BOATS & STREAMS

✓ **Downstream / Upstream**

In water, the direction along the stream is called Downstream and the direction against the stream is called Upstream.

✓ If the speed of a boat in still water is u km/hr and the speed of stream in v km/hr, then

Speed Downstream = (u + v) km / hr

Speed Upstream   = (u - v) km / hr

✓ If the speed downstream is a km/hr and speed upstream is b km/hr, then:

Speed in still water = ½ (a + b) km/hr

Rate of stream   = ½ (a - b) km/hr

Question

A boat can travel with a speed of 13 km/hr in still water. If the speed of the stream is 4 km/hr, find the time taken by the boat to go 68 km downstream.

A. 2 hours

B. 3 hours

C. 4 hours

D. 5 hours

Answer: Option **C**

Explanation:

Speed downstream = (13 + 4) km/hr = 17 km/hr.

Time taken to travel 68 km downstream = 68/17 hrs = 4 hrs.

Question

A man's speed with the current is 15 km/hr and the speed of the current is 2.5 km/hr. The man's speed against the current is:

A. 8.5 km/hr

B. 9 km/hr

C. 10 km/hr

D. 12.5 km/hr

Answer: Option **C**

Explanation:

Man's rate in still water = (15 - 2.5) km/hr = 12.5 km/hr.

Man's rate against the current = (12.5 - 2.5) km/hr = 10 km/hr.

Question

A motorboat, whose speed in 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is:

A. 4

B. 5

C. 6

D. 10

Answer: Option **B**

Explanation:

Let the speed of the stream be x km/hr. Then,

Speed downstream = $(15 + x)$ km/hr,

Speed upstream = $(15 - x)$ km/hr.

$$\therefore \frac{30}{(15 + x)} + \frac{30}{(15 - x)} = 4\frac{1}{2}$$

$$\Rightarrow \frac{900}{225 - x^2} = \frac{9}{2}$$

$$\Rightarrow 9x^2 = 225$$

$$\Rightarrow x^2 = 25$$

$$\Rightarrow x = 5 \text{ km/hr.}$$

Question

A boat running downstream covers a distance of 16 km in 2 hours while for covering the same distance upstream, it takes 4 hours. What is the speed of the boat in still water?

A. 4 km/hr

B. 6 km/hr

C. 8 km/hr

D. Data inadequate

Answer: Option **B**

Explanation:

Rate downstream = 16/2 kmph = 8 kmph.

Rate upstream = 16/4 kmph = 4 kmph.

Speed in still water = 1/2 (8 + 4) kmph = 6 kmph.

Question

A boatman goes 2 km against the current of the stream in 1 hour and goes 1 km along the current in 10 minutes. How long will it take to go 5 km in stationary water?

A. 40 minutes

B. 1 hour

C. 1 hr 15 min

D. 1 hr 30 min

Answer: Option **C**

Explanation:

Rate downstream = $\left(\dfrac{1}{10} \times 60\right)$ km/hr = 6 km/hr.

Rate upstream = 2 km/hr.

Speed in still water = $\dfrac{1}{2}(6 + 2)$ km/hr = 4 km/hr.

$\therefore$ Required time = $\left(\dfrac{5}{4}\right)$ hrs = $1\dfrac{1}{4}$ hrs = 1 hr 15 min.

Question

Three cities (A, B, C) are along side a river. B is the exact midway between A and C. A man takes 4hr30m to row from A to C. And takes 6 hr to row from A to B and back. How much time will he take to row from C to A

A. 3 hours 45 minutes

B. 7 hours 15 minutes

C. 7 hours 30 minutes

D. 7 hours 45 minutes

Answer: Option **C**

A ————————————— B ————————————— C →

A to B + B to C = 4 hr 30 min

Since B is in midway so A to B = half of 4 hr 30 min=2h 15 min

A to B and B to A = 6 hr (given)

So B to A = 6hr- 2h 15 min= 3hr 45 min

So C to A will be double of B to A = 2*(3hr 45 min)=7 hr 30 min

Question

A man can row 18km/hr in still water. It takes him twice as long to row up as to row down the river. Find the rate of stream.

A. 3 km/hr

B. 6 km/hr

C. 8 km/hr

D. 12 km/hr

Answer: Option **B**

Explanation:

18 + **6** =24 which is double of 18 − **6** =12

Question

A man can row a certain distance down stream in 6hrs and return the same distance in 10hrs. If the stream flows at the rate of the 3 km/hr. Find the speed of the man in still water.

A. 6 km/hr

B. 8 km/hr

C. 12 km/hr

D. 16 km/hr

Answer: Option **C**

(12+3)*6 = (12-3) *10

- A man's speed with the current is 18 KMPH and the speed of the current is 3.5KMPH Find the man's speed against the current?
- A   11KMPH
- B   21 KMPH
- C   23 KMPH
- D   43 KMPH

- Answer A
- X+Y=18   (if X=Speed of Man in still water
-                   Y=Speed of river)
- Y=3.5
- X-Y= 18-3.5-3.5=11

More Practice Questions from Time Speed Distance Problems on Trains Boats and Streams

- Walking at 80% of his normal speed, a man is 10 mins late to his office. Find the normal time taken by him to reach his office
- A=40 min
- B=50 min
- C=43 min
- D=23 min

- In a flight of 600 KM, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 KM/hr and the time of the flight increased by 30 minutes. The duration of the flight is
- A 2Hr
- B 1 Hr
- C 4 Hr
- D 5 Hr

- Avg Speed =Total Distance / Total time taken
- If we take total duration 1 hr from options
- Avg speed= 600/1=600KMph
- As per statement due to bad weather it take 30 min extra
- So new avg speed = 600/ 1 and half hour
- =600/3/2 =400 kmph which is 200 kmph less than original avg speed as per statement
- OR
- Let total duration of flight = X hr
- $600/x   -   600 / (x + \frac{1}{2})=200$

- A thief steals a car at 2.30 pm and drives it at 60 KMPH . The theft is discovered at 3pm and the owner sets off in the same direction in another car at 75 KMPH . When will he overtake the thief?
- A 5 PM
- B 7 PM
- C 6 PM
- D 9 PM

- A boat takes 19 hours for travelling downstream from point A to point B and coming back to point C midway between A and B. If the speed of the stream is 4 KMPH and the speed of boat in still water is 14 KMPH What is the distance between A and B?

- A 180 Km   B 200 KM   C 300 KM

- D 800KM

- Answer A
- 180/(14+4) + (half of 180) / (14-4) =19
- Downstream   Upstream

- A ship went on a voyage. After 180 miles a plane started with 10 times speed that of the ship. Find the distance when they meet from starting point.
- A 300 miles
- B 200 miles
- C 150 Miles
- D 100 Miles

- Suppose they meet 200 miles from starting point
- Miles ship has cover when the plane started =200-180=20 miles
- Suppose ship cover these 20 miles in an hour
- Now the speed of plane according to statement must be 10*20=200 miles per hour
- Now the data is satisfied plane has covered 200 miles in an hour where as ship has covered 20 miles in same hour and distance of ship from starting point is also 200 miles