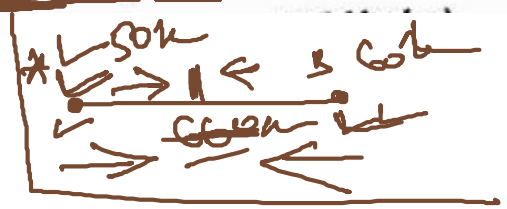
Q.1. (a) Two buses leave a town at the same time in opposite directions at 50 Km. per hour and 60 Km per hour. In how many hours will they be 660 Km. apart? (05 Marks)



As per the given question
Two buses leave a town at the same time in opposite direction at 50 km per hr & 60 km hr

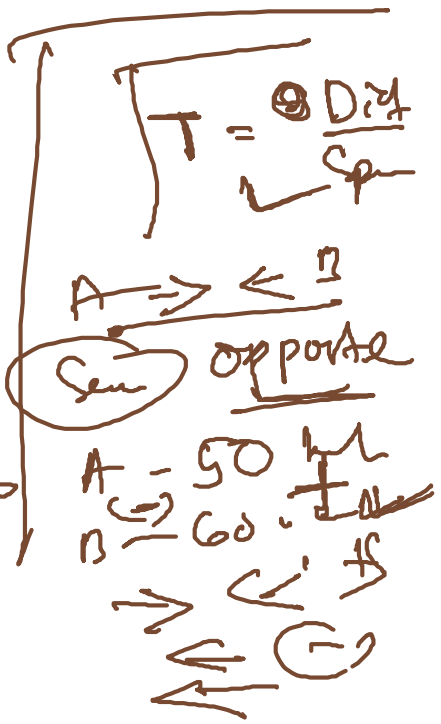
Let the bus A is going to 50 km/hr
& Bus B is going to 60 km/hr

Now we find the time of two buses apart 660 km.

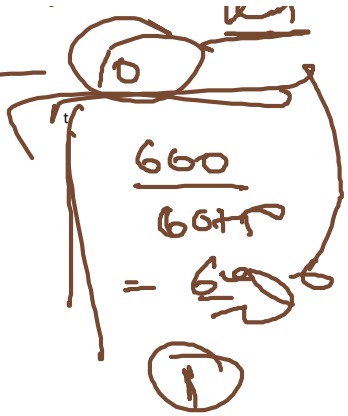
$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Time} = \frac{660}{50+60} = \frac{660}{110} = 6$$

6 hr



.. After 6 hr they travel apart 660 km



(b) Cubic root of 2197 plus the square root of ? = 24

As per the given question we found the

$$\Rightarrow \sqrt[3]{2197} + \sqrt{x} = 24$$

$$\Rightarrow 13 + \sqrt{x} = 24$$

$$\Rightarrow \sqrt{x} = 24 - 13$$

$$\Rightarrow \sqrt{x} = 11$$

$$\Rightarrow x = (11)^2 = 121$$

$$\Rightarrow x = 121$$

3×3×3=27

2197

2 | 3

13

Q. 2 (a) Ramesh borrowed Rs 8000/- at 10% interest per annum for 3 years. Find the difference between compound interest and simple interest assuring annual compounding. (05 Marks)

As per the given question

Ramesh borrowed Rs- 8000, at 10% rate for 3 year.

∴ The principal amount P = 8000

Rate of interest R = 10%.

Time T(n) = 3 years

∴ The SI is = $\frac{PTR}{100}$ = $\frac{8000 \times 10 \times 3}{100}$

⇒ SI = ⇒ 2400

∴ As per the given question we find the CI

The final Amount is = $P\left(1+\frac{R}{100}\right)^n$

⇒ $8000\left(1+\frac{10}{100}\right)^3$

⇒ $8000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10}$

⇒ $1331 \times 8 = 10648$

CI = A − P ⇒ 10648 − 8000 = 2648

∴ As per the question we found the differ between CI & SI

⇒ CI − SI = 2648 − 2400 = 248

(b) Gopal borrowed Rs.9000/- from a money lender at 20% interest per annum. After sometime, he paid back Rs.12,600/-. Find the time. (05 Marks)

(2-3)

As per the given question

(2)

Gopal borrow Rs. 9000 from a money

Gopal borrow Rs. 9000 from a money lender.

