Question No 6

6D

Series = -10, -8, 6, 40, 102 ___ ?

$$\underset{-10, \quad -8, \quad 6, \quad 40, \quad 102}{\overset{+2 \qquad 14 \qquad 34 \qquad 62}{\frown \quad \frown \quad \frown \quad \frown}}$$

the difference between 2, 14, 34 and
62 = 12, 20, 28
it means each number increases by
8 so adding 8 in 28 =
28 + 8 = 36
Adding 36 in 102
102 + 36 = 138
so the next number will be $\boxed{138}$

6C

Formula for volume of sphere =

$$V = \frac{4}{3} \pi r^3$$

Radius = 12cm from the statement
putting the value in above formula

$$V = \frac{4}{3} \pi (12)^3$$

$$V = \frac{4}{3} \pi (1728)$$

$$V = \frac{4}{3} \, 3.14 \, (1728) \quad \text{as } \pi \text{ value is } 3.14$$

multiplying 3.14 with 1728

$$V = \frac{4}{3} \times 5425$$

$$V = \frac{21700}{3}$$

$$\boxed{V = 7233 \ cm^3}$$

6A

Determine k if the arithematic mean of 9, 8, 10, k, 12 is 15.

Formula of mean =

$$\frac{sum \ of \ total \ numbers}{total \ numbers}$$

$$= \frac{9 + 8 + 10 + k + 12}{5} = 15 \ (according \ to \ statement)$$

$$= \frac{39 + k}{\cancel{5}_1} = \cancel{15}^3$$

$$= \ 39 + k = 3$$

$$k = 39 - 3$$

$$\boxed{k = 36}$$

6B

A mixture contains sugar solution and coloured water in the ratio 4:3. If 10 liters of colored water is added to the mixture, the ratio becomes 4:5. Find initial quantity of sugar solution in the given mixture.

let assume initial quantities as x

Sugar ratio in the water = 4

Colored water ratio = 3

ratio of mixture = $\dfrac{4}{3}$

if 10 liters of colored water is added to the mixture then it becomes,

$\dfrac{4}{3+10}$

new ratio = $\dfrac{4}{5}$

So $\dfrac{4x}{3x+10} = \dfrac{4}{5}$

$4x \times 5 = \qquad\qquad 4(3x+10)$

$4x \times 5 = 12x + 40$

$20x = 12x + 40$

$20x - 12x = 40$

$8x = 40$

$x = \dfrac{40}{8} \, \dfrac{5}{1}$

$\boxed{x = 5}$

Question No 7 (d)

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

Assume Time age as x

Assume Time's dad age as $4x$

After 14 years there ages will be

$x + 14$ and $4x + 14$

In 14 years Time's dad age will be twice the age of Time so it means

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

$4x + 14 = 2x + 28$

$4x - 2x = 28 - 14$

$2x = 14$

$x = \dfrac{14}{2}^{7}$

$\boxed{x = 7}$ $\longrightarrow$ Age of Jimie

Now dad's age

$4x$

putting value of x

$4(7) = 28$

$28 + 7 = 35$ (ages of Jimie and his dad combined)

Question 7(a)

If 20% of $x = y$, what is value of $y\%$ of 20 in terms of x

20% of $x = y$ means

$$\frac{20}{100} \times x = y$$

$$\frac{20x}{100} = \frac{y}{1}$$

$$\frac{\cancel{20}x}{\cancel{100}_5} = y$$

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

now y% of 20 means

$$y\% = \frac{\dfrac{x}{5} \times 20}{\dfrac{100}{1}}$$

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

$$\frac{x}{25} \times \frac{\cancel{20}}{\cancel{500}}$$

$$\boxed{y\% = \frac{x}{25}} \quad \text{Answer}$$

Question No 7 (b)

DATE : ___/___/___

Given data:

$P + Q = 5050$

$Q + R = 6250$

$P + R = 5200$

To find:

value of $P = ?$

Solution:

Average of $P + Q =$

$\dfrac{P + Q}{2} = 5050$

$P + Q = 5050 \times 2 = 10100$

$\boxed{P + Q = 10100}$ —①

Average of $Q + R =$

$\dfrac{Q + R}{2} = 6250$

$Q + R = 6250 \times 2 = 12500$

$\boxed{Q + R = 12500}$ —②

Average of $P + R =$

$\dfrac{P + R}{2} = 5200$

$P + R = 5200 \times 2$

$\boxed{P + R = 10400}$ —③

Now adding $1 + 2 + 3$ equation

$P + Q + Q + R + P + R = 10100 + 12500 + 10400$

$2P + 2Q + 2R = 33000$

taking 2 common

$2(P + Q + R) = 33000$

$P + Q + R = \dfrac{33000}{2}$

$$\boxed{P + Q + R = 16500} \quad \text{——④}$$

now put value of $P + Q$ in eq 4

$10100 + R = 16500$

$R = 16500 - 10100$

$\boxed{R = 6400}$.

now $P + R = 10400$ so to find P

$P = 10400 - R$

$P = 10400 - 6400$

$\boxed{P = 4000}$ Value of P.

Question No 7(c)

Given Data:

Times coins are tossed = 500

Times 2 heads occur = 105

Times 1 head occur = 275

Times no head occurs = 120

To find:

probability of each event to occur

Formula of probability =

$$\frac{\text{no of times event occurs}}{\text{total no of times}}$$

So,

Probability of head to occur 2 times

$$= \frac{105}{500} \qquad \boxed{= 0.21}$$

Probability of one head to occur =

$$\frac{275}{500} = \boxed{0.55}$$

Probability of no head to occur =

$$\frac{120}{500} = \boxed{0.24}$$