

# BOAT & STREAM QUESTIONS WITH SOLUTION

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1. Ram goes downstream with a boat to some destination and returns upstream to his original places in 6 hours. If the speed of the boat in still water and the stream are 12km/hr and 5 km/hr respectively, then find the distance of the destination form the starting position.
- A) 25km  
B) 26.67km  
C) 33km  
D) 29.75km  
E) 20km

**View Answer****Option D****Solution:**

$$T = 2xD/(x^2 - y^2)$$

$$\Rightarrow D = 119 \times 6/2 \times 12 = 29.75 \text{ km}$$

2. A boat travels downstream for 14km and upstream for 9km. If the boat took total of 5 hours for its journey. What is the speed of the river flow if the speed of the boat in still water is 5km/hr?
- A) 8km/hr.  
B) 2km/hr.  
C) 6km/hr.  
D) 5km/hr.  
E) 3km/hr.

**View Answer****Option B****Solution:**

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

Upward speed =  $(5 - x)$  km/hr.

Downward speed =  $(5 + x)$  km/hr.

$$14/(5+x) + 9/(5-x) = 5$$

$$\Rightarrow x = 2 \text{ km/hr.}$$

3. When a person is moving in the direction perpendicular to the direction of the current is 20km/hr, speed of the current is 5km/hr. Then find the speed of the person against the current?
- A) 10km/hr.  
B) 15km/hr.

- C) 30km/hr.  
D) 25km/hr.  
E) 11km/hr.

**View Answer****Option A****Solution:**

Speed of the person =  $20 - 5 = 15 \text{ km/hr}$

Speed of the person against the current =  $15 - 5 = 10 \text{ km/hr.}$

4. A boat goes 6 km an hour in still water, it takes thrice as much time in going the same distance against the current comparison to the direction of the current. Find the speed of the current.
- A) 5km/hr  
B) 3km/hr  
C) 8km/hr  
D) 9km/hr  
E) 12km/hr

**View Answer****Option B****Solution:**

Let the speed of the stream be x km/hr

speed of the still water = 6 km/hr

Downstream speed =  $(6+x)$  km/hr

Upstream speed =  $(6-x)$  km/hr

Now,

$$3[D/(6+x)] = D/(6-x)$$

$$\Rightarrow x = 3 \text{ km/hr}$$

5. There are two places A and B which are separated by a distance of 100k. Two boats starts form both the places at the same time towards each other. If one boat is going downstream then the other one is going upstream, if the speed of A and B is 12km/hr. and 13km/hr. respectively. Find at how much time will they meet each other.
- A) 10hrs.  
B) 4 hrs.  
C) 8hrs.  
D) 6hrs.

E) 7hrs.

**View Answer****Option B****Solution:**Downstream =  $(12+x)$ km/hrUpstream =  $(13-x)$ km/hr

Time = Distance / Relative speed

Relative speed =  $12 + x + 13 - x = 25$  km/hrTime =  $100/25 = 4$  hours

6. A girl was travelling in a boat, suddenly wind starts blowing and blows her hat and started floating back downstream. The boat continued to travel upstream for 12 more minutes before she realized that her hat had fallen off. She turned back downstream and she caught her hat as soon as she reached the starting point. If her hat flew off exactly 2km from where she started. What is the speed of the water?
- A) 12km/hr  
B) 8km/hr  
C) 5km/hr  
D) 9km/hr  
E) 10km/hr

**View Answer****Option C****Solution:**

Distance = 2 km

Time =  $2 * 12$  (doubles) = 24 mins. =  $2/5$  hr.Speed =  $2 / (2/5) = 5$  km/hr.

7. A ship sails 30km of a river towards upstream in 6 hours. How long will it take to cover the same distance downstream. If the speed of the current is  $(1/4)$ rd of the speed of the boat in still water.
- A) 2 hrs  
B) 4.5hrs  
C) 5 hrs  
D) 3.6hrs

E) 5.5 hrs

**View Answer****Option D****Solution:**Let  $x$  be speed of the boat and  $y$  be the speed of the current.Downstream speed =  $x + y$ Upstream speed =  $x - y$  $x - y = 30/6 = 5$  km/hr.

Now,

 $x = 4y$  $x - y = 4y - y = 3y$  $\Rightarrow x = (20/3)$ km/hr and  $y = (5/3)$ km/hrTherefore,  $x + y = (25/3)$  km/hr.Time during downstream =  $90/25 = 3.6$  hrs.

8. A man can row 6km/hr in still water. If the speed of the current is 2km/hr, it takes 4 hours more in upstream than in the downstream for the same distance. Find the distance.
- A) 44km  
B) 40km  
C) 32km  
D) 50km  
E) 45km

**View Answer****Option C****Solution:**Let the distance be  $D$ .

Downstream speed = 8 km/hr

Upstream speed = 4km/hr

From the question,

Upstream = Downstream + 4

 $D/4 = D/8 + 4$  $D/4 = (D + 32)/8$  $D = 32$  km

9. The speed of the motor boat is that of the current of water is 36:5 . The boat goes along with the current in 5 hours 10 minutes . How much time it will take to come back .
- A)  $45/2$

- B) 41/6  
C) 55/3  
D) 38/7  
E) 52/8

**View Answer**

**Option B**

**Solution:**

$$S_1/S_2 = T_1/T_2$$

$$(36 + 5)/(36 - 5) = x/(31/6)$$

$$\Rightarrow x = 41/6 = 6 \text{ hours } 50 \text{ minutes}$$

10. 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 3km/hr. , then what is the speed of the boy in still water ?
- A) 9 km/hr  
B) 13km/hr  
C) 15km/hr  
D) 22km/hr  
E) 10km/hr

**View Answer**

**Option A**

**Solution:**

Let the speed of boy in still water be x km/hr

and the speed of current is given = 3 km/hr

Downstream speed = (x+3) km/hr

Upstream speed = (x-3) km/hr

Let time be t hours

$$(x+3)*t = 2 \{(x-3)*t\}$$

$$\Rightarrow x = 9 \text{ km/hr}$$

1. A man can row 40 kmph in still water and the river is running at 10 kmph. If the man takes 2 hr to row to a place and back, how far is the place?
- A) 38km  
B) 37.5km  
C) 40.75km  
D) 41km  
E) None

**View Answer**

**Option B**

**Solution:**

Given u=40 , v=10

$$D = t[(u^2 - v^2)/2u]$$

$$= 2 * [(40^2 - 10^2)/2 * 40]$$

$$= 2 * (1600 - 100)/80$$

$$2 * 1500/80 \Rightarrow 37.5 \text{ km}$$

2. A man rows to a place 60 km distant and come back in 35 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. Find the speed in still water and in stream:
- A) 1.5, 2  
B) 0.5, 2.5  
C) 3.5, 0.5  
D) 2, 2.5  
E) None

**View Answer**

**Option C**

**Solution:**

If he moves 4 km downstream in x hours.

Downstream speed = 4/x

Upstream speed = 3/x

$$\text{Then } 60/(4/x) + 60/(3/x) = 35$$

$$60[(3x+4x)/12] = 35$$

$$60 * 7x/12 = 35$$

$$5 * 7x = 35 \Rightarrow x = 1 \text{ km.}$$

Then Downstream speed = 4km/hr ,

Upstream speed = 3km/hr

$$U = (4+3)/2 = 7/2 = 3.5 \text{ km/hr}$$

$$V = (4-3)/2 = 1/2 = 0.5 \text{ km/hr}$$

3. Speed of a boat in standing water is 12 kmph and the speed of the stream is 3 kmph. A man rows to a place at a distance of 6300 km and comes back to the starting point. The total time taken by him is:
- A) 1120hrs  
B) 1000hrs  
C) 980hrs  
D) 850hrs  
E) None

**View Answer****Option A****Solution:**

Downstream speed =  $(12 + 3) = 15$  km/hr

Upstream speed =  $(12 - 3) = 9$  km/hr

Total time taken =  $6300/15 + 6300/9$   
 $= 420 + 700 = 1120$  hrs.

