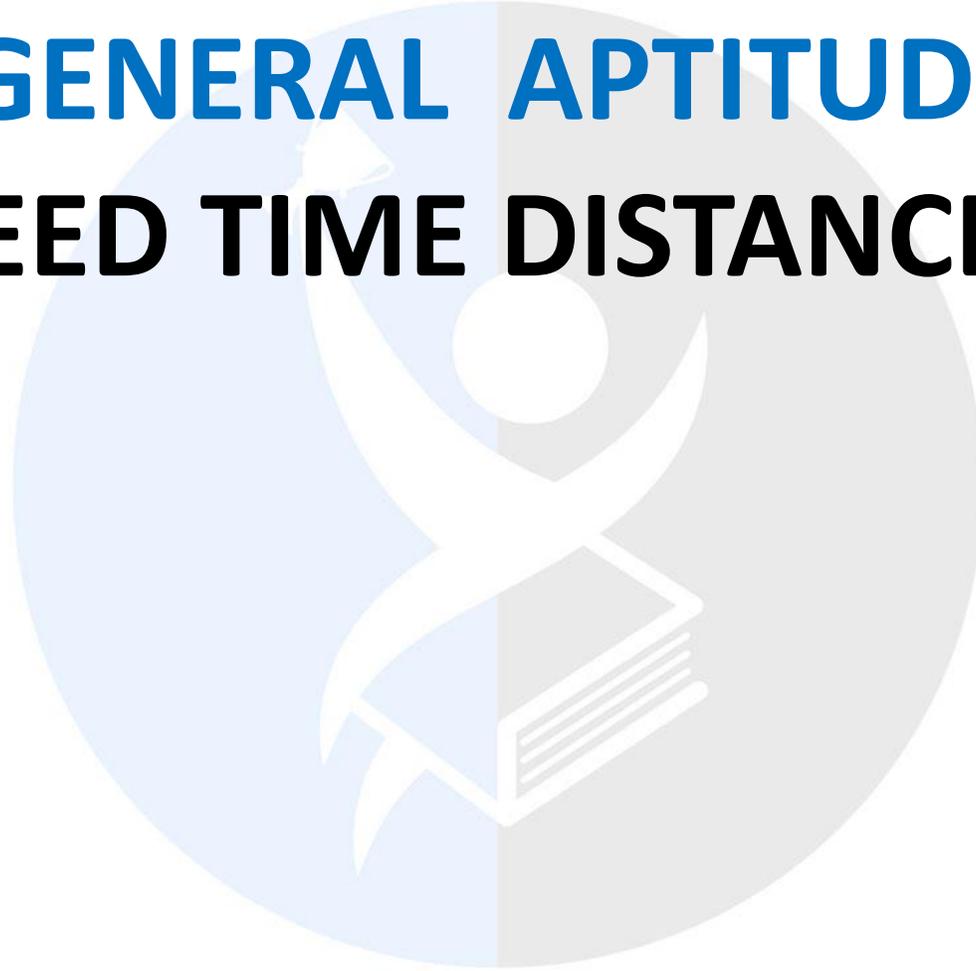


GENERAL APTITUDE

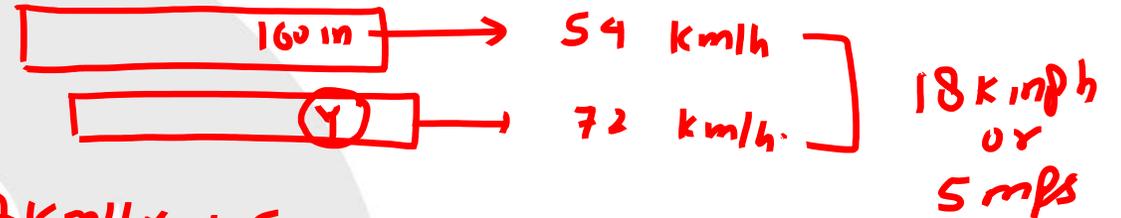
SPEED TIME DISTANCE-II



Two trains X and Y cross each other in 48 sec, when both are running in same direction. If length of train X is 160 m and speed of train X and train Y are 54 km/h and 72 km/h respectively then find the length of train Y.

