Q1- There are five numbers. HCF of each possible pair is 4 and LCM of all the 5 numbers is 27720. What will be the product of all the five numbers?

According to the question

There are five numbers.

Let the numbers are a, b, c, d, e

As per the question.

H.C.F of the each pairs is 4.

⇒ 4a, 4b, 4c, 4d, 4e.

4 is the HCF of all these numbers.

L.C.M of 5 numbers.

So 4 is common in all numbers.

L.C.M of 5 numbers is = 4 × a × b × c × d × e (i)

[a, b, c, d & e are relatively primes as given in the ques.]

Figuring out the product

Product = $4^5 \times abcde$ ← 4a × 4b × 4c ...

Now eq^n(i). LCM = 4abcde

⇒ abcde = LCM / 4 ← (ii)

Putting this in product

Putting this in proper

Product = $45 \times \frac{LCM}{4} \Rightarrow 4^5 \times \frac{27720}{4}$

$\Rightarrow 4^4 \times 27720$

$\Rightarrow 4 \times 4 \times 4 \times 4 \times 27720$

$\Rightarrow 7096320$

Q2- Six bells ring at intervals of 2, 4, 6, 8, 10 and 12s respectively. They started ringing simultaneously. How many times, will they ring together in 30 minutes?

As per the given question

Six bells are ring at intervals

of 2, 4, 6, 8, 10 & 12s respectively.

They started ring simultaneously.

∴ L.C.M of 2, 4, 6, 8, 10 & 12

2	2, 4, 6, 8, 10, 12
2	1, 2, 3, 4, 5, 6
3	1, 1, 3, 2, 5, 3
	1, 1, 1, 2, 5, 1

$\Rightarrow 2 \times 2 \times 3 \times 2 \times 5 = 120$

∴ $2 \times 2 \times 3 \times 2 \times 5 = 120$

∴ The LCM is 120s.

So, the bells will ring together after every 120s or 2 minutes.

↳ So, 30 minutes, they will ring together

$\Rightarrow \frac{30}{2} + 1 = 16$

16 times they will ring simultaneously in 30 min

Q3- Amit was to find 9/10 of a fraction. Instead of multiplying, he divides the fraction by 9/10 and the result obtained was 13/70 greater than original value. Find the fraction given to Amit?

As per the given question

Amit was to find 9/10 of a fraction

Let the fraction is x

As per the question $\Rightarrow x \times \frac{9}{10} = \frac{9x}{10}$

And by mistake he divided with $\frac{9}{10}$ with the fraction

$\Rightarrow \frac{x}{\frac{9}{10}} = \frac{10x}{9}$

$\frac{9}{10}$

As per the question.

⇒ Refills obtained exceeds by 13/70

$$\Rightarrow \frac{10x}{9} - \frac{9x}{10} = \frac{13}{70}$$

$$\Rightarrow \frac{100x - 81x}{90} = \frac{13}{70}$$

$$\Rightarrow \frac{19x}{90} = \frac{13}{70} \Rightarrow x = \frac{90 \times 13}{19 \times 70} = \frac{117}{133}$$

∴ The original value of the fraction is $\frac{117}{133}$

Q4- If due to 10% decrease in price of potato, Hari can buy 5kg more potato in Rs. 100/-, then find the actual price of potato?

As per the question

Let the original price of potato be ₹ x

Amount of potato in Rs 100 = $\frac{100}{x}$

Price of Potato after reduction.

$$x \times \frac{90}{100} = \frac{90x}{100} = 0.9x$$

100 − 10 = 90%

New cost of potato = $\frac{100}{}$

According to the question

$$\Rightarrow \frac{100}{0.9x} = \frac{100}{x} + 5$$

$$\Rightarrow \frac{100}{0.9x} - \frac{100}{x} = 5$$

$$\Rightarrow \frac{100}{(0.9x)x} \Rightarrow \frac{1}{x}\left(\frac{100}{0.9} - \frac{100}{1}\right) = 5$$

$$\Rightarrow \frac{1}{x}\left(\frac{1000}{9} - \frac{100}{1}\right) = 5$$

$$\Rightarrow 5x = \frac{1000}{9} - \frac{100}{1} = \frac{1000-900}{9}$$

$$\Rightarrow 5x = \frac{100}{9}$$

$$\Rightarrow x = \frac{100}{9 \times 5} = \frac{20}{9} = 2.22$$

$\therefore$ The original price is 2.22. Rs.

