

Symbiosis Entrance Test (SET)

Quantitative Aptitude — Sample Paper 7

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

Instructions

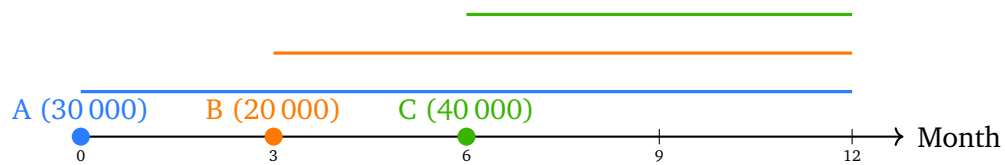
1. This paper contains **16 multiple-choice questions** carrying **1 mark each**.
2. Each question has **four options** (A)–(D). Choose the single best answer.
3. There is **no negative marking** for wrong answers.
4. Attempt all questions within the stipulated time of **16 minutes**.
5. Syllabus: Arithmetic, 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.** A shopkeeper marks goods 50% above cost price and allows a 20% discount on the marked price. What is his profit percentage?
- (A) 15%
(B) 18%
(C) 20%
(D) 24%
- Q2.** The average of 4 numbers is 25. When a 5th number is included, the average becomes 23. What is the 5th number?
- (A) 25
(B) 20
(C) 18
(D) 15

- Q3.** In an election, a candidate wins by 840 votes. The winning candidate receives 55% of the total votes cast. How many total votes were cast?
- (A) 8400
(B) 7600
(C) 9200
(D) 10000
- Q4.** A floor measuring $600 \text{ cm} \times 360 \text{ cm}$ is to be covered with square tiles of the largest possible equal size. What is the side length (in cm) of each tile?
- (A) 60 cm
(B) 120 cm
(C) 180 cm
(D) 240 cm
- Q5.** What is the remainder when $(11^2 + 12^2 + 13^2)$ is divided by 5?
- (A) 1
(B) 2
(C) 4
(D) 0
- Q6.** Alloy A contains gold and silver in the ratio 3:2, and Alloy B contains them in the ratio 2:3. In what ratio should the two alloys be mixed so that the resulting alloy has gold and silver in equal proportion?
- (A) 1:2
(B) 2:3
(C) 3:2
(D) 1:1
- Q7.** A invests Rs. 30 000 at the start of a business. B joins after 3 months with Rs. 20 000. C joins after another 3 months with Rs. 40 000. At the end of 12 months from the start, the total profit is Rs. 26 000. What is A's share of the profit?





- (A) Rs. 12 000
- (B) Rs. 10 000
- (C) Rs. 8000
- (D) Rs. 6000

Q8. A trader sells two watches, each for Rs. 1080. On one he gains 20% and on the other he loses 20%. What is the net result of the overall transaction?

- (A) No gain, no loss
- (B) Net loss of Rs. 90
- (C) Net gain of Rs. 90
- (D) Net loss of Rs. 180

Q9. A manufacturer sells goods to a wholesaler at 20% profit. The wholesaler sells to a retailer at 10% profit. The retailer sells the goods to a customer for Rs. 1848, earning a 40% profit. Find the manufacturer's cost price.

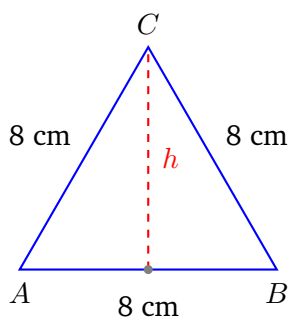
- (A) Rs. 800
- (B) Rs. 900
- (C) Rs. 1000
- (D) Rs. 1100

Q10. A car travelling at 80 km/h is 1 km behind a truck travelling at 60 km/h in the same direction. How long (in minutes) will it take for the car to catch up with the truck?

- (A) 1.5 minutes
- (B) 2 minutes
- (C) 2.5 minutes
- (D) 3 minutes

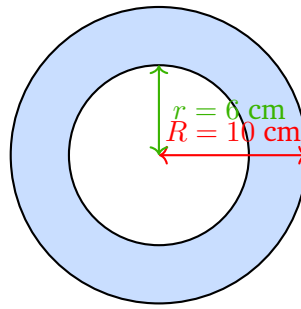


- Q11.** Ravi drives 90 km at 60 km/h, then takes a 30-minute rest, and finally drives the remaining 90 km at 45 km/h. What is his total travel time (including the rest)?
- (A) 4 hours
(B) 3.5 hours
(C) 4.5 hours
(D) 5 hours
- Q12.** A and B together can complete a task in 6 days, B and C together in 12 days, and A and C together in 4 days. How many days will A, B, and C together take to finish the task?
- (A) 3 days
(B) 4 days
(C) 5 days
(D) 6 days
- Q13.** Find the area of an equilateral triangle with side 8 cm.



