

①

out

SECTION - II

Q.NO.6

a. Determine the "k" value if the arithmetic mean of 9, 8, 10, k, 12 is 15.

Solution:

Given,

$$A.M = \frac{9+8+10+k+12}{5}$$

$$15 = \frac{9+8+10+k+12}{5}$$

$$15 \times 5 = 9+8+10+k+12$$

$$75 = 39+k$$

$$75-39 = k$$

$$\boxed{36 = k}$$

The value of k is found to be 36.

To check;

$$\frac{9+8+10+36+12}{5} = \frac{74}{5} = 14.8$$

Thus, k=36 is the correct answer.

$$\begin{array}{r} 17 \\ 10 \\ 12 \\ \hline 39 \\ 36 \\ \hline 75 \end{array} \quad \begin{array}{r} 15 \\ 5 \\ \hline 75 \end{array}$$

(2)

out

c. What will be the volume of a football with a radius of 12cm?

Solution: Volume of a sphere (football) = $\frac{4\pi r^3}{3}$

$$\text{Volume of football} = \frac{4\pi (12)^3}{3}$$

Since, given radius = 12cm

R. Work.

$$\text{Volume of football} = \frac{4\pi (1728)}{3}$$

$$\text{Volume of football} = 4\pi (576)$$

$$\text{Volume of football} = (3.14)(4)(576)$$

$$\text{Volume of football} = (3.14)(2304)$$

$$\text{Volume of football} = 7234.56 \text{ cm}^3$$

Thus,

Volume of football is found to be 7234.56 cm^3 Answer.

$$\begin{array}{r} 12 \\ 12 \\ \hline 24 \\ 12 \times \\ 144 \\ \hline 12 \\ 288 \\ 144 \times \\ 1728 \\ \hline 3576 \\ 4 \\ \hline 12304 \\ 3.14 \\ \hline 9216 \\ 2304 \times \\ 6912 \times \times \\ \hline 723456 \end{array}$$

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or

Q.NO. 7

a. If 20% of $x = y$, what is the value of $y\%$ of 20 in terms of x ?

Solution:-

20% of $x = y$
 $y\%$ of 20 in terms of $x = ?$

$$\frac{20}{100}(x) = y$$

means:- $y = \frac{20x}{100} = \frac{1}{5}x$

$$\boxed{y = \frac{1}{5}x}$$

Value of $y\%$ of 20 in terms of x :-
 $= \frac{y}{100}(20) \rightarrow \text{①}$

Put $y = \frac{1}{5}x$ in eq. ①

$$= \frac{\frac{1}{5}x}{100} \times 20 = \frac{1}{5}x \div 5 = \frac{1}{5} \times \frac{1}{5}x$$

$$= \frac{1}{25}x \rightarrow \text{Answer.}$$

So, Value of $y\%$ of 20 in terms of $x = \frac{1}{25}x$

(4)

5/1

b. P and Q have an average monthly income salary of Rs. 5050. Q and R have monthly average income of Rs. 6250, while P and R have an average monthly income of 5200. Find monthly salary of P.

Solution:

Average monthly salaries:-

$$P \text{ and } Q = 5050$$

$$Q \text{ and } R = 6250$$

$$P \text{ and } R = 5200$$

Monthly salary of P = ?

$$i) \frac{P+Q}{2} = 5050$$

$$P+Q = 10100 \rightarrow \text{eq. (i)}$$

$$ii) Q \text{ and } R = 6250$$

$$Q+R = 6250$$

2

$$Q+R = 12500 \rightarrow \text{eq. (ii)}$$

$$iii) \frac{P+R}{2} = 5200$$

2

$$P+R = 10400 \rightarrow \text{eq. (iii)}$$

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Subtracting eq. (ii) from (i) :-

$$\begin{array}{r} P+Q = 10100 \\ +Q+R = +12,500 \\ \hline \end{array}$$

$$P-R = -02400 \quad \text{--- (iv)}$$

Adding (iii) and (iv) :-

$$P+R = 10400$$

$$P-R = -2400$$

$$P = 8000$$

So, monthly salary of P = 8000 Rs.

To check:

$$P \text{ and } Q = 5050$$

$$8000 + (-2950) = 5050$$

2

$$8000 - 2950 = 5050$$

2

$$5050 = 5050$$

$$\text{L.H.S} = \text{R.H.S}$$

$$\boxed{P = 8000} \text{ Correct Answer.}$$

$$\begin{array}{r} P+Q = 5050 \\ +P+8000 = 5050 \\ 8000 - 5050 = -2950 \end{array}$$

$$\boxed{-2950 = -2950}$$

$$\begin{array}{r} 78000 \\ 2950 \\ \hline 5050 \end{array}$$

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6/15

c. Two coins are tossed 500 times, and we get:-

Two heads : 105 times

One head : 275 times

No head : 120 times

Find probability of each event to occur.

Solution:

Probability = $\frac{\text{Number of ways of occurrence of event}}{\text{Total outcomes}}$

1) Two Heads:-

$$\text{Probability (Two Heads)} = \frac{105}{500} = \frac{21}{100}$$

2) One Head:

$$\text{Probability (one head)} = \frac{275}{500} = \frac{55}{100} = \frac{11}{20}$$

3) No head:

$$\text{Probability (No head)} = \frac{120}{500} = \frac{6}{25}$$

(7)

ist

So, probability of occurrence of two heads is $\frac{21}{100}$, of one head

is $\frac{11}{20}$, and of no head is $\frac{6}{25}$.

d. Jamie's dad is 4 times older than Jamie. In 14 yrs time, Jamie's dad will be twice the age of Jamie. What is the sum of Jamie's age now and Jamie's dad's age now?

Jamie's dad = $4 \times$ Jamie.

In next 14 years:-

Jamie's dad age = 2 (Jamie's age)

let Jamie's age be (current) = x

Jamie's dad's age (current) = $4x$.

In next 14 yrs:-

Jamie's age = $x + 14$

Jamie's dad's age = $4x + 14$

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we know, in next 14 yrs,
Jamie's dad age will be
twice age of Jamie, so:-

$$4x + 14 = 2(x + 14)$$

$$4x + 14 = 2x + 28$$

$$4x - 2x = 28 - 14$$

$$2x = 14$$

$$x = \frac{14}{2}$$

$$\boxed{x = 7} \rightarrow \text{Jamie's Age.}$$

Summing ages of both:-

$$\cancel{4(7) + 14} = \cancel{2(7 + 14)}$$

$$4x = \text{Jamie's dad}$$

$$4(7) = 28 \text{ yrs.} \rightarrow \text{Jamie's dad.}$$

$$x + 4x = 7 + 28 = 35 \text{ yrs.}$$

Answer: 35 yrs.

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