Q5- If the mean age of combined group of boys and girls is 18 years and the mean of age of boys is 20 and that of girl is 16. Then what is the percentage of boys in the group?

According to the question.

the mean age of combined group of boys & girls is 18 yrs i

boys & girls is 18 yrs.

Let the number of boys be x & number of girls be y

∴ The total combined age of boys & girls is $= (x+y)18$

As per given the mean of the boy is 20

∴ Total age of boys $= x \times 20 = 20x$

The mean of the girls is 16

total number of girls $= 16 \times y = 16y$

$$\Rightarrow 20x + 16y = 18(x+y)$$
$$\Rightarrow 20x + 16y = 18x + 18y$$
$$\Rightarrow 2x = 2y$$
$$\Rightarrow x = y$$

∴ The proy of boys $\Rightarrow 50\%$.

Q6- Rita bought a cell phone and sold it to Gita at 10% profit. Then Gita wanted to sell it back to Rita at 10% loss. What will be Rita's position if she agreed?

As per the given question.

Rita bought a cell phone & sold to Gita at 10% of profit.

Gita at 10% of profit

S.P = C.P + L/P

S.P Profit = C.P + Profit of the C.P

S.P of Loss = C.P − loss

S.P at with Rita Sold the cell phone

① ⇒ 100 + 10 = 110

② 100 × 110/100 = ₹110

As per the question

Gita coants to sell the cell phone to Rita at loss of 10%.

⇒ 110 × 90/100 = 99

∴ The profit percent of Rita.

⇒ 100 − 99 / 100 × 100 = 1%

∴ The 1 Rs of Rita is agreed the gain profit part of 1%.

Q7- Rs. X was deposited at simple interest at a specific rate for three years. Had it been deposited at 2% higher rate, it would have fetched Rs.360 more. Find Rs. X?

(1)

As per the given question

we have Rs. x as a principle amount

at one rate of interest is R

& time is $T = 3$ years

$\therefore$ S.I of 1st case $= SI = \frac{x \times 3 \times R}{100}$ $\left[\frac{PTR}{100}\right]$

In the second case

principal amount x Rs.

Time $= T = 3$ yr.

Rate of interest $= R+2$

Simple Interest in 2nd case $= \frac{x \times 3 \times R+2}{100}$

As per the question

given difference is Rs. 360

$$\Rightarrow \frac{x \times 3 \times R+2}{100} - \frac{x \times 3 \times R}{100} = 360$$

$$\Rightarrow \frac{3x \times (R+2) - 3x \times R}{100} = 360$$

$$\Rightarrow \frac{3x(R+2-R)}{100} = 360$$

$$\Rightarrow \frac{6x}{100} = 360$$

$$3x = \frac{360 \times 100}{6} = 6000$$

$\Rightarrow$ $3 \times \frac{360 \times 100}{6}$ = 6000

$\Rightarrow x =$

$\therefore$ The Principal Amount on the value of x is Rs. 6000

Q8. The difference between compound interest and simple interest for three years at the rate of 20% per annum is 152. What is principal amount?

According to the question

The difference betn C.I & S.I for the 3 years at the rate of 20% is 152.

Rate of Perm $= R = 20\%$

$P = ?$

$D = 152$.

We know the formula of the difference betn CI & SI for 3 years.

$$\Rightarrow D = P\left(\frac{R}{100}\right)^2\left(\frac{R}{100}+3\right)$$

$$\Rightarrow 152 = P\left(\frac{20}{100}\right)^2\left(\frac{120}{100}+3\right)$$

$$\Rightarrow 152 = \left(\frac{1P}{5}\right) \times \frac{16}{5}$$

$$\Rightarrow 152 = P\left(\frac{1}{5}\right)^2 \times \frac{16}{5}$$

$$\Rightarrow P\left(\frac{1}{25}\right) \times \frac{16}{5} = 152$$

$$152 \times 25 \times 5$$

$\Rightarrow P\left(\frac{25}{16}\right)^2 = \frac{152 \times 25 \times 5}{16}$

$\Rightarrow P = \text{Rs. } 1187.50$

$\therefore$ the the principle Amount is Rs. 1187.50

Q9- A man borrowed some money and agreed to pay off by paying Rs.3150/- and at the end of first year and Rs. 4,410/- at the end of second year. If the rate of compound interest is 5% per annum then what is the sum he borrowed?