4. A boat takes 26 hours for travelling downstream from point A to point B and coming back to point C midway between A and B. If the velocity of the stream is 4 km/hr and the speed of the boat in still water is 10 km/hr, what is the distance between A and B?
- A) 210km  
 B) 185km  
 C) 140km  
 D) 168km  
 E) None

**View Answer****Option D****Solution:**

Downstream speed =  $10 + 4 = 14$

Upstream speed =  $10 - 4 = 6$

Now total time is 26 hours

If distance between A and B is d, then distance BC =  $d/2$

Now distance/speed = time, so

$$d/14 + (d/2)/6 = 26$$

$$13d/84 = 26$$

Solve,  $d = 168$  km

5. At his usual rowing rate, Rahul can travel 12 miles downstream in a certain river in 6 hours less than it takes him to travel the same distance upstream. But if he could double his usual rowing rate for his 24-mile round trip, the downstream 12 miles would then take only one hour less than the upstream 12 miles. What is the speed of the current in miles per hour?
- A)  $2 \frac{2}{3}$  mph  
 B) 2 mph  
 C)  $1 \frac{1}{4}$  mph  
 D) 3 mph

E) None

**View Answer****Option A****Solution:**

Let the speed of Rahul in still water be x mph

and the speed of the current be y mph

Then, Speed upstream =  $(x - y)$  mph

Speed downstream =  $(x + y)$  mph

Distance = 12 miles

Time taken to travel upstream – Time taken to travel downstream = 6 hours

$$12/(x-y) - 12/(x+y) = 6$$

$$x^2 = y^2 + 4y - 1$$

Now he doubles his speed. i.e., his new speed =  $2x$

Now, Speed upstream =  $(2x - y)$  mph

Speed downstream =  $(2x + y)$  mph

In this case, Time taken to travel upstream – Time taken to travel downstream = 1 hour

$$12/(2x-y) - 12/(2x+y) = 1$$

$$4x^2 = y^2 + 24y - 2$$

From 1 and 2 we get

$$4y + y^2 = (24y + y^2)/4$$

$$Y = 8/3 \Rightarrow 2 \frac{2}{3} \text{ mph}$$

6. There is a road beside a river. Two friends started from a place A, moved to a temple situated at another place B and then returned to A again. One of them moves on a cycle at a speed of 6 km/hr, While the other sails on a boat at a speed of 8 km/hr. If the river flows at the speed of 6 km/hr, which of the two friends will return to place A first?
- A) Cyclist  
 B) Sailor  
 C) Both come at same time  
 D) Anyother  
 E) None

**View Answer****Option A****Solution:**

Average speed of the cyclist = 6 km/hr

Downstream speed =  $8+6=14$  km/hr  
 Upstream speed =  $8-6=2$  km/hr  
 Therefore, average speed of the sailor  
 $= 2 \times 14 \times 2 / (14+2)$   
 $= 3.5$  km/hr  
 Average speed of the cyclist is more than that of the sailor. Therefore, the cyclist will return first.

7. 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 current respectively?
- A) 5:4  
 B) 8:3  
 C) 7:6  
 D) 4:5  
 E) None

**View Answer****Option B****Solution:**

Let the man's rate upstream be  $x$  kmph and that downstream be  $y$  kmph.

Then, distance covered upstream in 8 hrs 48 min = Distance covered downstream in 4 hrs.

$$x \times 8 \frac{4}{5} = 4y$$

$$44/5x = 4y$$

$$y = 11/5x$$

Required ratio  $(y+x)/2 = (y-x)/2$

$$16x/10 : 6x/10$$

$$8:3$$

8. A man takes thrice as long to row a distance against the stream as to row the same distance in favour of the stream. The ratio of the speed of the boat (in still water) and the stream is:
- A) 2:1  
 B) 3:2  
 C) 1:2  
 D) 2:3  
 E) None

**View Answer****Option A****Solution:**

Lets upstream be  $x$  km/hr

Downstream be  $3x$  km/hr

$$U: V = (3x+x)/2 : (3x-x)/2$$

$$4x/2 : 2x/2$$

$$2:1$$

9. A boat running downstream covers a distance of 40km in 4hrs and covering the same distance upstream in 8hrs. What is the speed of a boat in still water.
- A) 6km/hr  
 B) 7km/hr  
 C) 7.5km/hr  
 D) 8.5km/hr  
 E) None

**View Answer****Option C****Solution:**

Downstream speed =  $40/4 = 10$  km/hr

Upstream speed =  $40/8 = 5$  km/hr

So speed of boat in still

$$\text{water} = (10+5)/2 = 15/2$$

$$= 7.5 \text{ km/hr}$$

10. A boat can travel 3.5km upstream in 14min. If the ratio of the speed of the boat in still water to the speed of the stream is 7:2. How much time will the boat take to cover 36km downstream ?
- A) 65min  
 B) 80min  
 C) 75min  
 D) 70min  
 E) None

**View Answer****Option B****Solution:**

$$\text{Speed} = 7x:2x$$

$$\text{Downstream} = 9x; \text{upstream} = 5x$$

$$\text{Upstream speed} = 3.5 \times 60 / 14 = 15 \text{ kmph}$$



$$5x = 15$$

$$x = 3$$

$$\text{Downstream} = 9 \times 3 = 27$$

$$\text{Time taken for 36km} = 36 \times 60 / 27 = 80 \text{min}$$

1. Vimal can row a certain distance downstream in 14 hours and return the same distance in 21 hours. If the speed of the stream is 6 kmph, Find the speed of Vimal in the still water?
- A) 21 kmph  
B) 15 kmph  
C) 30 kmph  
D) 35 kmph  
E) None of these

#### View Answer

##### Option C

##### Solution:

Speed of Vimal in still water =  $x$

Downstream Speed =  $(x + 6)$

Upstream Speed =  $(x - 6)$

Downstream Distance = Upstream Distance

$$14(x + 6) = 21(x - 6)$$

$$2x + 12 = 3x - 18$$

$$x = 30 \text{ kmph.}$$

2. Rahul can row a certain distance downstream in 12 hour and return the same distance in 18 hour. If the speed of Rahul in still water is 12 kmph, find the speed of the stream?
- A) 2.1 kmph  
B) 1.5 kmph  
C) 4.4 kmph  
D) 2.4 kmph  
E) None of these

#### View Answer

##### Option D

##### Solution:

Let the speed of the stream be  $x$  kmph

Down stream =  $(12+x)$

Up stream =  $(12-x)$

suppose the distance traveled be  $y$

$$y/(12+x) = 12 \text{ ---(1)}$$

$$y/(12-x) = 18 \text{ ---(2)}$$

From eqn (1) and (2)

$$x = 2.4 \text{ kmph}$$

3. Anil can row 18 kmph in still water and he finds that it takes him twice as long to row up as to row down the river. Find the rate of stream?
- A) 5 kmph  
B) 6 kmph  
C) 4 kmph  
D) 3 kmph  
E) None of these

#### View Answer

##### Option B

##### Solution:

Stream Speed =  $a$  kmph

Time Taken =  $x$  km

Downstream speed =  $(18 + a)$  kmph

Upstream speed =  $(18 - a)$  kmph

Time taken to travel downstream =  $2 \times$

Time taken to travel upstream

$$(18 + a) / x = 2(18 - a) / x$$

$$18 + a = 36 - 2a$$

$$3a = 18$$

$$a = 6 \text{ kmph}$$

##### OR USE FORMULA

Speed of boat =  $[t_u + t_d] / [t_u - t_d] \times$  Speed of stream

$$\text{So } 18 = [2x + x] / [2x - x] \times \text{Speed of stream}$$

4. Mr. Suresh can row to a place 48 km away and come back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is?
- A) 1 kmph  
B) 3 kmph  
C) 4 kmph  
D) 6 kmph  
E) None of these

#### View Answer

**Option A****Solution:**

Downstream speed =  $4/x$  kmph

upstream speed =  $3/x$  kmph

$$48/(4/x) + 48/(3/x) = 14$$

Solving we get  $x = 1/2$  kmph

So, Speed of downstream = 8 kmph, Speed

of upstream = 6 kmph

$$\text{Stream Speed} = 1/2(8 - 6) \text{ kmph} = 1 \text{ kmph}$$

5. Mr. Ramesh's speed with the current is 20 kmph and the speed of the current is 5 kmph. Ramesh's speed against the current is?

