CSAT

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Q1.

A person allows a 10% discount for cash payment from the marked price of a toy and still he makes a 10% gain. What is the cost price of the toy which is marked Rs. 770?

A. Rs. 610

B. Rs. 620

C. Rs. 630

D. Rs. 640

Correct answer: Option C — Rs. 630

Explanation

Correct Answer: (c) — Rs. 630.

Method:

1. Marked price = Rs. 770.
2. Discount = 10% of 770 = Rs. 77.
3. Selling price = 770 − 77 = Rs. 693.
4. The seller makes a 10% gain, so selling price = 110% of cost price.
5. Cost price = 693 × 100/110 = Rs. 630.

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Q2.

A round archery target of diameter 1 m is marked with four scoring regions from the centre outwards as red, blue, yellow and white. The radius of the red band is 0.20 m. The width of all the remaining bands is equal. If archers throw arrows towards the target, what is the probability that the arrows fall in the red region of the archery target?

A. 0.40

B. 0.20

C. 0.16

D. 0.04

Correct answer: Option C — 0.16

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Explanation

Correct Answer: (c) — 0.16.

Method:

1. Radius of the entire target = 1 ÷ 2 = 0.5 m.
2. Radius of the red region = 0.2 m.
3. Probability of an arrow landing in the red region is the ratio of its area to the total target area.
4. Probability = $(\pi \times 0.2^2)/(\pi \times 0.5^2)$.
5. Probability = 0.04/0.25 = 0.16.

Q3.

In a race, a competitor has to collect 6 apples which are kept in a straight line on a track and a bucket is placed at the beginning of the track which is a starting point. The condition is that the competitor can pick only one apple at a time, run back with it and drop it in the bucket. If he has to drop all the apples in the bucket, how much total distance he has to run if the bucket is 5 metres from the first apple and all other apples are placed 3 metres apart?

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A. 40 m

B. 50 m

C. 75 m

D. 150 m

Correct answer: Option D — 150 m

Explanation

Correct Answer: (d) — 150 m.

Method:

1. Distance of the first apple from the bucket = 5 m.
2. Each successive apple is 3 m farther away.

3. Distances of the six apples are 5 m, 8 m, 11 m, 14 m, 17 m and 20 m.
4. The competitor must travel to each apple and return to the bucket.
5. Total distance = 2 × (5 + 8 + 11 + 14 + 17 + 20).
6. Total distance = 2 × 75 = 150 m.

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Q4.

The average monthly income of a person in a certain family of 5 is Rs. 10,000. What will be the average monthly income of a person in the same family if the income of one person increased by Rs. 1,20,000 per year?

A. Rs. 12,000

B. Rs. 16,000

C. Rs. 20,000

D. Rs. 34,000

Correct answer: Option A — Rs. 12,000

Explanation

Correct Answer: (a) — Rs. 12,000.

Method:

1. Initial total monthly income of the family = 5 × 10,000 = Rs. 50,000.
2. Increase in one person's annual income = Rs. 1,20,000.
3. Monthly increase = 1,20,000 ÷ 12 = Rs. 10,000.
4. New total monthly income = 50,000 + 10,000 = Rs. 60,000.
5. New average monthly income = 60,000 ÷ 5 = Rs. 12,000.

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Q5.

W can do 25% of a work in 30 days, X can do 1/4 of the work in 10 days, Y can do 40% of the work in 40 days and Z can do 1/3 of the work in 13 days. Who will complete the work first?

A. W

B. X

C. Y

D. Z

Correct answer: Option D — Z

Explanation

Correct Answer: (d) — Z.

Method:

Calculate the time each person would take to complete the entire work.

1. W: 25% in 30 days, so 100% in 120 days.
2. X: 25% in 10 days, so 100% in 40 days.
3. Y: 40% in 40 days, so 100% in 100 days.
4. Z: ⅓ of the work in 13 days, so the entire work in 13 × 3 = 39 days.

Z takes the least time and will complete the work first.

Q6.

A and B walk around a circular park. They start at 8 a.m. from the same point in the opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour respectively. How many times shall they cross each other after 8.00 a.m. and before 9.30 a.m.?

A. 7

B. 6

C. 5

D. 8

Correct answer: Option A — 7

Explanation

Correct Answer: (a) — 7.

Method:

1. Since they move in opposite directions, their relative speed = 2 + 3 = 5 rounds per hour.
2. They meet once whenever their combined movement equals one complete round.
3. Time between two successive meetings = 1/5 hour = 12 minutes.
4. From 8:00 a.m. to 9:30 a.m., the meetings occur at:

8:12, 8:24, 8:36, 8:48, 9:00, 9:12 and 9:24.