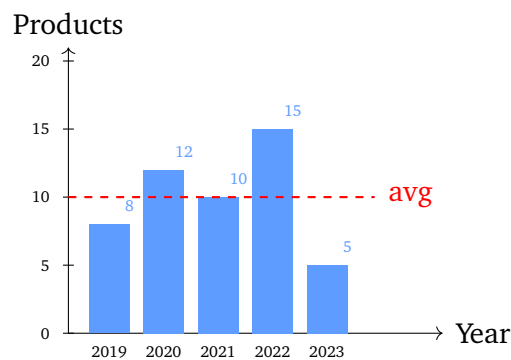
- (A) $8\sqrt{3} \text{ cm}^2$
(B) $12\sqrt{3} \text{ cm}^2$
(C) $16\sqrt{3} \text{ cm}^2$
(D) $24\sqrt{3} \text{ cm}^2$
- Q14.** Two concentric circles have radii 10 cm (outer) and 6 cm (inner). Find the area of the region between the two circles. (Use $\pi = 3.14$)





- (A) 150.72 cm^2
- (B) 176.84 cm^2
- (C) 188.40 cm^2
- (D) 200.96 cm^2

Q15. The bar chart shows the number of new products launched by a company over five years. In how many years was the number of products launched **above the average** for the 5-year period?



- (A) 2 years
- (B) 3 years
- (C) 4 years
- (D) 1 year

Q16. A bag contains 3 white and 5 black balls. Two balls are drawn one after another **without replacement**. What is the probability that both balls are black?

- (A) $\frac{1}{2}$
- (B) $\frac{5}{14}$
- (C) $\frac{3}{8}$



(D) $\frac{2}{7}$



DETAILED SOLUTIONS

Sol. 1.

Solution

Topic: Profit and Loss / Discount on Marked PriceLet CP = 100. Marked Price (MP) = $100 \times 1.50 = 150$.SP after 20% discount on MP = $150 \times 0.80 = 120$.Profit = $120 - 100 = 20$. Profit% = **20%**.Answer: (C) [Go Back to Q 1](#)

Sol. 2.

Solution

Topic: AveragesSum of 4 numbers = $4 \times 25 = 100$.New sum of 5 numbers = $5 \times 23 = 115$.5th number = $115 - 100 = 15$.Answer: (D) [Go Back to Q 2](#)

Sol. 3.

Solution

Topic: Percentages / Election

Winning candidate gets 55%, losing candidate gets 45%.

Margin = $55\% - 45\% = 10\%$ of total votes = 840.Total votes = $\frac{840}{0.10} = 8400$.Answer: (A) [Go Back to Q 3](#)

Sol. 4.

Solution

Topic: Number System / HCF $600 = 2^3 \times 3 \times 5^2$ $360 = 2^3 \times 3^2 \times 5$ HCF = $2^3 \times 3 \times 5 = 8 \times 3 \times 5 = 120$ cm.The largest square tile has side 120 cm, and the floor needs $5 \times 3 = 15$ tiles.Answer: (B) [Go Back to Q 4](#)

Sol. 5.



Solution**Topic: Number System / Remainders**

$$11^2 = 121, \quad 12^2 = 144, \quad 13^2 = 169.$$

$$\text{Sum} = 121 + 144 + 169 = 434.$$

$$434 \div 5 = 86 \text{ remainder } 4.$$

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

Sol. 6.

Solution**Topic: Ratio / Alloy Mixing**

$$\text{Gold fraction in A} = 3/5. \quad \text{Gold fraction in B} = 2/5. \quad \text{Target} = 1/2.$$

$$\text{By alligation: ratio} = (1/2 - 2/5) : (3/5 - 1/2) = 1/10 : 1/10 = 1 : 1.$$

Mix equal quantities of the two alloys.

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

Sol. 7.

Solution**Topic: Partnership (Three Partners)**Effective investment = Amount $\times$ Months invested:

$$\text{A: } 30000 \times 12 = 3,60,000 \quad \text{B: } 20000 \times 9 = 1,80,000 \quad \text{C: } 40000 \times 6 = 2,40,000$$

$$\text{Ratio} = 360 : 180 : 240 = 6 : 3 : 4. \quad \text{Total parts} = 13.$$

$$\text{A's share} = \frac{6}{13} \times 26000 = \text{Rs. } 12,000.$$

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

Sol. 8.