∴ The principal amount is ~~20%~~ P = 9000/-

∴ The rate of interest = 20%

Best he paid after some year of Rs. 126000/-

∴ The Amount A = 121600/-.

(A)

$A = P + SI$

∴ The formulae of Amount in SI

(PTR)

∴ $A = P + SI$.

$12,600 = 9000 + \frac{9000 \times T \times 20}{100}$

$12,600 = 9000 + 1800T$

$\Rightarrow 1800T = 12600 - 9000$

$= 2700$

$\frac{1800T}{100} =$

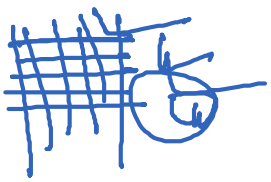
$T = \frac{2700}{1800} = \frac{3}{2} = 1\frac{1}{2}$ year

∴ The Time is $1\frac{1}{2}$ year.

Q. 3 (a) One P T Teacher wants to arrange maximum possible number of 5725 students in a field, such that the number of rows is equal to the number of columns. Find out the number of rows if 100 students were left out after the arrangement. (05 Marks)

A. ... the given question

As per the given question



a P.T. Teacher wants to arrange maximum possible rows of 5725 students in a field.

Number of students = 5725

After arranged 100 students are left.

∴ The rest of students in the field

⇒ 5725 − 100 = 5625

∴ Let the number of rows is x

Then the number of students in each row = x

⇒ $x \times x = 5625$

⇒ $x^2 = 5625$

⇒ $x = \sqrt{5625}$

$x = 75$

∴ The number of rows needed to arrange students is 75

(b) Solve it: $\left[\left(\frac{2}{3}\right)^2\right]^4 \times \left(\frac{1}{3}\right)^{-4} \times 3^{-1} \times \frac{1}{6}$ (05 Marks)

As per the given

$\Rightarrow \left(\left(\frac{2}{3}\right)^2\right)^4 \times \left(\frac{1}{3}\right)^{-4} \times 3^{-1} \times \frac{1}{6}$

$\Rightarrow \left(\frac{4}{9}\right)^4 \times (3)^4 \times \frac{1}{3} \times \frac{1}{6}$

$\Rightarrow \frac{4\times4\times4\times4\times3\times3\times3\times1\times1}{9\times9\times9\times9\times3\times3}$

$\Rightarrow \frac{128}{27\times81} = \frac{128}{2187}$

$\Rightarrow 0.058527\ldots$

Q. 4 (a) Divide 60 between A and B, so that 3 times of A's share is greater than 4 times of B's share by 5 (05 Marks)

According to the question

60 is divided bet A & B

$\Rightarrow \therefore 3A - 4B = 5$

Let the share of A = x

Share of B = 60 − x

$\Rightarrow 3x = 4(60-x) = 5$

$\Rightarrow 3x = 240 + 4x = 5$

$\Rightarrow 7x = 5 + 240$

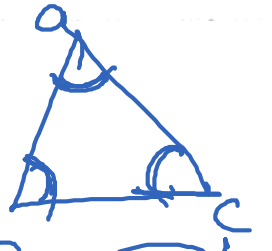
$\Rightarrow 7x = 245$

$\Rightarrow x = \frac{245}{7} = 35$

$\therefore x = 35$

$\therefore$ The values of A = 35 & B = 60 − 35 = 25

(b) The angles of a triangle are X, $X+25$ and $2X-45$. Find the smallest angel of the triangle. **(05 Marks)**



As per the given question
The three angle of the triangle.

$a = x$, $b = x+25$, & $c = 2x-45$

(180)

Now we found the value of x

$\Rightarrow$ As per rule the sum of three angle of a triangle is 180°

$\therefore a+b+c = x + x+25 + 2x-45 = 180$

$\Rightarrow 4x - 20 = 180$

$\Rightarrow 4x = 180+20$

$\rightarrow 4x = 200$

$\therefore x = \frac{200}{4} = 50$

$\therefore a = x = 50$, $b = x+25 = 50+25 = 75$,

$c = 2x - 45 = 100 - 45 = 55$.