$P \rightarrow P+R \rightarrow A$

According to the given question

A man borrowed some money & agreed to pay off by paying Rs. 3150 at the end of 1st year & Rs. 4410 at the end of 2nd year.

Amount $= A = 4410$, Rate of Interest $(R) = 5\%$.

& Time $T = 2$ years.

$$A = P\left(1 + \frac{R}{100}\right)^{TD}$$

$$= P\left(1 + \frac{5}{100}\right)^2 = 4410$$

$$\Rightarrow P\left(\frac{21}{20}\right)^2 = 4410$$

$$\Rightarrow P = \frac{4410 \times 20 \times 20}{21 \times 21} = 4000$$

Again in 1st year.

Amount = ₹ 3150, Rate of Int. R = 5%

& Time T = 1 yr.

$$\text{Amount } A = P\left(1+\frac{R}{T\%}\right)^{T}$$

$$\Rightarrow P\left(1+\frac{5}{100}\right)^{1} = 3150$$

$$\Rightarrow P\left(\frac{21}{20}\right)x = 3150$$

$$\Rightarrow P = \frac{3150 \times 20}{21} = 3000$$

$$\Rightarrow P = 3000$$

$\therefore$ the total sum = 4000 + 3000 = ₹ 7000/-

Q10- A policeman sees a chain snatcher at a distance of 50 meter. He starts chasing the chain snatcher who is running with a speed of 2 m/s, while the policeman chasing him with a speed of 4 m/s. Find the distance covered by the chain snatcher when he is caught by policeman.

As per the given question

The relative speed is equal to difference of Speeds.

let the velocity of chain snatcher is v & the policeman is V

Then the relative speed of police man is $= V - v$

$\Rightarrow 4\,m/s - 2\,m/s = 2\,m/s$

A chase scene of a film of 50 m from police van. So, to catch the snatcher the policeman has to go 50 m in time.

$t = \frac{\text{Distance}}{\text{speed}} = \frac{50}{2} = 25\,s$

Now total distance covered by the policeman in time 25 s

$\Rightarrow 25\,s \times 4\,s = 100\,m$

$\therefore$ the other covers by the snatcher

$100\,m - 50\,m = 50\,m$

$\therefore$ Thus, the distance covered by the chase snatcher when he is caught by the policeman is 50 m

Q11- A car starts running with the initial speed of 40 k.m. per hour with its speed increasing every hour by 5km/h. How many hours will it take to cover a distance of 385 k.m.?

As per the given question

A car starts running with initial speed of 40 km/hr.

Its speed increasing every hour

40 km/hr.

* His speed increases every hour by 5 km/hr.

⇒ 40 + 45 + 50 + 55 - - -

∴ The car can travel 385 km -

we can apply this formula for solving the question

Using $S = \frac{n}{2}(2a + (n-1)d)$ ⟸

⇒ $S = 385$, $a = 40, d = 5$, $n = ?$

⇒ $385 = \frac{n}{2}(2 \cdot 40 + (n-1)5)$

⇒ $770 = n(80 + 5n - 5)$

⇒ $770 = 80n + 5n^2 - 5n$

⇒ $5n^2 + 75n = 770$

⇒ $5n^2 + 75n - 770 = 0$ ⟸

⇒ $5(n^2 + 15n - 154) = 0$

⇒ $n^2 + 15n - 154 = 0$

⇒ $n^2 + 22n - 7n - 154 = 0$

⇒ $n(n+22) - 7(n+22)$

⇒ $(n+22)(n-7)$ ⟸

⇒ $n + 22 = 0 \Rightarrow n = -22$

($S = \frac{n}{2}$)

$\Rightarrow$ [illegible] $\Rightarrow n = 7$.