Solution**Topic: Profit and Loss / Two-Transaction Result**

Each watch sells for Rs. 1080.

$$\text{CP of watch sold at 20\% gain: } 1080/1.20 = 900.$$

$$\text{CP of watch sold at 20\% loss: } 1080/0.80 = 1350.$$

$$\text{Total CP} = 900 + 1350 = 2250. \quad \text{Total SP} = 2 \times 1080 = 2160.$$

$$\text{Net loss} = 2250 - 2160 = \text{Rs. } 90.$$

$$(\text{A percentage loss of } (20\%)^2/100 = 4\% \text{ on combined CP, i.e. } 0.04 \times 2250 = 90.)$$

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

Sol. 9.

Solution**Topic: Profit and Loss / Supply Chain**

Retailer's SP = 1848; profit = 40%

Retailer's CP = $\frac{1848}{1.40} = 1320$ (= Wholesaler's SP).Wholesaler's CP = $\frac{1320}{1.10} = 1200$ (= Manufacturer's SP).Manufacturer's CP = $\frac{1200}{1.20} = \text{Rs. } 1000$.**Answer: (C)** [Go Back to Q 9](#)

Sol. 10.

Solution**Topic: Time, Speed and Distance / Overtaking**Relative speed of car w.r.t. truck = $80 - 60 = 20$ km/h.

Gap to close = 1 km.

Time = $\frac{1}{20}$ hour = $\frac{1}{20} \times 60 = 3$ minutes.**Answer: (D)** [Go Back to Q 10](#)

Sol. 11.

Solution**Topic: Time, Speed and Distance / Journey with Rest**Time for first 90 km at 60 km/h = $\frac{90}{60} = 1.5$ h = 90 min.

Rest = 30 min.

Time for next 90 km at 45 km/h = $\frac{90}{45} = 2$ h = 120 min.Total = $90 + 30 + 120 = 240$ min = 4 hours.**Answer: (A)** [Go Back to Q 11](#)

Sol. 12.

Solution**Topic: Work / Three Workers**Let a, b, c be the daily rates of A, B, C respectively. $a + b = \frac{1}{6}, \quad b + c = \frac{1}{12}, \quad a + c = \frac{1}{4}.$ Adding: $2(a + b + c) = \frac{1}{6} + \frac{1}{12} + \frac{1}{4} = \frac{2 + 1 + 3}{12} = \frac{6}{12} = \frac{1}{2}.$ 

$$a + b + c = \frac{1}{4} \text{ tank/day} \Rightarrow \text{all three together finish in 4 days.}$$

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

Sol. 13.

Solution

Topic: Geometry / Equilateral Triangle

$$\text{Area} = \frac{\sqrt{3}}{4} \times \text{side}^2 = \frac{\sqrt{3}}{4} \times 8^2 = \frac{\sqrt{3}}{4} \times 64 = 16\sqrt{3} \text{ cm}^2.$$

Answer: (C) [Go Back to Q 13](#)

Sol. 14.

Solution

Topic: Geometry / Annulus (Ring)

$$\begin{aligned} \text{Area of annulus} &= \pi(R^2 - r^2) \\ &= 3.14 \times (10^2 - 6^2) = 3.14 \times (100 - 36) = 3.14 \times 64 = 200.96 \text{ cm}^2. \end{aligned}$$

Answer: (D) [Go Back to Q 14](#)

Sol. 15.

Solution

Topic: Data Interpretation / Bar Chart

Products launched: 2019=8, 2020=12, 2021=10, 2022=15, 2023=5.

$$\text{Average} = (8 + 12 + 10 + 15 + 5)/5 = 50/5 = 10.$$

Years above average (strictly > 10): 2020 (12) and 2022 (15) $\Rightarrow$ 2 years.

Answer: (A) [Go Back to Q 15](#)

Sol. 16.

Solution

Topic: Probability / Without Replacement

$$\text{Total balls} = 3 + 5 = 8.$$

$$P(\text{1st black}) = \frac{5}{8}. \quad \text{After removing one black: 4 black remain out of 7.}$$

$$P(\text{2nd black} \mid \text{1st black}) = \frac{4}{7}.$$

$$P(\text{both black}) = \frac{5}{8} \times \frac{4}{7} = \frac{20}{56} = \frac{5}{14}.$$



Answer: (B) [Go Back to Q 16](#)

ANSWER KEY

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

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