- A) 15 kmph  
B) 19 kmph  
C) 17 kmph  
D) 10 kmph  
E) None of these

**View Answer****Option D****Solution:**

Ramesh's speed with the current = 20 kmph

$$\Rightarrow \text{Ramesh's speed} + \text{speed of the current} = 20 \text{ kmph}$$

Speed of the current = 5 kmph

Speed of Ramesh =  $20 - 5 = 15$  kmph

Ramesh's speed against the current = speed of Ramesh - speed of the current =  $15 - 5 = 10$  kmph

6. Ravi can row 12 kmph in still water when the river is running at 6 kmph it takes him 1 hour to row to a place and to come back. How far is the place?
- A) 5.5 km  
B) 4.5 km  
C) 8.2 km  
D) 4.2 km  
E) None of these

**View Answer****Option B****Solution:**

Downstream Speed = 18 kmph

Upstream Speed = 6 kmph

Distance =  $x$

$$x/18 + x/6 = 1$$

$$18x + 6x = 108$$

$$24x = 108$$

$$x = 4.5 \text{ km}$$

OR USE FORMULA:

$$\text{Distance} = \text{time} [B^2 - R^2]/2 \cdot B$$

$$\text{So distance} = 1 \cdot [12^2 - 6^2]/2 \cdot 12$$

$$\text{Distance} = 108/24 = 4.5 \text{ km}$$

7. The different between downstream speed and upstream speed is 2 kmph and the total time taken during upstream and downstream is 2 hours. What is the upstream speed, if the downstream and upstream distance are 2 km each?
- A) 5.2 kmph  
B) 3.7 kmph  
C) 2.8 kmph  
D) 1.4 kmph  
E) None of these

**View Answer****Option D****Solution:**

$$2/x + 2/(x+2) = 2.$$

$$x^2 - 2 = 0$$

$$x = 1.414 \text{ kmph}$$

8. Rani can row 8 kmph in still water. If the river is running at 4 kmph it takes 90 minutes to row to a place and back. How far is the place?
- A) 4.5 km  
B) 8.2 km  
C) 4.2 km  
D) 3.5 km  
E) None of these

**View Answer****Option A****Solution:**

Speed in still water = 8 kmph

Speed of the stream = 4 kmph



Upstream Speed =  $(8-4) = 4$  kmph  
 Downstream Speed =  $(8+4) = 12$  kmph  
 Total time = 90 minutes =  $90/60 = 3/2$  hrs  
 Let x is the distance  
 $x/12 + x/4 = 3/2$   
 $x = 4.5$  km

9. Sumi can swim 6 kmph in still water. If the velocity of the stream be 2 kmph, the time taken by her to swim to a place 24 km upstream and back, is?
- A) 6 hours  
 B) 5 hours  
 C) 4 hours  
 D) 8 hours  
 E) 9 hours

**View Answer**

**Option E**

**Solution:**

Upstream speed = speed of man – speed of stream =  $6 - 2 = 4$

Downstream speed = speed of man + speed of stream =  $6 + 2 = 8$

Time taken to go upstream = distance/speed =  $24/4 = 6$  hour

Time taken to go downstream = distance/speed =  $24/8 = 3$  hour

Total time =  $6+3 = 9$  hour

10. Raghu can row 96 km downstream in 8 hours. If the speed of the current is 3 kmph, then find in what time will be able to cover 12 km upstream?
- A) 6 hours  
 B) 5 hours  
 C) 4 hours  
 D) 8 hours  
 E) 2 hours

**View Answer**

**Option E**

**Solution:**

Downstream speed =  $96/8 = 12$  kmph

Speed of current = 3 kmph

Speed of kamal in still water =  $12-3 = 9$

kmph

Upstream speed =  $9-3 = 6$  kmph

Time taken to cover 12 km upstream  $12/6 = 2$  hours

☐

A boat can cover 21 km in the direction of current and 15 km against the current in 3 hours each. Find the speed of current.

- A) 4.5 km/hr  
 B) 2.5 km/hr  
 C) 3 km/hr  
 D) 1 km/hr  
 E) 6 km/hr

**View Answer**

**Option D**

**Solution:**

Downstream speed =  $21/3 = 7$  km/hr

Upstream speed =  $15/3 = 5$  km/hr

So speed of current =  $1/2 * (7-5)$

☐

A boat in a river with speed of stream as 6 km/hr can travel 7 km upstream and back in 4 hours. What is the speed of the boat in still water?

- A) 10 km/hr  
 B) 8 km/hr  
 C) 11 km/hr  
 D) 12 km/hr  
 E) 15 km/hr

**View Answer**

**Option B**

**Solution:**

Let speed of boat is x km/hr

So

$$7/(x+6) + 7/(x-6) = 4$$

Solve,  $x = 8$  km/hr [ignore the negative root because speed cannot be negative]

☐

A boat can cover 40 km upstream and 60 km downstream together in 13 hours. Also it can cover 50 km upstream and 72 km downstream together in 16 hours. What is the speed of the boat in still water?

- A) 5.5 km/hr  
 B) 6.5 km/hr  
 C) 8.5 km/hr

- D) 3.5 km/hr  
E) None of these

**View Answer**

**Option C**

**Solution:**

Upstream speed in both cases is 40 and 50. Ratio is  $40 : 50 = 4 : 5$ . So let times in both cases be  $4x$  and  $5x$

Downstream speed in both cases is 60 and 72 resp. Ratio is  $60 : 72 = 5 : 6$ . So let times in both cases be  $5y$  and  $6y$

$$\text{So } 4x + 5y = 13$$

$$\text{and } 5x + 6y = 16$$

Solve both,  $x = 2, y = 1$

So upstream speed is  $= 40/4x = 5 \text{ km/hr}$

And downstream  $= 60/5y = 12 \text{ km/hr}$

So speed of boat is  $1/2 * (5+12)$

□ A boat can row to a place 56 km away and come back in 22 hours. The time to row 21 km with the stream is same as the time to row 12 km against the stream. Find the speed of boat in still water.

- A) 1.5 kmph  
B) 3.5 kmph  
C) 5.5 kmph  
D) 7.5 kmph  
E) None of these

**View Answer**

**Option C**

**Solution:**

Downstream speed  $= 21/x \text{ km/hr}$

Upstream speed  $= 12/x \text{ km/hr}$

$$56/(21/x) + 56/(12/x) = 22$$

Solve,  $x = 3 \text{ km/hr}$

So, downstream speed  $= 7 \text{ km/hr}$ , upstream speed  $= 4 \text{ km/hr}$

Speed of boat  $= 1/2 * (7 + 4) \text{ km/hr}$

□ A boat travels downstream from point A to B and comes back to point C half distance between A and B in 18 hours. If speed of boat in still water is  $7 \text{ km/hr}$  and distance  $AB = 80 \text{ km}$ , then find the downstream speed.

- A) 15 km/hr  
B) 18 km/hr  
C) 12 km/hr  
D) 10 km/hr

- E) 6 km/r

**View Answer**

**Option D**

**Solution:**

A to B is 80, so B to is  $80/2 = 40 \text{ km}$

Let speed of current  $= x \text{ km/hr}$

$$\text{So } 80/(7+x) + 40/(7-x) = 18$$

Solve,  $x = 3 \text{ km/hr}$

So downstream speed  $= 7 + 3 = 10 \text{ km/hr}$

□ A boat can cover 20 km upstream and 32 km downstream together in 3 hours. Also it can cover 40 km upstream and 48 km downstream together in 5 and half hours. What is the speed of the current?

- A) 13 km/hr  
B) 8 km/hr  
C) 7 km/hr  
D) 11 km/hr  
E) 16 km/hr

**View Answer**

**Option D**

**Solution:**

Upstream speed in both cases is 20 and 20 resp.

Ratio is  $20 : 40 = 1 : 2$ . So let times in both cases be  $x$  and  $2x$

Downstream speed in both cases is 32 and 48 resp. Ratio is  $32 : 48 = 2 : 3$ . So let times in both cases be  $2y$  and  $3y$

$$\text{So } x + 2y = 3$$

$$\text{and } 2x + 3y = 5 \frac{1}{2}$$

Solve both,  $x = 2, y = 0.5$

So upstream speed is  $= 20/x = 10 \text{ km/hr}$

And downstream  $= 32/2y = 32 \text{ km/hr}$

So speed of boat is  $1/2 * (32-10)$

□ Speed of boat in still water is  $14 \text{ km/hr}$  while the speed of current is  $10 \text{ km/hr}$ . If it takes a total of 7 hours to row to a place and come back, then how far is the place?

- A) 30 km  
B) 18 km  
C) 24 km  
D) 32 km  
E) None of these

**View Answer**

**Option C**

**Solution:**

USE FORMULA:

$$\text{Distance} = \text{total time} * [B^2 - R^2]/2*B$$

$$\text{So distance} = 7 * [14^2 - 10^2]/2*14$$

$$\text{Distance} = 24 \text{ km}$$

□ A man can row a certain distance downstream in 4 hours and return the same distance in 8 hours. If the speed of current is 16 km/hr, find the speed of man in still water.

- A) 47 km/hr
- B) 48 km/hr
- C) 42 km/hr
- D) 50 km/hr
- E) None of these

**View Answer**

**Option B**

**Solution:**

Use formula:

$$B = [t_u + t_d] / [t_u - t_d] * R$$

$$B = [8+4] / [8-4] * 16$$

$$B = 48 \text{ km/hr}$$

□ There are 3 point A, B and C in a straight line such that point B is equidistant from points A and C. A boat can travel from point A to C downstream in 12 hours and from B to A upstream in 8 hours. Find the ratio of boat in still water to speed of stream.

