BHARAT SCHOOL OF BANKING
BOATS AND STREAMS

Question1

If the speed of the stream is 2 km per hour, a boat can travel with a speed of 10 km per hour in still water and downstream in 60 km then the time taken by the boat to travel is:

a)2 hours   b)4 hours   c)5 hours   d)3 hours

Answer : c) 5 hours.

Solution:

Note that "If the speed of a boat in still water is u km/hr and the speed of the stream is v km/hr, then:

Speed downstream = (u + v) km/hr and Speed upstream = (u - v) km/hr".

Now, here the speed of the downstream is (10 + 2) km/hr = 12 km/hr.

Then, the time taken to travel 60 km downstream = (60/12) hours = 5 hours.

Hence the answer is 5 hrs.

Question2

Find the speed of the stream when a boat takes 7 hours to travel 40km downstream at a rate of 12km per hour in still water.

a) 6.92km.hr   b) 7.72km/hr   c) 5.82km/hr   d) 4.11km/hr

Answer: a) 6.92km/hr

Solution:

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

Downstream Speed = (12 + x) km/hr,

Upstream Speed = (12 - x) km/hr.

The boat covers, 40 km downstream in 7 hours then we have

[40 / (12 + x)] + [40 / (12 - x)] = 7

[40(12 - x) + 40(12 + x)] = 7(144 - x2)

$960 = 1008 - x2$

$x2 = 48$

$x = 6.92$

Hence the answer is 6.92 km/hr.

Question3

A boat covers a certain distance in half an hour downstream with the speed of 20km/hr in still water and the speed of current is 4km/hr. Then the distance travelled by the boat is:

a) 6km   b) 7km   c) 12km   d) 4km

Answer: c) 12km

Solution:

Given that the speed of a boat in still water is 20 km/hr and speed of the stream is 4 km/hr.

Then the speed downstream = (20 + 4) km/hr = 24 km/hr.

The distance travelled in half an hour = 24 x 1/2 = 12 km.

Hence the distance travelled by the boat is 12 km.

Question 4

A boat runs at 22 km per hour along the stream and 10 km per hour against the stream. Find the ratio of speed of the boat in still water to that of the speed of tht stream.

a) 2:3   b) 8:3   c) 5:3   d) 7:3

Answer : b) 8:3

Solution :

Speed along the stream = speed downstream = a = 22 km/hr

And speed against the stream = speed upstream = b = 10 km/hr.

Now, the speed in still water = a + b / 2 km/hr = (22 + 10) / 2 = 16 km/hr.

And the speed of stream = a - b / 2 km/hr = (22 - 10) / 2 = 6 km/hr.

Required ratio = speed in still water : speed of stream = 16:6 = 8:3.

Question 5

A boat takes 12 hours to cover 64 km downstream and 8 hours to cover 32 km upstream. Then the speed of the boat in still water is:

a) 14/3 km/hr   b) 3/2 km/hr   c) 6/5 km/hr   d) 8/7 km/hr

Answer : a) 14/3 km/hr

Solution :

Distance covered in downstream = 64 km

Time taken in downstream = 12 hours.

Rate of downstream = distance / time = a = 64 km / 12 hours = 16 / 3 km/hr.

Distance covered in upstream = 32km

Time taken in upstream = 8 hours.

Rate of upstream = distance / time = b = 32km / 8 hours = 4 km/hr.

Speed in still water = (a + b) / 2 = (1/2)(16/3 + 4) km/hr = (1/2)(28/3) = 14/3 km/hr.

Question 6

Find the rate of the stream, if a boat covers 120 km downstream and 40 km upstream in 4 hours.

a) 15 km/hr   b) 20 km/hr   c) 10 km/hr   d) 25 km/hr

Answer : c) 10km/hr.

Solution :

Distance covered in downstream = 120 km

Time taken in downstream = 4 hours.

Rate of downstream = distance / time = a = 120km / 4 hours = 30 km/hr.

Distance covered in upstream = 40 km

Since it takes same time to cover this 40km,

Time taken in upstream = 4 hours.

Rate of upstream = distance / time = b = 40km / 4 hours = 10 km/hr.

Speed of stream = (a - b)/2 = (1/2)(30 - 10) km/hr = 10 km/hr.

Question 7

If a man rows 4 km downstream in 3 hours and 2 km upstream in 2 hours then how long will he take to cover 8 km in stationary (still) water?

a) 5 hours   b) 9 hours   c)8 hours   d) none of these

Answer : d) none of these.

Solution :

Distance covered in downstream = 4 km

Time taken in downstream = 3 hours.

Rate of downstream = distance / time = a = 4km / 3 hours = 4/3 km/hr.

Distance covered in upstream = 2 km

Time taken in upstream = 2 hours.

Rate of upstream = distance / time = b = 2 km / 2 hours = 1 km/hr.

Speed in still water = (a + b)/2 = (1/2)(4/3 + 1) km/hr = (1/2)(4 + 3)/3 = 7/6 km/hr.

Time Taken to cover 8 km in still water = distance / speed = 8 x 6/7 = 48 / 7 = 7 hours (approximately).

Hence the answer is option d.

Question 8

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 = $\left(\dfrac{68}{17}\right)$ hrs = 4 hrs.

Question 9

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 10

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. 2 : 1

B. 3 : 2

C. 8 : 3

D. Cannot be determined

E. None of these

Answer: Option **C**
Explanation:
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.

$\Rightarrow \left(x \times 8\dfrac{4}{5} \right) = (y \times 4)$

$$\Rightarrow \frac{\overset{5}{44}}{5}x = 4y$$

$$\Rightarrow y = \frac{11}{5}x.$$

$\therefore$ Required ratio $= \left(\dfrac{y + x}{2}\right) : \left(\dfrac{y - x}{2}\right)$

$= \left(\dfrac{16x}{5} \times \dfrac{1}{2}\right) : \left(\dfrac{6x}{5} \times \dfrac{1}{2}\right)$

$= \dfrac{8}{5} : \dfrac{3}{5}$

$= 8 : 3.$