$\therefore$ The Smallest angle $\Rightarrow$ 50°

Q 5 (a) Ram has Rs 30/- on the form of the fifty paise and twenty-five paise coins. He has twice as many twenty-five paise coins as he has fifty paise coins. How many coins of each kind does he have? **(05 Marks)**

@ 50P 25P

Q 5 (a) Ram has Rs.30/- on the form of the fifty paise and twenty-five paise coins. He has twice as many twenty-five paise coins as he has fifty paise coins. How many coins of each kind does he have? (05 Marks)

50P 25P

As per the question
Ram has Rs. 30/- in the form of
50P & 25P coins.
Let if we take 50P coins are x
25P coins are y

1 = 100
50 = 0.50
25 = 0.25

∴ As per the question
$\Rightarrow y = 2x$
$0.5x + 0.25y = 30$
$\Rightarrow 0.5x + 0.25 \times 2x = 30$
$\Rightarrow 0.5x + 0.5x = 30$
$\Rightarrow 1x = 30$
$\Rightarrow x = 30$
$\Rightarrow y = 2x = 30 \times 2 = 60$

∴ The quantity of 50P are 30 & the quantity of 25P are 60.

(b) Rabi has a sum of Rs.1000 in the form of denominations of Rs.10 and Rs.20. If the total of notes is 60, find the number of notes each type (05 Marks)

According to the question.
Rabi has sum of Rs. 1000 in the

form of denom of Rs 10 & Rs. 20

And the total of notes is 60

Let the Rs.10 notes are x

∴ the Rs. 20 notes are 60−x

60
x
60−x

form of each & respective notes

$\Rightarrow 10x + (60-x)20 = 1000$

$\Rightarrow 10x + 1200 - 20x = 1000$

$\Rightarrow -10x = 1000 - 1200$

$\Rightarrow -10x = -200$

$\Rightarrow x = \frac{200}{10} = 20$

$\Rightarrow x = 20$ (60)

$\Rightarrow 60 - x = 60 - 20 = 40$

query of.

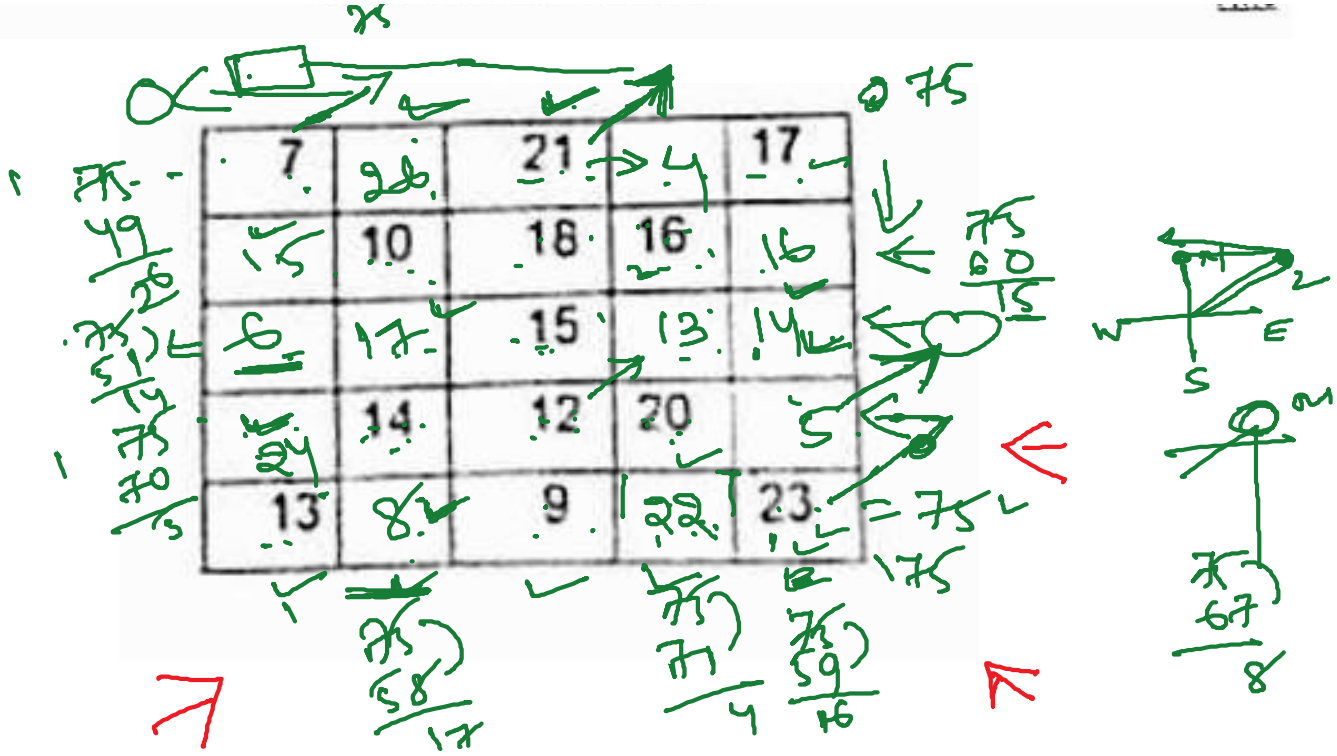
∴ the Rs10 notes are 20 & Rs. 20 notes are 40

