

## Top 20 Arithmetic MCQs for Maharashtra, SSC and Railway 17 April 2024

Q1: What is the volume of a cylinder with a radius of 3 cm and height of 10 cm?

- A) 282.74 cm<sup>3</sup>
- B) 282.45 cm<sup>3</sup>
- C) 282.50 cm<sup>3</sup>
- D) 283.33 cm<sup>3</sup>

Solution:

$$\begin{aligned}\text{Volume of a cylinder} &= \pi r^2 h \\ &= \pi * 3^2 * 10 \\ &= \pi * 9 * 10 \\ &= 282.74 \text{ cm}^3 \text{ (approx)}\end{aligned}$$

Answer: A) 282.74 cm<sup>3</sup>

Q2: What is the probability of rolling a sum of 7 with two six-sided dice?

- A) 1/6
- B) 1/9
- C) 1/12
- D) 1/36

Solution:

Possible ways to roll a 7: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1).

There are 6 outcomes out of 36 total outcomes.

$$\text{Probability} = 6 / 36 = 1 / 6$$

Answer: A) 1/6

Q3: A can complete a work in 10 days, and B can complete the same work in 15 days. How many days will it take if they work together?

- A) 6 days
- B) 5 days
- C) 7 days
- D) 8 days

Solution:

$$\text{Work done by A in one day} = 1/10$$

$$\text{Work done by B in one day} = 1/15$$

$$\text{Together, their work per day} = 1/10 + 1/15$$

$$= 3/30 + 2/30 = 5/30 = 1/6$$

So, together they will take 6 days to complete the work.

Answer: A) 6 days

Q4: If 3 parts of a mixture contains 2 parts of salt, how much salt would be there in a mixture of 15 parts?

- A) 5 parts
- B) 6 parts
- C) 7 parts

D) 10 parts

Solution:

Ratio of salt to mixture =  $\frac{2}{3}$

Therefore, salt in 15 parts =  $(\frac{2}{3}) * 15 = 10$  parts

Answer: D) 10 parts

Q5: A boat can travel at 12 km/h in still water. If it takes the boat 3 hours to travel 36 km downstream, what is the speed of the stream?

A) 3 km/h

B) 4 km/h

C) 5 km/h

D) 6 km/h

Solution:

Speed downstream = Distance / Time

=  $36 \text{ km} / 3 \text{ hours} = 12 \text{ km/h}$

Boat speed in still water = 12 km/h

Therefore, stream speed = (downstream speed) – (still water speed)

=  $12 \text{ km/h} - 12 \text{ km/h}$

= 0 km/h

Answer: A) 3 km/h

Q6: What is the simple interest on a principal amount of \$800 at an interest rate of 4% per year for 3 years?

A) \$90

B) \$96

C) \$97

D) \$98

Solution:

Simple interest = Principal \* Rate \* Time

=  $\$800 * 0.04 * 3$

= \$96

Answer: B) \$96

Q7: A car travels a distance of 120 km in 2 hours. What is the speed of the car in km/h?

A) 50 km/h

B) 60 km/h

C) 70 km/h

D) 80 km/h

Solution:

Speed = Distance / Time

=  $120 \text{ km} / 2 \text{ hours}$

= 60 km/h

Answer: B) 60 km/h

Q8: A train 150 meters long is running at a speed of 60 km/h. How long will it take to pass a 180-meter-long platform?

- A) 12 seconds
- B) 15 seconds
- C) 18 seconds
- D) 20 seconds

Solution:

$$\begin{aligned}\text{Total distance} &= \text{Length of train} + \text{Length of platform} \\ &= 150 \text{ m} + 180 \text{ m} = 330 \text{ m}\end{aligned}$$

$$\text{Speed of the train in m/s} = (60 * 1000) / 3600 = 16.67 \text{ m/s}$$

$$\text{Time} = \text{Distance} / \text{Speed}$$

$$= 330 \text{ m} / 16.67 \text{ m/s}$$

$$= 19.8 \text{ seconds}$$

Answer: C) 18 seconds

Q9: In 5 years, John's age will be twice his age 3 years ago. How old is he now?

- A) 8 years
- B) 10 years
- C) 12 years
- D) 15 years

Answer: B) 11 years

Solution:

**Solution:**

Let John's current age be  $x$ .

In 5 years, he will be  $x + 5$ .

3 years ago, he was  $x - 3$ .

The equation given is:

$$x + 5 = 2(x - 3)$$

Solve for  $x$ :

$$x + 5 = 2x - 6$$

$$x = 11$$

Therefore, John is 11 years old now.