- (a) 160 m (b) 120 m (c) 80 m (d) 100 m

Eg
CC



Ans
R Speed = $72 - 54 = 18 \text{ km/hr} \times \frac{5}{18} = 5 \text{ mps}$
 $t = 48 \text{ sec}$

$$5 = \frac{(160 + y)}{48}$$

$$160 + y = 240$$

$$y = 80 \text{ m}$$



The length of train A is twice that of train B and speed of train A is half of that of train B. If train A crosses a man in 4 sec. then find how long will train B take to cross train A if they go in same direction.

(a) 3s (b) 4s (c) 5s (d) 6s

length

(A) $2x$ + (B) x = $3x$ ✓

speed

(Y) Y (2Y) R. speed = Y ✓

$Y = \frac{2x}{4}$

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

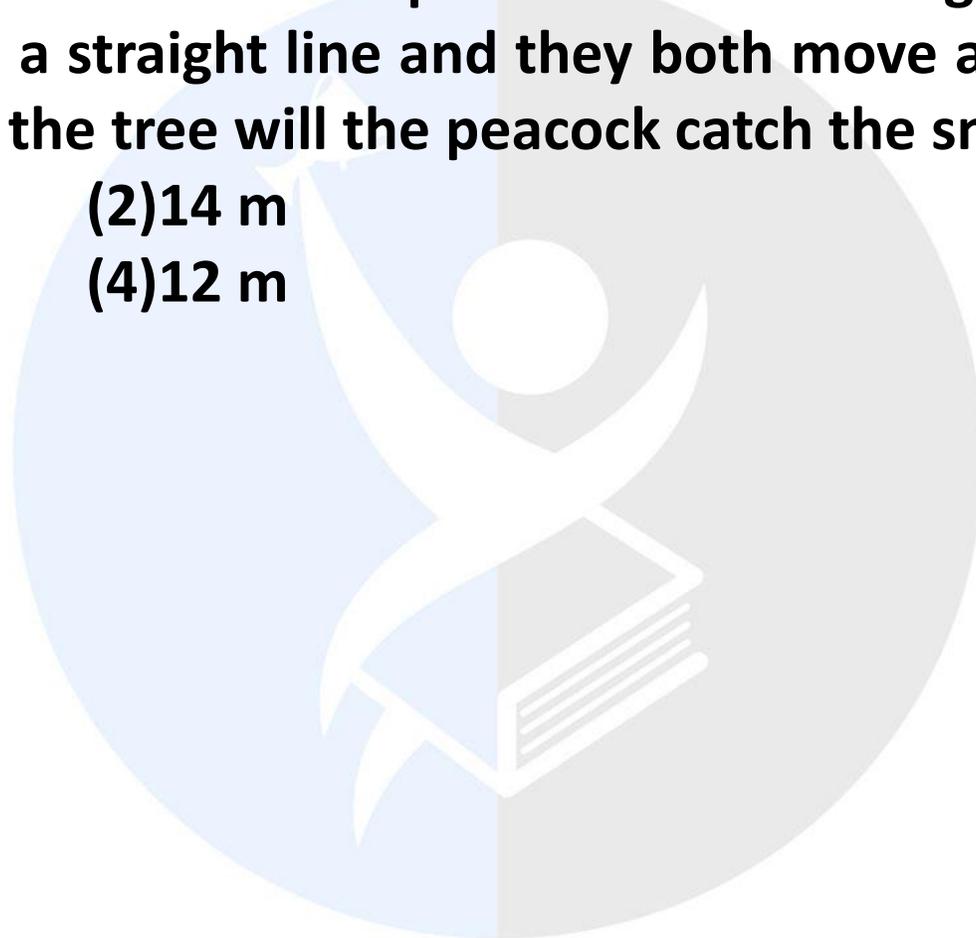
$t = \frac{d}{s} = \frac{3x}{Y} = \frac{3x \times 2}{x} = 6 \text{ sec}$ Any



A peacock perched on the top of a 12 m high tree spots a snake moving towards its hole at the base of the tree from a distance equal to thrice the height of the tree. The peacock flies towards the snake in a straight line and they both move at the same speed. At what distance from the base of the tree will the peacock catch the snake?