- A) 9 : 2
- B) 8 : 3
- C) 7 : 1
- D) 4 : 1
- E) 7 : 3

**View Answer**

**Option C**

**Solution:**

Let speed in still water = x km/hr, of current = y km/hr

Downstream speed = (x+y) km/hr

Upstream speed = (x - y) km/hr

Let AC = 2p km. So AB = BC = p km.

So

$$2p/(x+y) = 12$$

And

$$p/(x-y) = 8$$

Divide both equations, and solve

$$x/y = 7/1$$

□ A boat can row 18 km downstream and back in 8 hours. If the speed of boat is increased to twice its previous speed, it can row same distance downstream and back in 3.2 hours. Find the speed of boat in still water.

- A) 9 km/hr
- B) 5 km/hr
- C) 4 km/hr
- D) 8 km/hr
- E) 6 km/hr

**View Answer**

**Option E**

**Solution:**

Let speed of boat = x km/hr and that of stream = y km/hr

So

$$18/(x+y) + 18/(x-y) = 8$$

when speed of boat becomes 2x km/hr:

$$18/(2x+y) + 18/(2x-y) = 3.2$$

Solve, x = 6 km/hr

1. A boat can cover 25 km upstream and 42 km downstream together in 7 hours. Also it can cover 30 km upstream and 63 km downstream together in 9 hours. What is the speed of the boat in still water?

- A) 13 km/hr
- B) 8 km/hr
- C) 7 km/hr
- D) 11 km/hr
- E) 16 km/hr

**View Answer**

**Option A**

**Solution:**

Upstream speed in both cases is 25 and 30 resp. Ratio is 25 : 30 = 5 : 6. So let times in both cases be 5x and 6x

Downstream speed in both cases is 42 and 63 resp. Ratio is 42 : 63 = 2 : 3. So let times in both cases be 2y and 3y

$$\text{So } 5x + 2y = 7$$

$$\text{and } 6x + 3y = 9$$

Solve both, x = 1, y = 1

So upstream speed is = 25/5x = 5 km/hr

And downstream =  $42/2y = 21$  km/hr  
So speed of boat is  $1/2 * (5+21)$

2. A man rows to a certain place and comes back, but by mistake he covers  $1/3$ rd more distance while coming back. The total time for this journey is 10 hours. The ratio of speed of boat to that of stream is 2 : 1. If the difference between upstream and downstream speed is 12km/hr, then how much time will the man take to reach to starting point from his present position?
- A) 35 minutes  
B) 45 minutes  
C) 60 minutes  
D) 40 minutes  
E) 55 minutes

#### View Answer

##### Option D

##### Solution:

Speed of boat and stream –  $2x$  and  $x$  respectively. So downstream speed =  $2x+x = 3x$ , and upstream speed =  $2x-x = x$   
Let total distance between points is  $d$  km  
So he covered  $d$  km downstream, and while coming back i.e. upstream he covers  $d + 1/3 * d = 4d/3$  km  
Total time for this journey is 10 hrs. So  
 $d/3x + (4d/3)/x = 10$   
Solve,  $d = 6x$   
Now also given, that  $(2x+x) - (2x-x) = 12$   
Solve,  $x = 6$   
So  $d = 36$  km  
So to come to original point, he will have to cover  $1/3 * 36 = 12$  km  
And with speed  $3x = 18$  km/hr(downstream)  
So time is  $12/18 * 60 = 40$  minutes

3. A man can row at a speed of 15 km/hr in still water to a certain upstream point and back to the starting point in a river which flows at 9 km/hr. Find his average speed for total journey.
- A) 10.4 km/hr  
B) 8.4 km/hr  
C) 9.1 km/hr  
D) 5.2 km/hr

E) 9.6 km/hr

#### View Answer

##### Option E

##### Solution:

When the distance is same, then average speed throughout journey would be:  
Speed downstream \* Speed upstream/speed in still water.  
So here average speed =  $(15+9)*(15-9)/15 = 9.6$  km/hr

4. A boat takes 5 hours for travelling downstream from point A to point B and coming back to point C at  $3/4$ th of total distance between A and B from point B. If the velocity of the stream is 3 kmph and the speed of the boat in still water is 9 kmph, what is the distance between A and B?
- A) 24 km  
B) 32 km  
C) 27 km  
D) 21 km  
E) 34 km

#### View Answer

##### Option A

##### Solution:

Let total distance from A to B =  $d$  km, So  
 $CB = 3d/4$  km  
So  
 $d/(9+3) + (3d/4)/(9-3) = 5$   
Solve,  $d = 24$  km

5. At its usual rowing rate, a boat can travel 18 km downstream in 4 hours less than it takes to travel the same distance upstream. But if he the usual rowing rate for his 28-km round trip was  $2/3$ rd, the downstream 14 km would then take 12 hours less than the upstream 14 km. What is the speed of the current?
- A) 1.5 km/h  
B) 3 km/h  
C) 2 km/h  
D) 3.5 km/h  
E) 4 km/hr

**View Answer****Option B****Solution:**

Let speed of boat =  $x$  km/hr, and of current =  $y$  km/hr

So

$$18/(x-y) = 18/(x+y) + 4$$

$$\text{Gives } x^2 = 9y + y^2 \dots\dots\dots(1)$$

Now when speed of boat is  $2x/3$

$$14/(2x/3 - y) = 14/(2x/3 + y) + 12$$

$$42/(2x-3y) = 42/(2x+3y) + 12$$

$$\text{Gives } 4x^2 = 21y + 9y^2 \dots\dots\dots(2)$$

From (1), put value of  $x^2$  in (2) and solve

Solving,  $x = 6$ ,  $y = 3$

6. A boat can row to a place 120 km away and come back in 25 hours. The time to row 24 km with the stream is same as the time to row 16 km against the stream. Find the speed of current.
- A) 1.5 km/h  
B) 3 km/h  
C) 2 km/h  
D) 3.5 km/h  
E) 4 km/hr

**View Answer****Option C****Solution:**

Downstream speed =  $24/x$  km/hr

Upstream speed =  $16/x$  km/hr

$$120/(24/x) + 120/(16/x) = 25$$

Solve,  $x = 2$  km/hr

So, downstream speed = 12 km/hr,

upstream speed = 8 km/hr

Speed of current =  $1/2 * (12 - 8)$  km/hr

7. A boatman can row 4 Km against the stream in 20 minutes and return in 24 minutes. Find the speed of boatman in still water.
- A) 10 km/hr  
B) 8 km/hr  
C) 15 km/hr  
D) 12 km/hr  
E) 11 km/hr

**View Answer****Option E****Solution:**

Upstream speed =  $4/20 * 60 = 12$  km/hr

Downstream speed =  $4/24 * 60 = 10$  km/hr

Speed of boatman =  $1/2 (12+10) = 11$  km/hr

8. A man can row a certain distance downstream in 3 hours and return the same distance in 9 hours. If the speed of current is 18 km/hr, find the speed of man in still water.
- A) 47 km/hr  
B) 48 km/hr  
C) 42 km/hr  
D) 50 km/hr  
E) 36 km/hr

**View Answer****Option E****Solution:**

Use formula:

$$B = [t_u + t_d] / [t_u - t_d] * R$$

$$B = [9+3] / [9-3] * 18$$

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

9. Four times the downstream speed is 8 more than 15 times the upstream speed. If difference between downstream and upstream speed is 24 km/hr, then what is the ratio of speed in still water to the speed of the current?
- A) 9 : 2  
B) 5 : 3  
C) 7 : 1  
D) 4 : 1  
E) 7 : 3

**View Answer****Option B****Solution:**

Let speed in still water =  $x$  km/hr, of current =  $y$  km/hr

So

$$4(x+y) = 15(x-y) + 8$$

$$\text{Solve, } 11x - 19y + 8 = 0 \dots\dots\dots(1)$$

$$\text{Also } (x+y) - (x-y) = 24$$

$$\text{So } y = 12$$



Put in (1).  $x = 20$   
 So  $x/y = 20/12 = 5/3$

10. A boat can cover 14 km upstream and 21 km downstream together in 3 hours. Also it can cover 21 km upstream and 42 km downstream together in 5 hours. What is the speed of current?
- A) 13 km/hr  
 B) 8 km/hr  
 C) 7 km/hr  
 D) 11 km/hr  
 E) 16 km/hr

#### View Answer

#### Option C

#### Solution:

Upstream speed in both cases is 14 and 21 resp. Ratio is  $14 : 21 = 2 : 3$ . So let times in both cases be  $2x$  and  $3x$

Downstream speed in both cases is 21 and 42 resp. Ratio is  $21 : 42 = 1 : 2$ . So let times in both cases be  $y$  and  $2y$

So  $2x + y = 3$

and  $3x + 2y = 5$

Solve both,  $x = 1$ ,  $y = 1$

So upstream speed is  $= 14/2x = 7$  km/hr

And downstream  $= 21/y = 21$  km/hr

So speed of current is  $1/2 * (21-7)$

□

The speed of a Boat in standing water is 10km/hr. It traveled Down Stream from point A to B in certain time. After reaching B the Boat is powered by Engine then Boat started to return from Point B to A. The time taken for Forward journey and Backward journey are same. Then what is the speed of the stream?