5. Total meetings = 7.

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Q7.

In a class of 60 students, where the number of girls is twice that of boys, Kamal, a boy, ranked seventeenth from the top. If there are 9 girls ahead of Kamal, the number of boys in rank after him is:

A. 13

B. 12

C. 7

D. 3

Correct answer: Option B — 12

Explanation

Correct Answer: (b) — 12.

Method:

1. Let the number of boys be x. The number of girls is 2x.
2. Therefore, 3x = 60, so x = 20 boys.
3. Kamal is seventeenth from the top, so 16 students are ahead of him.
4. Of these, 9 are girls. Therefore, boys ahead of him = 16 − 9 = 7.
5. Number of boys after Kamal = 20 − 7 − 1 = 12.

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Q8.

A cylindrical overhead tank of radius 2 m and height 7 m is to be filled from an underground tank of size 5.5 m × 4 m × 6 m. How much portion of the underground tank is still filled with water after filling the overhead tank completely?

A. 1/3

B. 1/2

C. 1/4

D. 1/6

Correct answer: Option A — 1/3

Explanation

Correct Answer: (a) — 1/3.

Method:

1. Volume of the cylindrical overhead tank = $\pi r^2 h$.
2. Using $\pi = 22/7$:

Volume = $(22/7) \times 2 \times 2 \times 7 = 88$ m³.

1. Volume of the underground tank = $5.5 \times 4 \times 6 = 132$ m³.
2. Water remaining in the underground tank = $132 - 88 = 44$ m³.
3. Remaining fraction = $44/132 = 1/3$.

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Q9.

Four-digit numbers are to be formed using the digits 1, 2, 3 and 4; and none of these four digits are repeated in any manner. Further:

1. 2 and 3 are not to immediately follow each other.
2. 1 is not to be immediately followed by 3.
3. 4 is not to appear at the last place.
4. 1 is not to appear at the first place.

How many different numbers can be formed?

A. 6

B. 8

C. 9

D. None of the above

Correct answer: Option B — 8

Explanation

Correct Answer: (b) — 8.

Method:

1. Total possible arrangements of four distinct digits = 4! = 24.
2. Exclude arrangements having 4 in the last position and those having 1 in the first position, while also applying the two restrictions on consecutive digits.

3. Checking the valid arrangements gives:

2143, 2431, 3142, 3241, 3412, 3421, 4312, 4321.

4. Total valid arrangements = 8.

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Q10.

Directions for the following item:

Read the following passage and answer the item that follows the passage. Your answers to this item should be based on the passage only.

Passage

Historically, the biggest challenge to world agriculture has been to achieve a balance between demand for and supply of food. At the level of individual countries, the demand-supply balance can be a critical policy issue for a closed economy, especially if it is a populous economy and its domestic agriculture is not growing sufficiently enough to ensure food supplies, on an enduring basis; it is not so much and not always, of a constraint for an open, and growing economy, which has adequate exchange surpluses to buy food abroad. For the world as a whole, supply-demand balance is always an inescapable prerequisite for warding off hunger and starvation. However, global availability of adequate supply does not necessarily mean that food would automatically move from countries of surplus to countries of deficit if the latter lack in purchasing power. The uneven distribution of hunger, starvation, under- or malnourishment, etc., at the world-level, thus owes itself to the presence of empty-pocket hungry mouths, overwhelmingly confined to the underdeveloped economies. Inasmuch as 'a two-square meal' is of elemental significance to basic

human existence, the issue of worldwide supply of food has been gaining significance, in recent times; both because the quantum and the composition of demand has been undergoing big changes, and because, in recent years, the capabilities of individual countries to generate uninterrupted chain of food supplies have come under strain. Food production, marketing and prices, especially price-affordability by the poor in the developing world, have become global issues that need global thinking and global solutions.

The issue of worldwide supply of food has gained importance mainly because of:

1. Overgrowth of the population worldwide
2. Sharp decline in the area of food production
3. Limitation in the capabilities for sustained supply of food

Select the correct answer using the code given below:

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A. 1 and 2 only

B. 3 only

C. 2 and 3 only

D. 1, 2 and 3

Correct answer: Option B — 3 only

Explanation

Correct Answer: (b) — 3 only.

1. Statement 1 is not directly established. The passage mentions the need to feed more people and changing demand, but does not identify worldwide population overgrowth as the main reason.
2. Statement 2 is incorrect. The passage does not mention a sharp decline in agricultural land.
3. Statement 3 is correct. The passage explicitly states that the capabilities of individual countries to ensure uninterrupted food supplies have come under strain.

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