100.

Marked Price = $100 + 25\% \text{ of } 100 = \text{Rs. } 125$.Selling Price after 20% discount = $125 \times 0.80 = \text{Rs. } 100 = \text{CP}$.Since SP = CP, there is **no profit and no loss**.**Answer: (D)** [Go Back to Q 14](#)

Sol. 15.

Solution**Topic: Time, Speed and Distance / Two Objects Meeting**Combined speed = $80 + 70 = 150 \text{ km/h}$.

$$\text{Time to meet} = \frac{600}{150} = 4 \text{ hours.}$$

Distance covered by Train 1 from city A = $80 \times 4 = 320 \text{ km}$.**Answer: (A)** [Go Back to Q 15](#)

Sol. 16.



Solution**Topic: Number System / Laws of Exponents**

Note that $6^4 = (2 \times 3)^4 = 2^4 \times 3^4$. Therefore:

$$\frac{2^{10} \times 3^4}{6^4 \times 2^2} = \frac{2^{10} \times 3^4}{2^4 \times 3^4 \times 2^2} = \frac{2^{10}}{2^{4+2}} = 2^{10-6} = 2^4 = 16.$$

Answer: (B)

[Go Back to Q 16](#)

ANSWER KEY

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	D	5	A
6	B	7	C	8	D	9	B	10	C
11	D	12	A	13	C	14	D	15	A
16	B								

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