1. 2 Km/hr  
 2. 3 Km/hr  
 3. 4 Km/hr  
 4. 5 Km/hr  
 5. Cannot be determined

#### Answer & Explanation

Answer – 5. Cannot be determined

#### Explanation :

$$S+R = D/t ; S-R+x = D/t$$

$$S+R = S-R+x$$

$$R = x/2$$

- A Boat going upstream takes 8 hours 24 minutes to cover a certain distance, while it takes 5 hours to cover  $5/7$  of the same distance running downstream. Then what is the ratio of the speed of boat to speed of water current?

1. 6:5  
 2. 11:5  
 3. 11:6  
 4. 11:1  
 5. 11:10

#### Answer & Explanation

Answer – 4. 11:1

#### Explanation :

$$(S-R)*42/5 = (S+R)*7$$

$$S:R = 11:1$$

- A Boat takes total 16 hours for traveling downstream from point A to point B and coming back point C which is somewhere between A and B. If the speed of the Boat in Still water is 9 Km/hr and rate of stream is 6 Km/hr, then what is the distance between A and C?

1. 30 Km  
 2. 60 Km  
 3. 90 Km  
 4. 100 Km  
 5. Cannot be determined

#### Answer & Explanation

Answer – 5. Cannot be determined

#### Explanation :

$$16 = D/9+6 + x/9-6$$

- A Boat takes 128 min less to travel to 48 Km downstream than to travel the same distance upstream. If the speed of the stream is 3 Km/hr. Then Speed of Boat in still water is?

1. 6 Km/hr  
 2. 9 Km/hr  
 3. 12 Km/hr  
 4. 15 Km/hr  
 5. None

#### Answer & Explanation

Answer – 3. 12 Km/hr

#### Explanation :



$$32/15 = 48(1/s - 1/s+3)$$

$$s = 12$$

□ The speed of Boat in Still water is 40 Km/hr and speed of the stream is 20 Km/hr. The distance between Point A and Point B is 480 Km. The boat started traveling downstream from A to B, in the midway, it is powered by an Engine due to which speed of the Boat increased. Now Boat reached Point B and started back to point A with help of the same engine. It took 19 hours for the entire journey. Then with the help of the engine, the speed of the boat increased by how many Km/hr?

1. 10 Km/hr
2. 15 Km/hr
3. 20 Km/hr
4. 24 Km/hr
5. Cannot be determined

**Answer & Explanation**

Answer – 3. 20 Km/hr

**Explanation :**

$$19 = 240/60 + 240/60+x + 480/20+x$$

$$x = 20$$

□ A Boat covers upstream in 12 Hours 48 minutes to travel distance from Point A to B, while it takes 6 hours to cover 3/4th of the same distance running downstream. The speed of the current is 15 Km/hr. The boat covered both forward distance from A to B and backward distance from B to A. Then what is the distance between A and B?

1. 360 Km
2. 480 Km
3. 540 Km
4. 640 Km
5. Cannot be determined

**Answer & Explanation**

Answer – 4. 640 Km

**Explanation :**

$$(S+R)*8 = (S-R)*64/5$$

$$S:R = 13:3$$

$$R = 15 \quad S = 65$$

$$D = (65+15) * 8 = 640$$

□ A Boat takes total 10 hours for traveling downstream from point A to point B and coming back point C which is somewhere between A and B. The speed of the Boat in

Still water is 9 Km/hr and rate of Stream is 3 Km/hr, then what is the distance between A and B if the ratio of distance between A to C and distance between B to C is 2:1?

1. 54 Km
2. 66 Km
3. 72 Km
4. 84 Km
5. Cannot be determined

**Answer & Explanation**

Answer – 3. 72 Km

**Explanation :**

$$10 = D/12 + D/18$$

$$D = 72$$

□ A Ship of Length 300m traveling from point A to B downstream passes a Ghat along the river in 18 sec, while in return it passes the same Ghat in 24 sec. If the rate of current is 9 Km/hr. Then what is the length of the Ghat?

1. 50 m
2. 60 m
3. 80 m
4. 100 m
5. Cannot be determined

**Answer & Explanation**

Answer – 2. 60 m

**Explanation :**

$$(S+9)*18 = (S-9)*24$$

$$S = 63$$

$$300+x = 72*5/18*18$$

$$x = 60$$

□ Speeds of Boat A and B in still water are in the ratio of 3:2 Rate of current is 10 Km/hr. Both Boats started from Point P to point Q downstream at the same time. After Boat B reaching Point Q, in return journey, it is powered by engine due to which the speed of the boat in still water is increased by 70%, while returned Boat A returned to Point Q as usual. Both the boats returned back to point P at the same time. Then what is the speed of Boat A?

1. 20 Km/hr
2. 30 Km/hr
3. 40 Km/hr
4. 50 Km/hr
5. Cannot be determined

**Answer & Explanation**

**Answer – 2. 30 Km/hr**

**Explanation :**

$$S_1 / S_2 = 3/2$$

$$R = 10$$

then

$$(1/3x+10) + (1/3x-10) = (1/2x+10) + (1/3.4x-10)$$

$$x = 10$$

$$\text{Speed of boat A} = 3 \times 10 = 30$$

□ **A Boat took 8 hours less to travel a distance downstream than to travel the same distance upstream. If the speed of a boat in still water is 9 Km/hr and speed of a stream is 3 Km/hr. In total how much distance traveled by boat?**

1. 96 Km
2. 144 Km
3. 164 Km
4. 192 Km
5. 216 Km

**Answer & Explanation**

**Answer – 4. 192 Km**

**Explanation :**

$$8 = D(1/6 - 1/12)$$

$$D = 96$$

$$\text{Total} = 96 + 96 = 192$$

□ **If Nishu can swim downstream at 6kmph and upstream at 2kmph. What is his speed in still water ?**

- A. 5 km/hr
- B. 4 km/hr
- C. 8km/hr
- D. 7km/hr

**Answer**

**Answer- B**

**Basic Formula:**

If the speed downstream is a km/ hr and the speed upstream is b km/ hr

then Speed in still water is  $= \frac{1}{2} (a+b)$  km / hr

[memory tool last 2 L cross and make +]

**Explanation:**

Given : speed downstream a = 6 km ph

Speed upstream b = 2kmph

Speed in still water  $= \frac{1}{2} (a+b)$  kmph

$$= \frac{1}{2} (6+2)$$

$$= 8/2 = 4\text{kmph}$$

$$\text{speed in still water} = 4\text{kmph}$$

□ **Ashok can row upstream at 8kmph and downstream at 12kmph. What is the speed of the stream ?**

- A. 6km/hr
- B. 3km/h
- C. 2 km/hr
- D. 4km/hr

**Answer**

**Answer -C**

**Basic Formula:**

If the speed downstream is a kmph and the speed upstream is b kmph

then

$$\text{Speed of the stream} = \frac{1}{2} (a-b) \text{ kmph}$$

**Explanation:**

Speed downstream a = 12kmph

Speed upstream b = 8 kmph

$$\text{Speed of the stream} = \frac{1}{2} (a-b) = \frac{1}{2} (12-8)$$

$$= 4/2 = 2 \text{ kmph}$$

$$\text{speed of the stream} = 2\text{kmph}$$

□ **A man rows 750m in 775 seconds against the stream and returns in 7 1/2 minutes. What is rowing speed in still water ?**

- A. 4.7km/hr
- B. 4km/hr
- C. 3.5km/hr
- D. 6km/hr

**Answer**

**Answer-A**

**Basic Formula:**

i) Speed in still water  $= \frac{1}{2} (a+b)$  kmph where 'a' is speed

downstream and 'b' is speed upstream

$$\text{ii) } a \text{ km / hr} = a \times 5/18 \text{ m / s}$$

$$\text{iii) } a \text{ m/sec} = a \times 18/5 \text{ km/hr}$$

**Explanation:**

$$\text{Speed upstream 'b'} = 750\text{m} / 775 \text{ sec} = 30/31 \text{ m/sec}$$

$$\text{Speed downstream 'a'} = 750 \text{ m} / (15/2)\text{minutes} [1\text{min}=60 \text{ sec}] a = 750\text{m}/450 \text{ sec} = 5/3 \text{ m/sec}$$

$$\text{speed in still water} = \frac{1}{2} (a+b)$$

$$= \frac{1}{2} (750/450 + 750/675) \text{ m / sec}$$

$$= \frac{1}{2} (750/450 + 750/675) \times 18/5 \text{ km/hr}$$

$$= \frac{1}{2} (5/3 + 30/31) \times 18/5 \text{ km/hr}$$

$$= 4.7 \text{ km/hr}$$

□ **A man can row 9 (1/3) kmph in still water and finds that it takes him thrice as much time to row up than as to row**

down the same distance in the river. What is speed of the current ?