- (1) 16 m
- (3) 18 m

- (2) 14 m
- (4) 12 m





A cyclist covers a certain distance at a constant speed. If a jogger covers half the distance in double the time as the cyclist, the ratio of the speed of the jogger to that of the cyclist is

- ✓ (1) 1:4 *Ans*
 (3) 1:2

- (2) 4:1
 (4) 2:1

Jogger
 distance (x)
 time 2y

Cyclist
 distance (2x)
 time y'

$$\frac{S_J}{S_C} = \frac{\frac{x}{2y}}{\frac{2x}{y}} = \frac{x}{2y} \times \frac{y}{2x} = \frac{1}{4}$$

$$S_J : S_C = 1 : 4$$

CC



Two locomotives are running towards each other with speeds of 60 and 40 km/hr. An object keeps on flying to and fro from the front tip of one locomotive to the front tip of the other with a speed of 70 km/hr. After 30 minutes, the two locomotives collide and the object is crushed. What distance did the object cover before being crushed?

- (1) 50 km
- (3) 35 km

- (2) 45 km
- (4) 10 km

Ans



$$S = 70 \text{ km/hr}$$

$$t = 0.5 \text{ hr}$$

$$d = 70 \times 0.5$$

$$d = 35 \text{ km}$$

बोट
moving water / current

BOAT AND STREAM





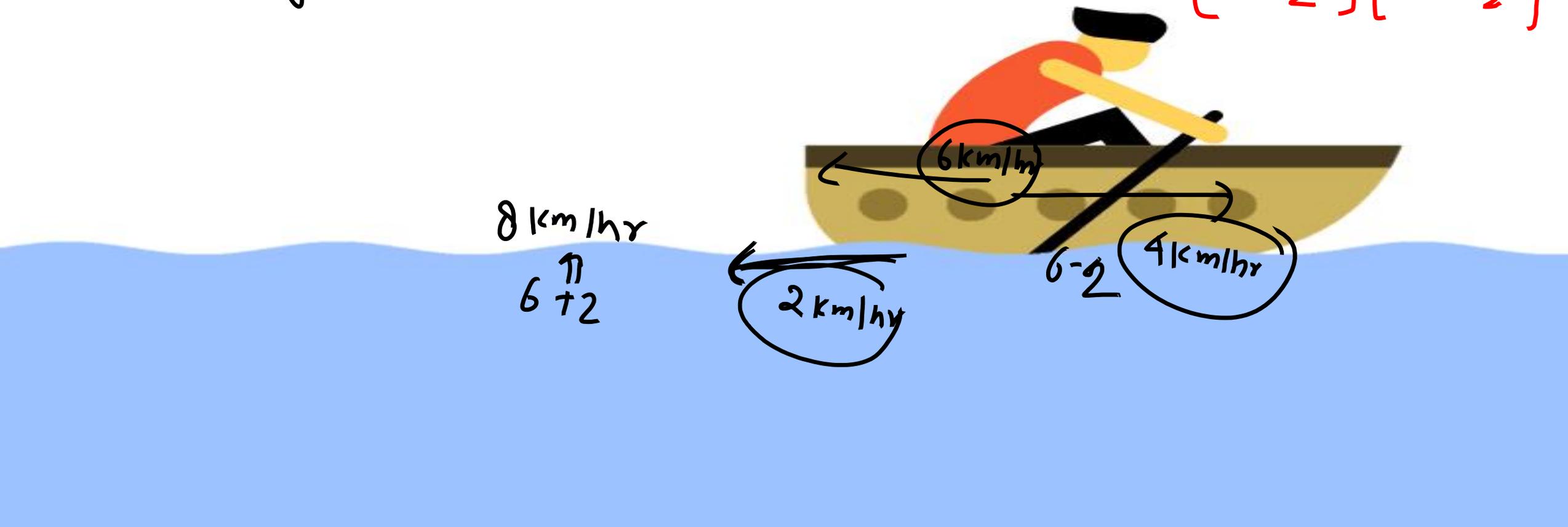
- D → Downstream speed
- U → upstream speed
- B → Speed of Boat
- C → speed of current/water