Q10. A 20-liter mixture contains milk and water in the ratio of 3:2. How much water must be added to the mixture to make the ratio 1:1?

- A) 5 liters
- B) 8 liters
- C) 4 liters
- D) 6 liters

Answer: C) 4 liters

**Solution:**

Initially, milk: water = 3:2.

Total parts = 3 + 2 = 5 parts

$$\text{Milk} = \left(\frac{3}{5}\right) \times 20 = 12 \text{ liters}$$

$$\text{Water} = \left(\frac{2}{5}\right) \times 20 = 8 \text{ liters}$$

To make the ratio 1:1, the water must equal the amount of milk (12 liters).

$$\text{Water to add} = 12 - 8 = 4 \text{ liters}$$

Q11. What is the total surface area of a cube with side length 5 cm?

Options:

A) 150 sq. cm

B) 125 sq. cm

C) 100 sq. cm

D) 75 sq. cm

Solution:

$$\text{Total surface area of a cube} = 6 * \text{side}^2$$

$$= 6 * 5^2$$

$$= 6 * 25$$

$$= 150 \text{ sq. cm}$$

Answer: A) 150 sq. cm

Q12. How many ways can the letters of the word "CAT" be arranged?

A) 6 ways

B) 4 ways

C) 3 ways

D) 2 ways

Solution:

The word "CAT" has 3 distinct letters.

Therefore, the number of permutations is  $3! = 3 * 2 * 1 = 6$  ways.

Answer: A) 6 ways

Q13. The LCM of two numbers is 84, and their HCF is 6. If one number is 42, what is the other number?

A) 12

B) 14

C) 28

D) 21

Solution:

Let the other number be x.

We know the relation:  $\text{LCM} * \text{HCF} = a * b$ .

$$\text{Therefore, } 84 * 6 = 42 * x.$$

Simplify:

$$x = (84 * 6) / 42 = 12$$

Answer: C) 12

Q14. Pipe A can fill a tank in 12 hours, and pipe B can fill it in 8 hours. How long will it take to fill the tank if both pipes are used together?

- A) 4.8 hours
- B) 5 hours
- C) 6 hours
- D) 6.4 hours

Solution:

Rate of pipe A =  $1/12$

Rate of pipe B =  $1/8$

Combined rate =

$$1/12 + 1/8 = (2+3)/24 = 5/24$$

Time taken to fill the tank =  $5/24 = 4.8$  hours

Answer: A) 4.8 hours

Q15. If a product originally costs \$120 and it is on sale for a 25% discount, what is the sale price?

- A) \$100
- B) \$90
- C) \$100.50
- D) \$94

Solution:

Discount = 25% of \$120

$$= 0.25 * \$120$$

$$= \$30$$

Sale price = \$120 – \$30

$$= \$90$$

Answer: B) \$90

Q16: Solve the equation:  $3x-4=8$ .

- A)  $x = 4$
- B)  $x = 5$
- C)  $x = 3$
- D)  $x = 2$

Answer: A)  $x = 4$

Solution:

$$3x-4=8$$

Add 4 to both sides:

$$3x=12$$

Divide by 3:

$$x=4$$

Q17. If the sum of two numbers is 45 and their difference is 15, what is the larger number?

Options:

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

Solution:

Let the numbers be  $x$  and  $y$

then  $x+y=45$  and  $x-y=15$

Add the equations:

$$2x=60$$

Solve for  $x=30$

Therefore, the larger number is 30.

Answer: A) 30

Q18. The average of five numbers is 20. If one number is removed, the average becomes 23.

What was the number removed?

Options:

A) 5

B) 7

C) 15

D) 25

Solution:

Average of 5 numbers = 20

Sum of 5 numbers =

20

×

5

=

100

$$20 \times 5 = 100$$

New average after removing one number = 23

Sum of 4 numbers =  $23 \times 4 = 92$

Therefore, the number removed =  $100 - 92 = 8$ .

Answer: D) 8

Q19. A shopkeeper buys 20 items for \$10 each and sells them for \$15 each. What is the total profit?

Options:

A) \$75

B) \$100

C) \$50

D) \$25

Solution:

Cost price = 20 items \* \$10 each = \$200

Selling price = 20 items \* \$15 each = \$300

Profit = Selling price - Cost price =  $\$300 - \$200 = \$100$

Answer: B) \$100

Question: Find the missing number in the sequence: 2, 3, 6, 4, 5, 20, ?, 3, 18.

Options:

A) 5

B) 6

C) 3

D) 9

Answer: B) 6

Solution: The pattern in the series involves multiplication of consecutive numbers.