- A. 5km/hr
- B.  $3\frac{1}{2}$  km/hr
- C.  $4\frac{2}{3}$  km/hr
- D.  $8\frac{3}{2}$  km/hr

**Answer**

**Answer- C**

**Basic Formula:**

Speed of current =  $\frac{1}{2}$  (a-b) km/hr

**Explanation:**

Let man's rate upstream be x km/hr. Then his rate downstream is 3 x km/hr

Given:

Speed in still water =  $9\frac{1}{3}$  =  $28\frac{1}{3}$  km/hr

i.e.,  $\frac{1}{2}$  (a+b) =  $28\frac{1}{3}$  km/hr

$\frac{1}{2}$  (x+3x) =  $28\frac{1}{3}$

$2x = 28\frac{1}{3}$      $x = 28\frac{1}{3} \div 2 = 14\frac{1}{3}$  km/hr

rate upstream b =  $14\frac{1}{3}$  km/hr and

rate downstream a =  $14\frac{1}{3} \times 3 = 42$  km/hr

speed of the current =  $\frac{1}{2}$  (a-b) =  $\frac{1}{2}$  (42 -  $14\frac{1}{3}$ )  
=  $\frac{1}{2}$  ( $42 - 14\frac{1}{3}$ ) =  $28\frac{1}{6}$  =  $4\frac{2}{3}$  km/hr

☐ **Sham can row a boat at 10kmph in still water. IF the speed of the stream is 6kmph, the time taken to row a distance of 80km down the stream is**

- A. 4 hours
- B. 5 hours
- C. 3 hours
- D. 2 hours

**Answer**

**Answer- B**

**Basic Formula:**

Speed of stream =  $\frac{1}{2}$  (a-b) km/hr

Speed in still water =  $\frac{1}{2}$  (a+b) km/hr

**Explanation:**

Given:

Speed in still water,  $\frac{1}{2}$  (a+b) = 10 km/hr

a+b = 20 km/hr.....(1)

speed of the stream,  $\frac{1}{2}$  (a-b) = 6 km/hr

a-b = 12 km/hr .....(2)

(1)+(2) we get 2a = 32

a = 16 km/hr

speed downstream = distance traveled / time taken

time taken =  $80/16 = 5$  hours

☐ **A boat takes 4 hours for traveling downstream from point P to point**

**Q and coming back to point P upstream. If the velocity of the stream is 2kmph and the speed of the boat in still water is 4kmph, what is the distance between P and Q?**

- A. 9 km
- B. 7 km
- C. 5 km
- D. 6 km

**Answer**

**Answer- D**

**Basic Formula:**

Speed of stream =  $\frac{1}{2}$  (a-b) km/hr

Speed of still water =  $\frac{1}{2}$  (a+b) km/hr

**Explanation:**

Time taken by boat to travel upstream and downstream = 4 hours

Velocity of the stream,  $\frac{1}{2}$  (a-b) = 2 km/hr

a-b = 4 km/hr .....(1)

velocity of the boat in still water =  $\frac{1}{2}$  (a+b) = 4 km/hr

a+b = 8 km/hr .....(2)

1 + 2 we get a = 6 km/hr, b = 2 km/hr

let the distance between A and B be x km

$x/2 + x/6 = 4$

$3x + x/6 = 4$      $4x = 24$  so, x = 6

distance between P and Q = 6 km

☐ **Speed of a boat in standing water is 9kmph and the speed of the stream is 1.5kmph. A man rows to a place at a distance of 10.5 km and comes back to the starting point. Find the total time taken by him.**

- A. 24 hours
- B. 16 hours
- C. 20 hours
- D. 15 hours

**Answer**

**Answer- A**

**Basic Formula:**

i. speed = distance traveled / time taken

ii. speed of the stream =  $\frac{1}{2}$  (a-b) km/hr

iii. speed in still water =  $\frac{1}{2}$  (a+b) km/hr

**Explanation:**

Speed in still water =  $\frac{1}{2}$  (a+b) = 9 kmph  
a+b = 18 .....1

speed of the stream =  $\frac{1}{2}$  (a-b) = 1.5 kmph

a-b = 3 kmph.....2

solving 1 and 2 gives a = 10.5 km/hr ; b = 7.5 kmph

Total time taken by him =  $105/10.5 + 105/7.5 = 24$  hours

□ A man rows to a place 48km distant and back in 14 hours. He finds that he can row 4km with the stream in the same time as 3km against the stream. Find the rate of the stream.

- A. 2 km/hr  
B. 1 km/hr  
C. 3 km/hr  
D. 3.5 km/hr

**Answer**

**Answer- B**

**Basic Formula:**

Speed of the stream =  $\frac{1}{2} (a-b)$  km / hr

Speed = distance traveled / time taken

**Explanation:**

Suppose he moves 4km downstream in x hours

Then, downstream  $a = 4 / x$  km/hr

Speed upstream  $b = 3 / x$  km/hr

$48 / (4 / x) + 48 / (3 / x) = 14$

$12x + 16x = 14$

$x = 1/2$

$a = 8$  km/hr,  $b = 6$  km/hr

rate of stream =  $\frac{1}{2} (8 - 6)$

= 1 km/hr

□ There is road besides a river. Two friends started from a place P, moved to a shopping mall situated at another place Q and then returned to P again. One of them moves on a cycle at a speed of 12 km/hr, while the other sails on a boat at a speed of 10 km/hr. If the river flows at the speed of 4 km/hr, which of the two friends will return to place P?

- A. Both  
B. Boater  
C. Cyclist  
D. None of these

**Answer**

**Answer-C**

**Explanation:**

The cyclist moves both ways at a speed of 12 km/hr so average speed for the

cyclist = 12 km/hr

boat sailor moves downstream at  $10+4 =$

14 km/hr and upstream  $10-$

4 = 6 km/hr

Average speed of the boat sailor =  $2 \times 14 \times 6 /$

$14 + 6 = 42 / 5 = 8.4$  km/hr

The average speed of cyclist is greater .so, cyclist comes first and return to place P.

□ A this usual rowing rate, Mohit can travel 12 miles downstream in a certain river in 6 hours less than it takes him to travel the same distance upstream. But if he could double his usual rowing rate for his 24 miles round trip, the downstream 12 miles would then take only one hour less than the upstream 12 miles. What is the speed of the current in miles per hour?

- A. 2.5 m/hr  
B. 4 m/hr  
C.  $8/3$  m/hr  
D.  $5/3$  m/hr

**Answer**

**Answer-C**

**Basic Formula:**

Speed of the stream =  $\frac{1}{2} (a-b)$  km/hr

**Explanation:**

Let the speed in still water be x m/hr

Speed of stream be y m/hr

Then, speed upstream =  $x-y$  m/hr and

Speed downstream =  $x+y$  m/hr

$12/x-y - 12/x+y = 6$  so,  $6(x^2 - y^2) = 24y$

$x^2 - y^2 = 4y$

$x^2 = y^2 + 4y$ .....1

also

$12/2x-y - 12/2x+y = 1$   $4x^2 - y^2 = 24y$

$x^2 = [24y + y^2] / 4$  .....2

$16y + 4y^2 = 24y + y^2$  [put  $x^2$  value from 1]

$3y^2 = 8y$  so,  $y = 8/3$

speed of the current =  $8/3$  m/hr =  $2(2/3)$  m/hr

□ A boat takes 28 hours for travelling downstream from point A to point B and coming back to point C midway between A and B. If the velocity of the stream is 6 km/hr and the speed of the boat in still water is 9 km/hr, what is the distance between A and B?