total of notes is 60, find the number of notes each type

Q. 6 (a) Complete the magic square so that the sum of the numbers in each row, each column and along the diagonals will be 75. **(05 Marks)**

7		21		17
	10	18	16	
		15		
	14	12	20	
13		9		23

P.T.O



7	26	21	4	17
15	10	18	16	16
6	17	15	13	14
24	14	12	20	5
13	8	9	22	23

(b) The ratio of the present ages of Gita and Mita are 5:7. After 4 years the ratio will be 3:4. What are their present age? (05 Marks)

As per the question,

the ratio of the present ages of

$$\frac{\text{Gita}}{\text{Mita}} = 5:7 = \frac{5x}{7x}$$

∴ As per the question after 4 years the ratio of Gita & Mita is 3:4

Now we found this age.

$$\Rightarrow \frac{5x+4}{7x+4} = \frac{3}{4}$$

$$\Rightarrow 4(5x+4) = 3(7x+4)$$

$$\Rightarrow 20x+16 = 21x+12.$$

$\Rightarrow 20x + 16 = 21x + 12$.

$\Rightarrow 21x - 20x = 16 - 12$.

$\Rightarrow x = 4$

∴ the present age

is Gita = $5x = 5 \times 4 = 20$ yrs

Mita = $7x = 7 \times 4 = 28$ yrs

Q. 7(a) The length of a bridge is 1500 meters A train crossed the bridge in 3 Sec. at a speed of 60 Km. per hour What is the length of the train? (05 Marks)

$1500 + x = ①$

Km ⇒ hr.

m ⇒ Sec.

As per the given question

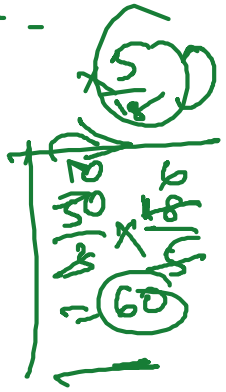
The length of a bridge is 1500 meters

A train crossed the bridge in 3 Sec.

speed of the train is 60 km/hr.

we convert 60 km/hr to m/s.

$\Rightarrow \frac{60 \times 5}{18_3} = \frac{50}{3}$ m/s



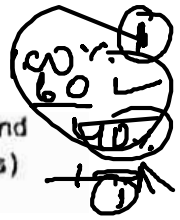
Let the length of the train x

$\Rightarrow \frac{1500 + x}{3} = \frac{50}{3}$

$\Rightarrow x = 1500 - 50$

$\Rightarrow 1450$ L

$\therefore$ The length of the train $\Rightarrow$ 1450 m



There are 150 students in Class X. Out of them 60% passed in the examination and others failed. What is the percentage of the failed students? (05 Marks)

As per the given question.

The total number of students in class X is 150.

$\therefore$ the passed students is 60% of the total students

Now we found the number of students passed $\Rightarrow \frac{150 \times 60}{100} = 90$

$\therefore$ The failed students is 60

Now we found the percentage of failed students.

$\Rightarrow \frac{60}{150} \times \frac{2}{100} = 40\%$

$\therefore$ The percentage of failed students is 40%.

8 (a) A grocer buys 600 eggs at 75 paise each, out of them 50 eggs are broken. At what rate should he sell the remaining eggs so as to gain 10%? (05 Marks)

rate should he sell the remaining eggs so as to gain 10%?

Accy to the question.

A grocer buys 600 eggs at 75 paise each.

∴ The total price of 600 eggs

C.P ⇒ $600 \times \frac{75}{100} = 450$

1 → 100

The rest of them 50 eggs are broken

the remaining eggs are 600 − 50 = ~~500~~ 550

He wants 10% on the price of C.P

⇒ The gain percentage ⇒

⇒ $450 \times \frac{110}{100} = Rs. 495$

100 + 10 = 110.