← Direction of flow of water
← Direction of the boat

Downstream (D)
 When direction of water and Boat are same

$D = (B + C) , U = (B - C)$

$B = \frac{D + U}{2}$ $C = \frac{D - U}{2}$



A boat running downstream covers a distance of 20 km in 2 hrs while it covers the same distance upstream in 5 hrs. Then speed of the boat in still water is

- (a) 7 km/hr (b) 8 km/hr (c) 9 km/hr (d) 10 km/hr

$$D = \frac{20}{2}$$

$$D = 10 \text{ km/hr}$$

$$B = ?$$

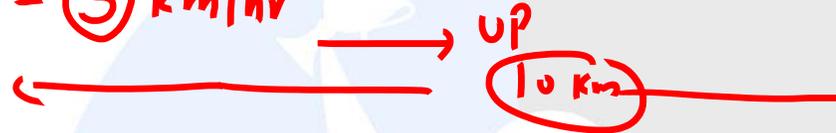
$$U = \frac{20}{5}$$

$$U = 4 \text{ km/hr}$$

$$B = \frac{D+U}{2} = \frac{10+4}{2} = 7 \text{ km/hr}$$

The speed of the current is 5 km/hour. A motorboat goes 10 km upstream and back again to the starting point in 50 minutes. The speed (in km/hour) of the motorboat in still water is _____

$$C = 5 \text{ km/hr}$$



- (a) 20
- (b) 26
- (c) 25
- (d) 28

Ans

$$B^2 - 25B + B - 25 = 0$$

$$B[B - 25] + 1[B - 25] = 0$$

$$(B - 25)(B + 1) = 0$$

$$B = 25 \text{ km/hr} \quad B = -1 \text{ (Rejected)}$$

$$t_u + t_d = \frac{5}{6}$$

$$\frac{10}{(B-5)} + \frac{10}{(B+5)} = \frac{5}{6}$$

$$\left[\frac{1}{(B-5)} + \frac{1}{(B+5)} \right] = \frac{1}{6}$$

$$\frac{B+5 + B-5}{(B-5)(B+5)} = \frac{1}{6}$$

$$\frac{2B}{B^2 - 25} = \frac{1}{6}$$

$$B^2 - 25 = 24B$$

$$B^2 - 24B - 25 = 0$$

A motorboat in still water travels at a speed of 36 km/h. It goes 56 km upstream in 1 hour 45 minutes. The time taken by it to cover the same distance down the stream will be:

- (a) 2 hours 25 minutes
- (b) 3 hours
- (c) 1 hour 24 minutes
- (d) 2 hours 21 minutes

$$5 \sqrt{7} \left(\frac{5}{2} \right)$$

$$\frac{2}{5} \times 60 = 24 \text{ min}$$

$$t = \frac{56}{(36 + 4)} = \frac{56 + 4}{40} = \frac{60}{40} = \frac{3}{2} \text{ hours} = 1 \frac{1}{2} \text{ hours}$$

$$B = 36 \text{ km/hr}$$

$$U = \frac{56 \times 4}{7}$$

$$U = 32 \text{ km/hr}$$

$$t = \frac{56}{D}$$

$$B - C = 32$$

$$36 - C = 32$$

$$C = 4$$

$$\frac{45}{60} = \frac{3}{4} \text{ hr}$$

$$1 \frac{3}{4} \text{ hr}$$

$$\frac{7}{4} \text{ hr}$$

In a fixed time, a boy swims double the distance along the current that he swims against the current. If the speed of the current is 3 km/hr, the speed of the boy in still water is

