

DATE: \_\_\_/\_\_\_/\_\_\_

$$\underline{\underline{Q7}} - \underline{\underline{(A)}} -$$

Solution

Given data:

Sagib took a loan worth <sup>Rs</sup> 1200.

Total period = interest rate  $\Rightarrow T = R$

Total paid simple interest = 432

Rate of interest ?

Simple interest = Principle amount  $\times$  time period  $\times$   
interest rate

$$= \frac{P \times R \times T}{100} \quad \therefore R = \%$$

$$432 = \frac{1200 \times R \times R}{100}$$

$$\frac{432}{1200} = \frac{R^2}{100}$$

$$R^2 = \frac{432}{12} = 36$$

$$R^2 = 36 \Rightarrow R = \sqrt{36}$$

$$R = 6\%$$

$$\boxed{R = 6\%}$$



Q7 - (B) -

## Solution

Given:

Avg visitors on Sunday = 510

Avg visitors on Mon-Sat = 240  
each day

Avg visitors per day in a Month (30 days) beginning with a Sunday = ?

⇒ There are five Sundays in a month of 30 days beginning with Sunday

$$\text{Avg visitors per day} = \frac{510 \times 5 + 240 \times 25}{30}$$

$$= \frac{5(510 + 240 \times 5)}{5 \times 6}$$

$$= \frac{510 + 1200}{6}$$

$$= \frac{510}{6} + \frac{2 \times 100}{1}$$

$$= \frac{17 \times 5}{3 \times 2} + 200$$

$$= 85 + 200$$

$$= 285$$

285 visitors per day



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Q7 - (C) -

Solution:

Given = 40% of a number =  $\frac{2}{3}$  of another  
the ratio of first/second? numbers

Let first number be  $x$

Let second number be  $y$

$$40\% \times x = \frac{2}{3}y$$

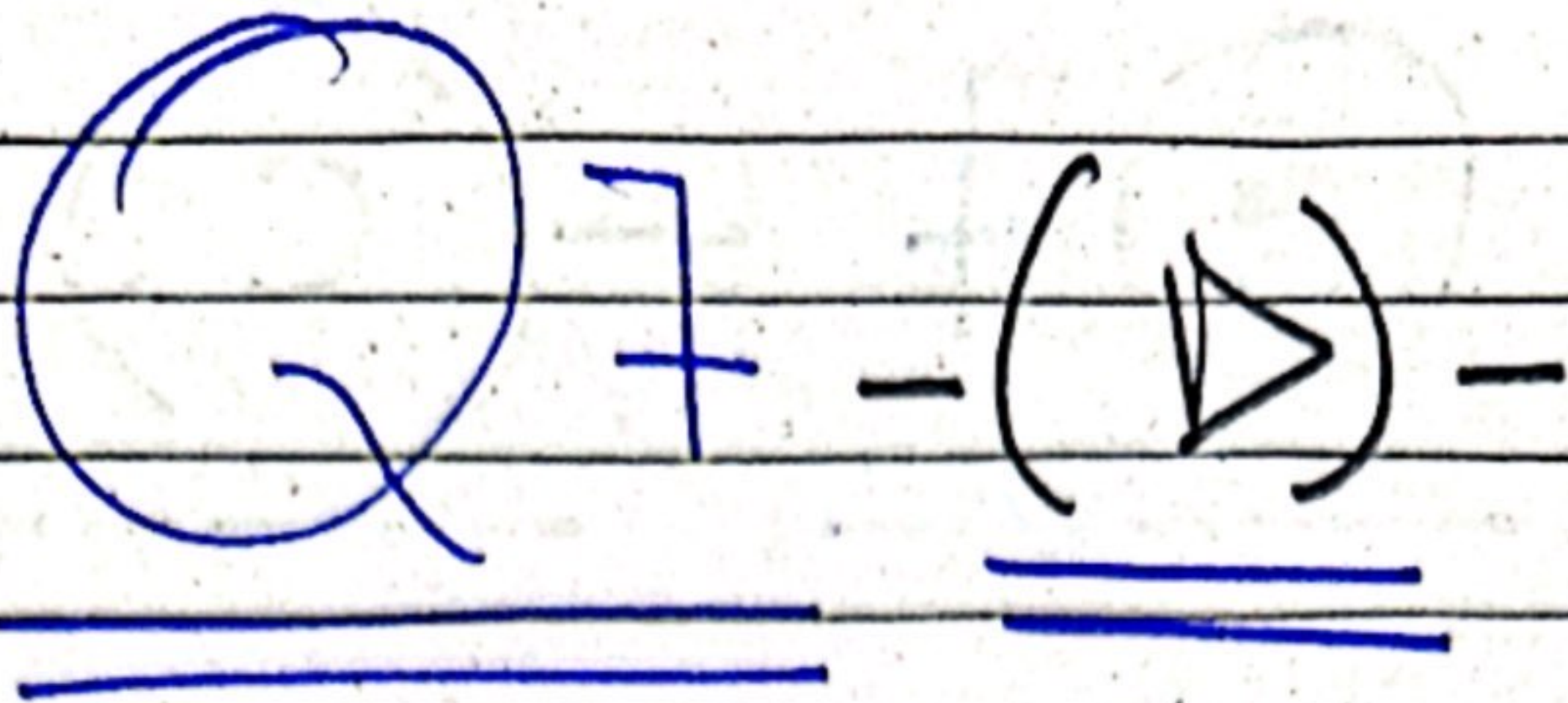
$$\frac{40x}{100} = \frac{2y}{3} \Rightarrow \frac{2 \times 100}{40 \times 3} = \frac{x}{y}$$