∴ He will have to sell 550 eggs to Rs. 495

cost of each egg

$\frac{49500 P}{550} = 90 P$

Rs 1 → 100

495 → ×100

49500

∴ He will have to sell one egg for Rs of 90 Rs.

(b) If a man travels 324 Km. in 6 hours of driving, how many kilometers would he travel in 5 hours at the same speed? (05 Marks)

As per the given question.

Km + hr

m + s

As per the given question.

km + hr
M + S

A man travels 324 km in 6 hr.

∴ the speed of the man is $= S = \frac{D}{T}$

$\Rightarrow \frac{324}{6} = 54$ km/hr

∴ Speed is 54 km/hr.

∴ he travel same speed & same time is 5 hrs.

$\Rightarrow D = S \times T$

$\Rightarrow 54 \times 5 = 270$

∴ he have at same speed in same time at a distance of 270 km.

9 (a) You take 20 minutes to reach your school at a speed of 12 Km. per hour. What will be your speed if you want to reach school in 15 minutes? (05 Marks)

As per the given question.

km + hr.
M + S.

At speed of 12 km/hr - time taken to reach the school is 20 min

∴ The $20 \text{ min} = \frac{20}{60} = \frac{1}{3}$ hr.

∴ Now we found the Distance.

$\Rightarrow$ Distance = Speed × time

$= 12 \times \frac{1}{3} = 4$ km

$= 12 \times \frac{1}{3} = 4$ cm

∴ The Distance is 4 cm

Now we found the speed if we have to reach in 15 min.

∴ Speed $= \frac{\text{Distance}}{\text{Time}} = \frac{4}{\frac{15}{60}} = \frac{4 \times 60}{15} = 16$ km/hr

∴ The speed are needed to reach the school in 15 min is 16 km/hr

(b) Rama can do a work in 2 days. Hari and Gopal can do the same work in 4 days. How many days will they take together to finish the work. (05 Marks)

According to the question

Rama can do the work in 2 days

Hari and Gopal can do the same work in 4 days.

Rama's 1 day work $= \frac{1}{2}$

$\frac{1}{2}$

Hari & Gopal one day work $= \frac{1}{4}$

Now we found the total work of Rama, Hari & Gopal.

$\Rightarrow \frac{1}{2} + \frac{1}{4} = \frac{2+1}{4} = \frac{3}{4}$

$\Rightarrow \frac{1}{2} + \frac{1}{4} = \frac{\ldots}{4} = \frac{\ldots}{4}$

$\therefore$ The total work of Rama, Hari & Gopal is $\frac{4}{3}$ days.

4 2
6 : 11

Q. 10 (a) Students of a school have been divided into two groups in the ratio 6:11. If the first group has 870 students, in total how many students are there in the school. (05 Marks)

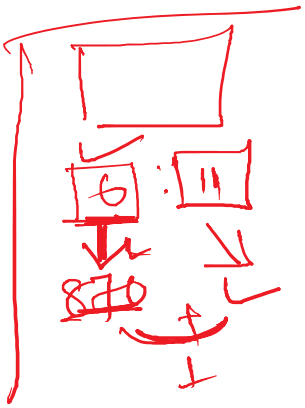
As per the given question

Students of a school have been divided into two groups.

$\therefore$ The ratio of the group is 6 : 11

$\Rightarrow 6x$

$11x$



6 : 11

870

According to the question in 1st group the number of students are 870.

$\therefore$ The Now as per the question

$\Rightarrow 6x = 870 \Rightarrow$

$\Rightarrow x = \frac{870}{6} = 145$

$\Rightarrow x = 145$.

$\therefore$ The group of $11x$ ~~parts~~ ~~group~~ students is

$\Rightarrow 11x = 11 \times 145$

$\Rightarrow 1295$

$\therefore$ The total students in the school is

∴ The total Students in the School is

⇒ 870 + 1295 = 2165

(6) The Coach of a Cricket Team buys 3 bats and 6 balls for Rs 4200/-. Later he buys another bat and 4 more balls of the same kind for Rs 1700/. Find the price of the ball and bat (05 Marks)

As per the given question

The coach buys 3 bats & 6 balls for Rs. 4200 :

Let we take bat is x & ball is y

⇒ $3x + 6y = 4200$ —(i)

Later he buys one bat & 4 balls at Rs. 1700.