- A. 115 km  
B. 120 km  
C. 140 km  
D. 165 km  
E. 150 km

**Answer & Explanation**

Answer – **B.120 km**

**Explanation :**

Downstream speed =  $9+6 = 15$

Upstream speed =  $9-6 = 3$

Now total time is 28 hours

If distance between A and B is d, then distance

$BC = d/2$

Now distance/speed = time, so

$d/15 + (d/2)/3 = 28$

Solve,  $d = 120$  km

□ **Speed of a man in still water is 5 km/hr and the river is running at 3km/hr. The total time taken to go to a place and come back is 10 hours. What is the distance travelled?**

A.10 km

B.16 km

C.24 km

D.32 km

E.36 km

**Answer & Explanation**

Answer – **D.32 km**

**Explanation :**

Down speed=  $5+3 = 8$

Up speed=  $5-3 = 2$

Let distance travelled = X

$(X/8) + (X/2) = 10$

$X = 16$  km

Total distance is  $16+16=32$

□ **A boat running upstream takes 9 hours 48 minutes to cover a certain distance, while it takes 7 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of the water current respectively?**

A.5:2

B.7:4

C.6:1

D.8:3

E.2:5

**Answer & Explanation**

Answer – **C.6:1**

**Explanation :**

Distance covered upstream in 9hrs 48 min =

Distance covered downstream in 7hrs

$(X-Y) 49/5 = (X+Y) 7$

$X/Y = 1/6$

□ **A boat can travel 20 km downstream in 24 min. The ratio of the speed of the boat in still**

**water to the speed of the stream is 4 : 1. How much time will the boat take to cover 15 km upstream?**

A.20 min

B.22 min

C.25 min

D.30 min

E.35 min

**Answer & Explanation**

Answer – **D.30 min**

**Explanation :**

Down speed =  $20/24 \times 60 = 50$  km/hr

$4:1 = 4x:x$

Downstream speed =  $4x+x = 5x$

Upstream speed =  $4x-x = 3x$

$5x = 50$ ;  $x = 10$

so up speed  $3 \times 10 = 30$

Time =  $15/30 \times 60 = 30$  min.

□ **A boat whose speed in 20 km/hr in still water goes 40 km downstream and comes back in a total of 5 hours. The approx. speed of the stream (in km/hr) is:**

A.6 km/hr

B.9 km/hr

C.12 km/hr

D.16 km/hr

E.18 km/hr

**Answer & Explanation**

Answer – **B.9 km/hr**

**Explanation :**

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

Speed downstream =  $(20 + x)$  km/hr,

Speed upstream =  $(20 - x)$  km/hr.

$40/20+x + 40/20-x = 5$

$X = 9$  approx

□ **A boat covers a certain distance downstream in 2 hour, while it comes back in 2 1/2 hours. If the speed of the stream be 5 kmph, what is the speed of the boat in still water?**

A.40 kmph

B.30 kmph

C.35 kmph

D.45 kmph

E.None of these

**Answer & Explanation**

Answer – **D.45 kmph**

**Explanation :**

Let the speed of the boat in still water



be  $x$  kmph. Then,  
 Speed downstream =  $(x + 5)$  kmph,  
 Speed upstream =  $(x - 5)$  kmph.  
 $(x + 5) \times 2 = (x - 5) \times 5/2$   
 $X = 45$  kmph

□ **A boat running downstream covers a distance of 40 km in 5 hrs and for covering the same distance upstream it takes 10 hrs. What is the speed of the stream?**

- A.5 km/hr
- B.2 km/hr
- C.6 km/hr
- D.4 km/hr
- E.3 km/hr

**Answer & Explanation**

Answer – **B.2 km/hr**

**Explanation :**

Downstream speed =  $40/5 = 8$  km/hr

Upstream speed =  $40/10 = 4$  km/hr

So speed of stream =  $1/2 \times (8-4)$

□ **A boat goes 4 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 15 km in stationary water?**

- A.2 hour 15 min
- B.2 hour
- C.3hr
- D.3hr 30 min
- E.None of these

**Answer & Explanation**

Answer – **C.3hr**

**Explanation :**

Rate downstream =  $1/10 \times 60 = 6$  kmph

Rate upstream = 4 km/hr.

Speed in still water =  $1/2 \times 10 = 5$  kmph

Required time =  $15/5 = 3$  hr

□ **A man rows to a place 40 km distant and come back in 9 hours. He finds that he can row 5 km with the stream in the same time as 4 km against the stream. The rate of the stream is:**

- A.1 km/hr
- B.1.5 km/hr
- C.2 km/hr
- D.2.5 km/hr
- E.None of these

**Answer & Explanation**

Answer – **A.1 km/hr**

**Explanation :**

Speed downstream =  $5/x$

Speed upstream =  $4/x$

$40/(5/x) + 40/(4/x) = 9$

$X = 1/2$

So, Speed downstream = 10 km/hr, Speed upstream = 8 km/hr.

Rate of the stream =  $1/2 \times 2 = 1$  kmph

□ **A man can row 8 km/hr in still water. When the river is running at 4 km/hr, it takes him  $2 \frac{1}{3}$  hr to row to a place and come back. How far is the place?**

- A.4 km
- B.5 km
- C.7 km
- D.10 km
- E.None of these

**Answer & Explanation**

Answer – **C.7 km**

**Explanation :**

Downstream speed =  $8+4 = 12 \Rightarrow a$

Upstream speed =  $8-4 = 4 \Rightarrow b$

Distance =  $a \times b / (a+b) \times \text{total time (t)}$

$= 12 \times 4 / 16 \times 7/3$

$= 7$  kms

□ **A boat can travel 15 km downstream in 18 min. The ratio of the speed of the boat in still water to the speed of the stream is 4 : 1. How much time will the boat take to cover 10 km upstream?**

- A) 22 min
- B) 25 min
- C) 20 min
- D) 33 min
- E) 30 min

**Answer & Explanation**

**C) 20 min**

**Explanation:**

Use:

$B = [t_u + t_d] / [t_u - t_d] \times R$

15 km downstream in 18 min so 10 km in  $(18/15) \times 10 = 12$  min

$B = 4x, R = x$

Now

$4x = [t_u + 12] / [t_u - 12] \times x$

Solve,  $t_u = 20$  min



□ Speed of a man in still water is 4 km/hr and the river is running at 2 km/hr. The total time taken to go to a place and come back is 4 hours. What is the distance travelled?

- A) 16 km
- B) 13 km
- C) 10 km
- D) 6 km
- E) 8 km

**Answer & Explanation**

**D) 6 km**

**Explanation:**

Use

$$\text{Distance} = \text{time} * [B^2 - R^2] / 2 * B$$

$$\text{Distance} = 4 * [4^2 - 2^2] / 2 * 4$$

□ A boat takes 25 hours for travelling downstream from point A to point B and coming back to point C midway between A and B. If the velocity of the stream is 5 km/hr and the speed of the boat in still water is 10 km/hr, what is the distance between A and B?

- A) 100 km
- B) 122 km
- C) 146 km
- D) 178 km
- E) 150 km

**Answer & Explanation**

**E) 150 km**

**Explanation:**

$$\text{Downstream speed} = 10 + 5 = 15$$

$$\text{Upstream speed} = 10 - 5 = 5$$

Now total time is 25 hours

If distance between A and B is d, then distance

$$BC = d/2$$

Now distance/speed = time, so

$$d/15 + (d/2)/5 = 25$$

$$\text{Solve, } d = 150 \text{ km}$$

□ A boat goes 6 km against the current of the stream in 2 hours and goes 8 km along the current in half hour. How long will it take to go 28.5 km in stationary water?

- A) 4 1/2 hours
- B) 3 hours
- C) 3 1/2 hours
- D) 4 hours
- E) None of these

**Answer & Explanation**

**B) 3 hours**

**Explanation:**

$$\text{Speed upstream} = 6/2 = 3, \text{ speed downstream} = 8/(1/2) = 16$$

$$\text{Speed of boat} = 1/2(3+16) = 9.5 \text{ km/hr}$$

$$\text{So time in still water} = 28.5/9.5$$

□ A man can row 48 km upstream and 56 km downstream in 12 hrs. Also, he can row 54 km upstream and 70 km downstream in 14 hrs. What is the speed of man in still water?