$$\frac{x}{y} = \frac{2 \times 100}{40 \times 3} = \frac{5}{3}$$

$$\frac{x}{y} = \frac{5}{3} \Rightarrow x:y = 5:3$$

$$x:y = 5:3$$





## Solution

Given

Two dice are thrown simultaneously.  
probability of getting numbers having  
even product?

$$\text{Dice A} = \{1, 2, 3, 4, 5, 6\}$$

$$\text{Dice B} = \{1, 2, 3, 4, 5, 6\}$$

Total possible outcomes = 36

$$\{ (1,1) (1,2) (1,3) (1,4) (1,5) (1,6) (2,1) (2,2) (2,3) (2,4) \\ (2,5) (2,6) (3,1) (3,2) (3,3) (3,4) (3,5) (3,6) (4,1) \\ (4,2) (4,3) (4,4) (4,5) (4,6) (5,1) (5,2) (5,3) \\ (5,4) (5,5) (5,6) (6,1) (6,2) (6,3) (6,4) (6,5) \\ (6,6) \}$$

Product leading to even outcomes?

$$\{ (1,2) (1,4) (1,6) (2,1) (2,2) (2,3) (2,4) (2,5) (2,6) (3,2) (3,4) \\ (3,6) (4,1) (4,2) (4,3) (4,4) (4,5) (4,6) (5,2) (5,4) (5,6) \\ (6,1) (6,2) (6,3) (6,4) (6,5) (6,6) \}$$

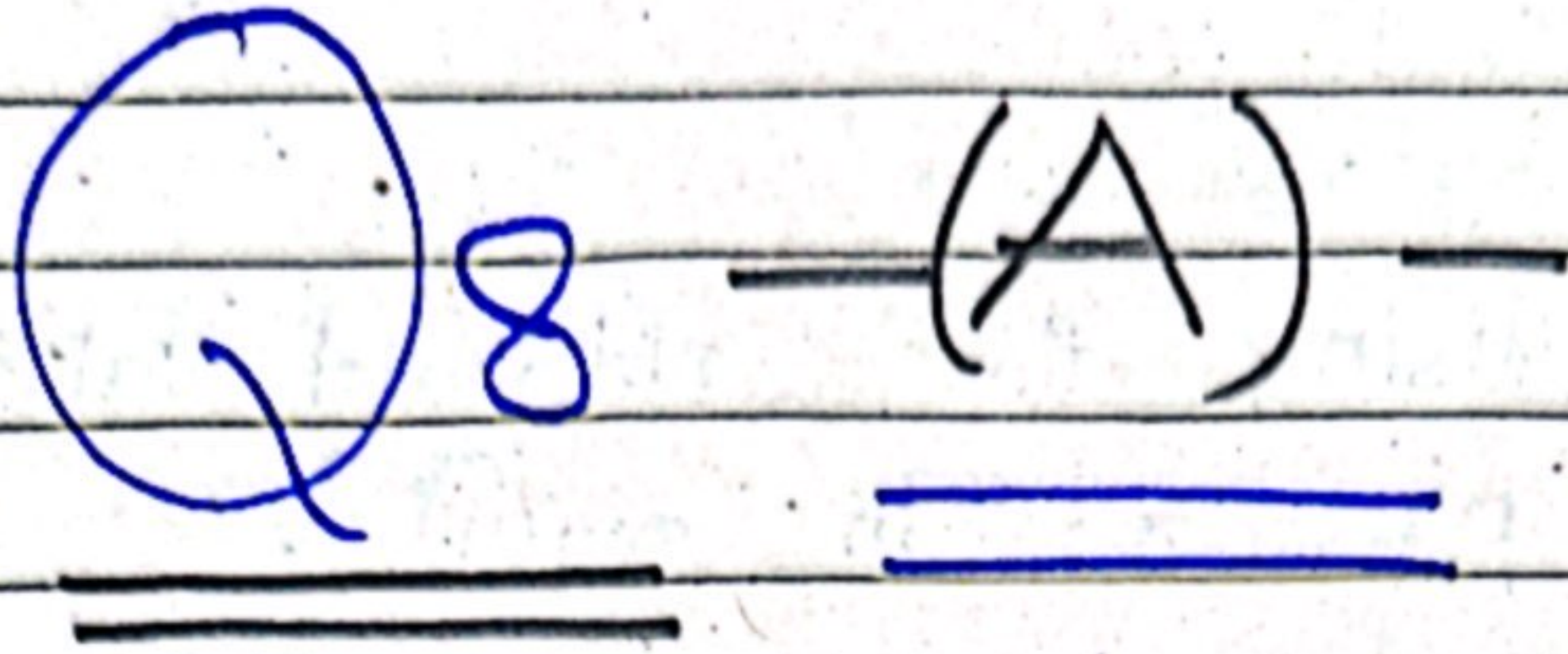
These are 27 such outcomes leading to product  
of an even number