$x + 4y = 1700$ — (ii)

Now we add the eqn (i) & eqn (ii) to find the value of bat & ball

⇒ $3x + 6y = 4200$ —(i)

⇒ $x + 4y = 1700$ —(ii)

Now we multiply by 3 with eqn (ii)

⇒ $3x + 6y = 4200$

$3x + 12y = 5100$

$6y - 12y = 4200 - 5100$

$6y - 12y = 420 - 510$

$-6y = -90$

$\Rightarrow y = \frac{90}{6} = 15$

$\Rightarrow y = 15$

$\Rightarrow$ Put the Value of y in eq (i)

$3x + 6 \times 15 = 420$

$\Rightarrow 3x + 90 = 420$

$\Rightarrow 3x = 420 - 90$

$3x = 330$

$x = \frac{330}{3} = 110$

∴ the value of bat is Rs 110 & the value of one ball is Rs. 150.

$\Rightarrow 3b + 6b = 420$

$3 \times 110 + 6 \times 150 =$

$\Rightarrow 330 + 900$

$= 420$

Q. 11 (a) A train travels a distance of 480 Km. at a uniform speed. If the speed had been 8 Km per hour less, then it would have taken 3 hours more to cover the same distance. We need to find the speed of the train **(05 Marks)**

Q. Accord to the question.

Distance travelled by train = 480 km

Let the speed of the train be x km/hr

time taken for the journey $= t = \frac{\text{Dist}}{\text{Spd}}$.

$\Rightarrow \frac{480}{x}$ "

time taken for the journey $= t = \frac{\text{Dist.}}{\text{Speed}}$.

$\Rightarrow \frac{480}{x}$

Given speed is ~~decreased~~ decreased by 8 km.

Hence the new speed of train $= \frac{480}{x-8}$

According to the given.

$\Rightarrow \frac{480}{x-8} - \frac{480}{x} = 3$

$\Rightarrow \frac{480x - 480(x-8)}{x(x-8)} = 3$

$\Rightarrow \frac{480(x - x + 8)}{x^2 - 8x} = 3$

$\Rightarrow \frac{480 \times 8}{x^2 - 8x} = 3 \Rightarrow \frac{480 \times 8}{3} = x^2 - 8x$

$\Rightarrow 1280 = x^2 - 8x$

$\Rightarrow x^2 - 8x = 1280$

$\Rightarrow x^2 - 2 \cdot 4 \cdot x = 1280$

$\Rightarrow$ Adding to 16 on both sides.

$\Rightarrow x^2 - 2 \cdot 4 \cdot x + 16 = 1280 + 16$

$\Rightarrow (x-4)^2 = 1296$

$\Rightarrow x - 4 = \sqrt{1296} = \pm 36$

$\Rightarrow x - 4 = \pm 36$

$\Rightarrow x-4 = \sqrt{1296} = 36$

$\Rightarrow x-4 = \pm 36$

$\Rightarrow x-4 = +36$

$\Rightarrow x = 36+4 = 40$

$\Rightarrow x-4 = -36 \Rightarrow x = -36+4 = -32$

$\therefore$ The $x = 40$

$\therefore$ The actual speed of the train is 40 km

(b) Rohan's mother is 26 years older than him. The product of their 3 years from now will be 360. Find our Rohan's present age. (05 Marks)

As per the given question:-

Rohan's mother is 26 years older than him.

Let the Rohan's present age is x

then the mother's age of Rohan $= x+26$

In the given question After 3 years from now, the product of Rohan's & his mother's age will be 360

$\Rightarrow (x+3)(x+26+3) = 360$

$\Rightarrow (x+3)(x+29) = 360$

$\Rightarrow x^2 + 32x + 87 = 360$

$\Rightarrow x^2 + 32x + 87 - 360 = 0$

$\Rightarrow x^2 + 32x - 273 = 0$

Factorization of the above quadratic eqn using the formula.