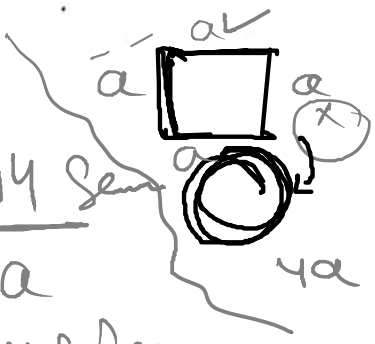
$\therefore$ He cover 385 km in 7 hr

$a^2 = 41$

Q12- If area of a square is 44 square cm, find the area of the circle formed by the same perimeter?

As per the given question

Area of a Square = 44 Sq cm



let the side of the Square is a

According to the formula $= a^2 = 44$ Sq cm.

$\Rightarrow a = \sqrt{44}$

$\Rightarrow a = 2\sqrt{11}$

Hence, Perimeter of the Square $= 4a$

$\Rightarrow 4 \times 2\sqrt{11}$

$\Rightarrow 8\sqrt{11}$

Perimeter of Square = Circumference of circle.

$\Rightarrow 2\pi r = 8\sqrt{11}$

$\Rightarrow 2 \times \frac{22}{7} \times r = 8\sqrt{11}$

$\Rightarrow r = \frac{8\sqrt{11} \times 7}{2 \times 22} = \frac{14\sqrt{11}}{11} = \frac{14\sqrt{11}}{\sqrt{11} \times \sqrt{11}}$

$r \Rightarrow \frac{14}{\sqrt{11}}$

$\therefore$ Now we found area of the circle.

∴ Now we found area of the circle

$\Rightarrow \pi r^2 = \frac{22}{7} \times \frac{14}{\cancel{14}} \times \frac{14}{\cancel{14}} = 56$ sq cm

∴ The area of the circle is 56 sq cm

Q13- There are 30 boys and 60 girls in a class. If the average age of boys is 12 years and average age of girl 10 years, then find out the average age of whole class?

(a × N)

According to the given question

⇒ In a class the total no. of boys are 30

& the total number of girls are 60

The average age of boys is 12

∴ The total age of the boys = 30 × 12 = 360 years

The average age of girls is = 10 years.

∴ The total age of girls is = 60 × 10 = 600 yrs

∴ The total age of boys & girls is = 600 + 360

⇒ 960

∴ The total number of Student = 60 + 30 = 90

∴ Now we found the average age of whole Class

$\Rightarrow \frac{\text{Total of Age}}{\text{total No of Stu}} : \frac{960}{90} = 10.66$ yrs

$\Rightarrow \frac{32}{3} = 9\frac{5}{3}$ yrs

Q14- A, B & C enters into a partnership. A invests some amount at the beginning. B invests double the amount of A after six months and C invests thrice the amount of A after 8 months. If the annual profit is Rs54000/-, then find C's share?

∴ Given question.

find C's share?

As per the given question.

A, B & C enters into a partnership

Let the A invests the amount of Rs. x

The B invests after six months of Rs. $2x$

The C invests after eight months of Rs. $3x$

∴ The ratio of A : B : C

$\Rightarrow x \times 12 : 2x \times 6 : 3x \times 4$

$\Rightarrow \frac{12x}{12x} : \frac{12x}{12x} : \frac{12x}{12x} \Rightarrow 1 : 1 : 1$

a / b / c

∴ The share of C is $= 5400 \times \frac{1}{1+1+1} = 5400 \times \frac{1}{3}$

$\Rightarrow 1800$.

∴ The share of C is Rs. 1800

Q.15 –A mixture of certain quantity of milk with 16L of water is worth Rs 0.75 per litre. If pure milk is worth Rs 2.25 per litre, then how much milk is there in the mixture?

As per the question

Let the quantity of milk be x Ltr.

Cost of 1 Ltr of milk = 2.25 ⇒ 225 P

Then as per the question.

$(x + 16) \times 75 = x \times 225 + 16 \times 0$ (Cost of water is 0)

$75x + 1200 = 225x$

$(x+16) \times$ [illegible] $=$ [illegible]

$\Rightarrow$ [illegible] $\Rightarrow 75x + 1200 = 225x$

$\Rightarrow 225x - 75x = 1200$

$\Rightarrow 150x = 1200 \Rightarrow x = \frac{1200}{150}$

$\Rightarrow x = 8$

$\therefore$ The velocity of current is 8 km/hr