$$\text{Probability} = \frac{27}{36} = \frac{3}{4} = 0.75$$

$$\text{Probability} = 75\%$$

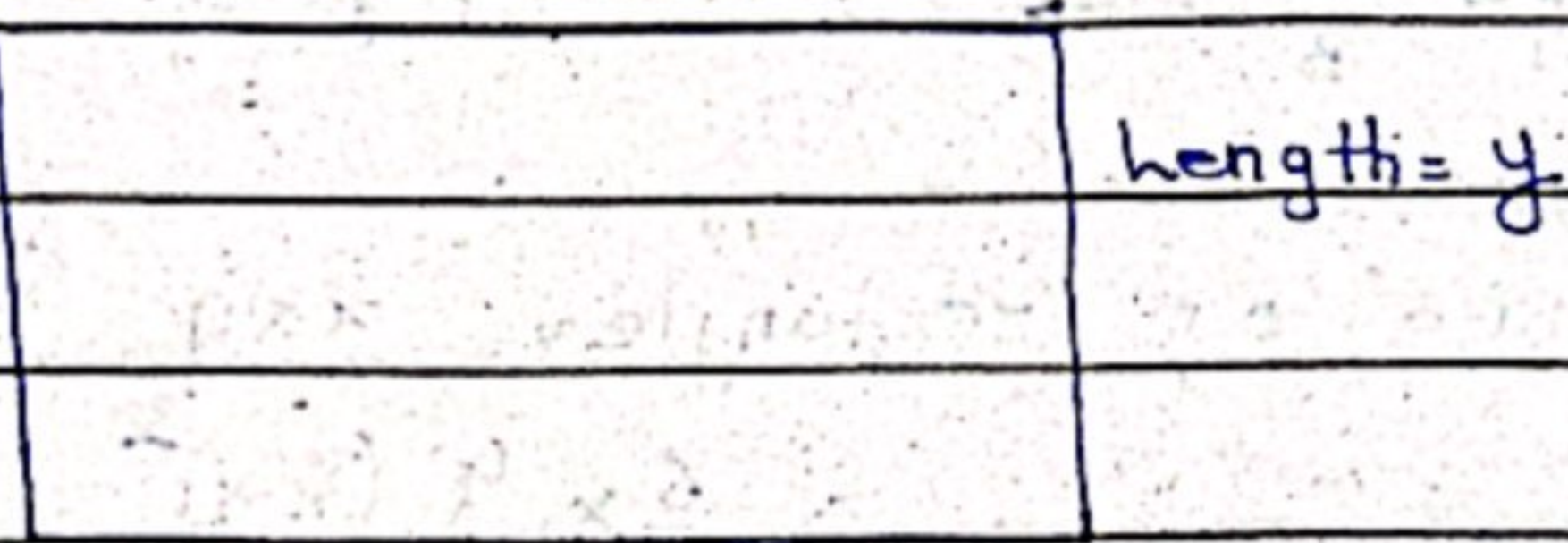


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## Solution:

Given



Breadth =  $x$

$$\frac{y}{x} = 3:2$$

completion of one round in 8 minutes at speed  
12 km/hr

$$S = vt$$

$$S = \frac{12 \text{ km}}{\text{hour}} \times \frac{8 \text{ hours}}{5}$$

$S = \frac{8}{5} \text{ km} \rightarrow$  Total distance covered = perimeter of  
rectangle

$$2(x+y) = \frac{8}{5} \Rightarrow x+y = \frac{4}{5} \rightarrow \textcircled{1}$$

$$\frac{y}{x} = \frac{3}{2} \Rightarrow 2y = 3x \Rightarrow y = \frac{3x}{2} \rightarrow \textcircled{2}$$

put  $\textcircled{2}$  in  $\textcircled{1}$

$$\frac{x+3x}{2} = \frac{4}{5}$$

$$\frac{2x+3x}{2} = \frac{4}{5}$$

$$5x = 4$$

$$x = \frac{4}{5}$$



using the obtained value  
of  $x$  in eq (11)

$$y = \frac{3}{2} x$$

$$y = \frac{m}{k} x \frac{1}{5}$$

$$y = \frac{6}{5} \rightarrow \text{value of } y$$

$$\begin{aligned} \text{Area of rectangle} &= x \times y \text{ (km}^2\text{)} \\ &= \frac{6}{5} \times \frac{4}{5} \text{ (km)}^2 \end{aligned}$$

$$\frac{6 \times 4}{5 \times 5} \times (1000\text{m})^2$$

$$\frac{6 \times 4}{5 \times 5} \times 1000 \times 1000$$

$$\frac{6 \times 4}{5 \times 5} \times \sqrt{10}^2 \times 100 \times \sqrt{10}^2 \times 100$$

$$6 \times 4 \times 4 \times 100 \times 100$$

$$96 \times 100 \times 100$$

$$\text{Area} = 960000 \text{ m}^2$$

of rectangle



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Q8 - (B) -

Solution:

Father of her uncle = Grandfather of the girl

Means

Paternal aunt

Son of the ~~day~~ daughter of her grandfather

Son of paternal aunt

Son of paternal aunt = cousin

The girl has a cousin relation to the boy in question

Q8 - (C) -

Solution

Let the numbers be  $x$

Unit ten

~~$x+2$   $x$~~

Unit ten

$x+2$   $x$

~~$2x(x+x+2) = 144$~~

~~$2x(2x+2) = 144$~~

~~$2x^2 + 2 = 144$~~

~~$x^2 + 1 = 72$~~

~~$x^2 = 71$~~

~~$(x) \times (x)$~~

$(x) \times (x+x+2) = 144$

$x(2x+2) = 144$

$2x(x+1) = 144$

$x^2 + x = 72$



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$$x^2 + x - 72 = 0$$

Using quadratic formula

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

$$x = \frac{-1 \pm \sqrt{1 - 4(1)(-72)}}{2(1)}$$

$$\frac{-1 \pm \sqrt{289}}{2(1)}$$

$$x = \frac{-1 \pm 17}{2}$$

$$x = \frac{-1 + 17}{2}$$

$$x = \frac{16}{2} = 8$$

~~$x = 8$~~

The number is

~~$x + 2 = 10$~~

$x + 2$	$x$
---------	-----

8 6
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 Ans



Q8 (- > -)

## Solution

Given = LCM of two numbers = 48

The numbers are in ratio 2:3 Then their sum?

Let the numbers be  $x$  and  $y$

$$\frac{x}{y} = \frac{2}{3}$$

Then the lcm of  $x$  and  $y = xy$

$$xy = 48 \rightarrow (1)$$

$$\frac{x}{y} = \frac{2}{3} \rightarrow (2)$$

$$x = \frac{2y}{3} \rightarrow (3)$$

putting (3) in (1)

$$\frac{2y}{3} \times y = \frac{48}{1}$$

$$y^2 = 72 \quad y = 8.5$$

$$x = \frac{2xy}{3} = \frac{2 \times 8.5}{3} = \frac{17}{3} = 5.66$$

$$x+y = 8.5 + 5.66$$

$$x+y = 14.16$$