According of the formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Put $a = 1$, $b = 32$, $c = -273$

$$\Rightarrow x = \frac{-32 \pm \sqrt{(32)^2 - 4 \cdot 1 \cdot -273}}{2 \cdot 1}$$

$$\Rightarrow x = \frac{-32 \pm \sqrt{1024 + 992}}{2}$$

$$\Rightarrow \frac{-32 \pm \sqrt{2116}}{2} \Rightarrow \frac{-32 \pm 46}{2}$$

$$\Rightarrow x = \frac{-32 \pm 46}{2}$$

$$\Rightarrow x = \frac{-32 + 46}{2} = \cancel{\frac{-78}{2}} = \cancel{-39} \Rightarrow \frac{14}{2} = 7$$

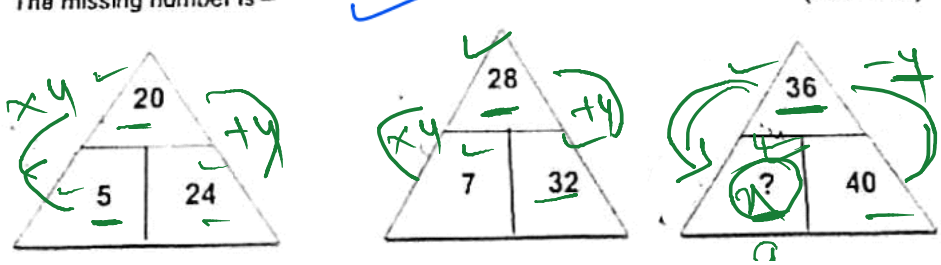
$$\Rightarrow x = \frac{-32 - 46}{2} = \frac{-78}{2} = -39$$

We can not take the negative value

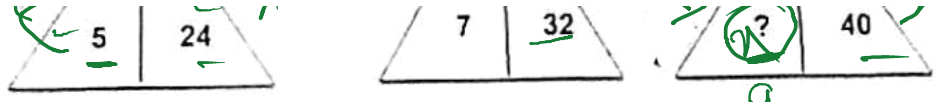
$\Rightarrow x = 7$

$\therefore$ Thus Rohit's present age is 7 years.

Q. 12 (a) The missing number is – (05 Marks)



$\frac{36}{4} = 9$



$\frac{36}{4} = 9$

According to the question.
In the given 3 triangles. we found the value of last triangle x

In the given question the probably solution is

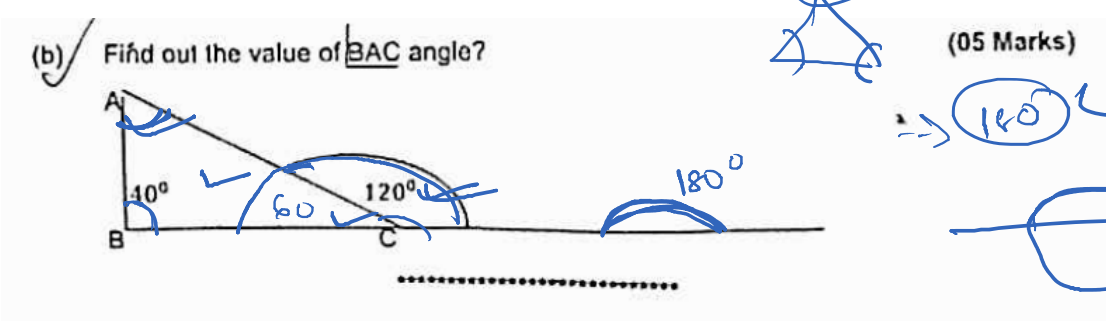
In triangle-1 $\Rightarrow 5 \times 4 = 20$, $20 + 4 = 24$

In triangle-2 $\Rightarrow 7 \times 4 = 28$, $28 + 4 = 32$

In triangle-3 $\Rightarrow x \times 4 = 36$, $36 + 4 = 40$

$\Rightarrow x = \frac{36}{4} = 9$

$\therefore$ The value of $x = 9$


(b) Find out the value of BAC angle? (05 Marks)

$\Rightarrow 180$

As per the question.

$\Rightarrow$ triangle ABC the $\angle B = 40^\circ$
& the outer angle $\angle C = 120^\circ$

$\therefore$ The internal angle of $\angle C = 180 - 120 = 60^\circ$

$\therefore$ Now we found the value $\angle BAC$

we know that $\angle A + \angle B + \angle C = 180^\circ$

$\therefore \angle A + 40 + 60 = 180$

$\therefore \quad \angle A + 40 + 60 = 180$

$\Rightarrow \angle A = 180 - 100$

$\Rightarrow \angle A = 80^\circ$

$\therefore$ the value of $\angle BAC = 80^\circ$