- A) 4 km/hr
- B) 10 km/hr
- C) 12 km/hr
- D) 15 km/hr
- E) 18 km/hr

**Answer & Explanation**

**B) 10 km/hr**

**Explanation:**

Let upstream speed = x km/hr, downstream speed = y km/hr

$$\text{So } 48/x + 56/y = 12$$

$$\text{And } 54/x + 70/y = 14$$

$$\text{Put } 1/x = u, 1/y = v$$

$$\text{So equations are } 48u + 56v = 12 \text{ and } 54u + 70v = 14$$

$$\text{Solve the equations, } u = 1/6, v = 1/14$$

$$\text{So upstream speed} = 6 \text{ km/hr, downstream speed} = 14 \text{ km/hr}$$

$$\text{Speed of boat in still water} = 1/2 * (6+14)$$

□ A boat takes 150 min less to travel 40 km downstream than to travel the same distance upstream. The speed of the stream is 4 km/hr. What is the downstream speed?

- A) 16 km/hr
- B) 12 km/hr
- C) 10 km/hr
- D) 8 km/hr
- E) None of these

**Answer & Explanation**

**A) 16 km/hr**

**Explanation:**

Let speed of boat in still water = x km/hr

$$\text{So speed upstream} = x - 4, \text{ and speed downstream} = x + 4$$

Now given:

$$\text{Time to travel 40 km downstream} = \text{time to travel 40 km upstream} - 150/60$$

$$\text{So } 40/(x+4) = 40/(x-4) - 5/2$$

$$8/(x-4) - 8/(x+4) = 1/2$$

$$x+4 - (x-4)/(x^2 - 16) = 1/16$$

solve,  $x = 12$

so downstream speed =  $12+4$

□ A man rows to a place 40 km distant and back in a total of 18 hours. He finds that he can row 5 km with the stream in the same time as 4 km against the stream. What is the speed of boat in still water?

- A) 4.5 km/hr
- B) 8 km/hr
- C) 5.5 km/hr
- D) 2 km/hr
- E) None of these

#### Answer & Explanation

A) 4.5 km/hr

#### Explanation:

Suppose he moves 5km downstream in  $x$  hours

Then, downstream speed  $a = 5/x$  km/hr

Speed upstream speed  $b = 4/x$  km/hr

$$40 / (5/x) + 40 / (4/x) = 18$$

$$8x + 10x = 18$$

$$x = 1$$

$$a = 5 \text{ km/hr, } b = 4 \text{ km/hr}$$

$$\text{speed of boat} = \frac{1}{2} (5 + 4) = 9/2 \text{ km/hr}$$

□ In a stream running at 2 km/hr, a motorboat goes 6 km upstream and back again to the starting point in 2 hours. Find the speed of boat in still water.

- A) 9 km/hr
- B) 12 km/hr
- C) 8 km/hr
- D) 10 km/hr
- E) None of these

#### Answer & Explanation

C) 8 km/hr

#### Explanation:

$$\text{Distance} = \text{time} * [B^2 - R^2] / 2*B$$

$$6 = 2 * [B^2 - 4^2] / 2*B$$

$$B^2 - 6B - 16 = 0$$

$$(B-8)(B+2) = 0$$

$$\text{So } B = 8$$

□ It takes five times as long to row a distance against the stream as to row the same distance in favor of the stream. What is the ratio of the speed of the boat in still water to that of stream?

- A) 7 : 4
- B) 2 : 3

C) 9 : 5

D) 3 : 2

E) 5 : 2

#### Answer & Explanation

D) 3 : 2

#### Explanation:

Use:

$$B = [t_u + t_d] / [t_u - t_d] * R$$

So

$$B = [5x + x] / [5x - x] * R$$

$$\text{So } B/R = 6/4 = 3/2$$

□ A boat running downstream covers a distance of 32 km in 4 hrs and for covering the same distance upstream it takes 8 hrs. What is the speed of the stream?

- A) 5 km/hr
- B) 2 km/hr
- C) 6 km/hr
- D) 4 km/hr
- E) 3 km/hr

#### Answer & Explanation

B) 2 km/hr

#### Explanation:

$$\text{Downstream speed} = 32/4 = 8 \text{ km/hr}$$

$$\text{Upstream speed} = 32/8 = 4 \text{ km/hr}$$

$$\text{So speed of stream} = \frac{1}{2} (8-4)$$

□ A man can row upstream at 10 km/hr and downstream at 16 km/hr. Find the man's rate in still water and the rate of current.

- A. 13 km/hr, 3 km/hr
- B. 10 km/hr, 2 km/hr
- C. 3 km/hr, 13 km/hr
- D. 15 km/hr, 5 km/hr

#### Answer

A. 13 km/hr, 3 km/hr

#### Explanation:

$$\text{man's rate in still water} = \frac{1}{2} (16+10)$$

$$\text{man's rate in still water} = \frac{1}{2} (16+10)$$

□ A boat can row at 16 km/hr in still water and the speed of river is 10 km/hr. Find the speed of boat with the river and speed of boat against the river.

- A. 13 km/hr, 3 km/hr
- B. 15 km/hr, 5 km/hr
- C. 26 km/hr, 6 km/hr
- D. 6 km/hr, 26 km/hr

#### Answer

**C. 26 km/hr, 6 km/hr**

Explanation:

Speed with the river (downstream) =  $16+10$

Speed against the river (upstream) =  $16-10$

☐ **A man goes downstream 60 km and upstream 20 km, taking 4 hrs each. What is the velocity of current?**

A. 4 km/hr

B. 8 km/hr

C. 6 km/hr

D. 5 km/hr

**Answer**

**D. 5 km/hr**

Explanation:

Downstream speed =  $60/4 = 15$  km/hr

Upstream speed =  $20/4 = 5$  km/hr

Velocity of stream =  $(15-5)/2 = 5$  km/hr

☐ **A man rows downstream 28 km and upstream 16 km, taking 5 hrs each time. What is the velocity of current?**

A. 4 km/hr

B. 2.4 km/hr

C. 1.2 km/hr

D. 3 km/hr

**Answer**

**C. 1.2 km/hr**

☐ **A man can row 30 km upstream and 44 km downstream in 10 hrs. Also, he can row 40 km upstream and 55 km downstream in 13 hrs. Find the speed of the man in still water.**

A. 5 km/hr

B. 8 km/hr

C. 10 km/hr

D. 12 km/hr

**Answer**

**B. 8 km/hr**

Explanation:

Let upstream speed =  $x$ , downstream speed =  $y$  km/hr

Then,  $30/x + 44/y = 10$  and  $40/x + 55/y = 13$

Put  $1/x = a$ ,  $1/y = b$

Solve the equations.

$A = 1/5$ ,  $b = 1/11$

So,  $x = 5$ ,  $y = 11$

Speed in still water =  $(5+11)/2 = 8$

☐ **A man can row 24 km upstream and 36 km downstream in 6 hrs. Also, he can row 36**

**km upstream and 24 km downstream in 6.5 hrs. Find the speed of the current.**

A. 2 km/hr

B. 8 km/hr

C. 10 km/hr

D. 12 km/hr

**Answer**

**A. 2 km/hr**

☐ **A man can row 6 km/hr in still water. When the river is running at 2 km/hr, it takes him  $1\frac{1}{2}$  hr to row to a place and come back. How far is the place?**

A. 2.5 km

B. 4 km

C. 5 km

D. 10 km

**Answer**

**B. 4 km**

Explanation:

$B$  is speed of boat in still water,  $R$  is speed of stream

Time is total time taken for upstream and downstream

Distance = time \*  $[B^2 - R^2] / 2*B$   
 $= 3/2 * [6^2 - 2^2] / 2*6$

☐ **In a stream running at 2 km/hr, a motorboat goes 10 km upstream and back again to the starting point in 55 minutes. Find the speed (km/hr) of the motorboat in still water.**

A. 17

B. 20

C. 22

D. 25

**Answer**

**C. 22**

Explanation:

Distance = time \*  $[B^2 - R^2] / 2*B$   
 $10 = 55/60 * [B^2 - 2^2] / 2*B$

☐ **A man can row a certain distance downstream in 2 hours and return the same distance in 6 hours. If the speed of current is 22 km/hr, find the speed of man in still water.**

A. 44 km/hr

B. 48 km/hr

C. 50 km/hr

D. 55 km/hr

**Answer**

A. 44km/hr

Explanation:

Use:

$$B = [t_u + t_d] / [t_u - t_d] * R$$

$$B = [6+2] / [6-2] * 22$$

$$B = 44$$

□ A man can row  $9 \frac{3}{5}$  km/hr in still water and he finds that it takes him twice as much time to row up than as to row down the same distance in river. The speed (km/hr) of the current is

A. 2

B.  $2 \frac{1}{2}$

C.  $3 \frac{1}{5}$

D. 5

**Answer**

**C.  $3 \frac{1}{5}$**

Explanation:

Let downstream time = t, then upstream time = 2t

$$B = [t_u + t_d] / [t_u - t_d] * R$$

$$48/5 = [2t+t] / [2t-t] * R$$