- (a) 6 km/hr
- (b) 9 km/hr
- (c) 10 km/hr
- (d) 12 km/hr

Ans

$$B = ?$$

$$C = 3 \text{ km/hr}$$

$$U = (B - 3)$$

$$t_u = t_D$$

$$\frac{d}{B-3} = \frac{2d}{B+3}$$

$$B + 3 = 2(B - 3)$$

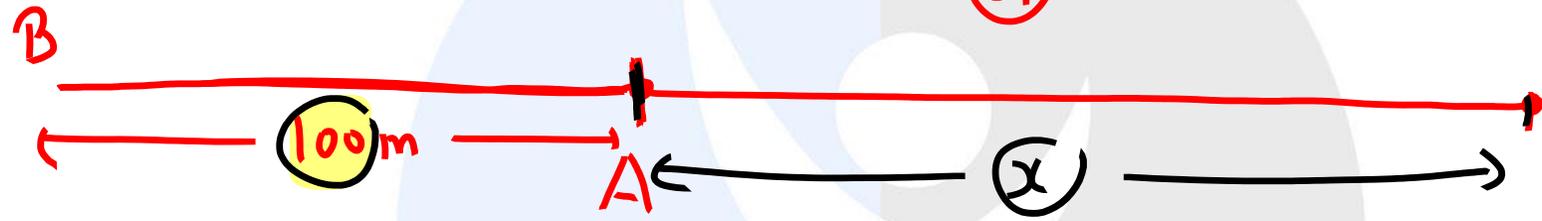
$$B + 3 = 2B - 6$$

$$B = 9 \text{ km/hr}$$

A swimmer swims from a point A against a current for 5 minutes and then swims backwards in favour of the current for next 5 minutes and comes to the point B. If AB is 100 meters, the speed of the current (in km per hour) is:

$C = ?$

$U = (B - C) \quad D = (B + C)$
 (UP) →



(a) 0.4

(b) 0.2

(c) 1

(d) 0.6

Ans

$d_D - d_U = \frac{100}{109\phi}$

$(B+C) \frac{5}{64} - (B-C) \frac{5}{64} = \frac{1}{14}$

$\frac{5}{6} [B+C - B+C] = 1$

$C = \frac{2}{3} = 0.6 \text{ km/hr}$

The speed of boat in still water is 5 km/hr more than speed of current and the ratio of speed of boat in downstream to the speed of boat in still water is 4 : 3. Find downstream distance covered by boat in 3 hours.

- (a) 33 km
- ~~(b) 30 km~~
- (c) 36 km
- (d) 39 km

$$\begin{array}{cccc} \textcircled{D} & : & \textcircled{B} & : & \textcircled{C} & : & \textcircled{U} \\ \textcircled{4} & : & 3 & : & 1 & : & 2 \end{array}$$

$$\begin{aligned} D &= B + C \\ 4 &= 3 + C \\ C &= 1 \end{aligned}$$

$$\frac{2}{1} = \frac{5}{2} = 2.5 \text{ km/hr}$$

$$D = 4 \times 2.5 = 10 \text{ km/hr}$$

$$d = D \times t$$

$$\begin{aligned} d &= 10 \times 3 \\ &= 30 \text{ km} \end{aligned}$$

Am

A boat running upstream takes 8 hours 48 minutes to cover a certain distance, while it takes 4 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of the water respectively?

(1) 2:1 (2) 3:2 (3) 8:3 (4) none of these

A peacock perched on the top of a 12 m high tree spots a snake moving towards its hole at the base of the tree from a distance equal to thrice the height of the tree. The peacock flies towards the snake in a straight line and they both move at the same speed. At what distance from the base of the tree will the peacock catch the snake?

(1) 16 m

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THANK YOU
HAPPY LEARNING



