Problems on Boats and Streams Aptitude Questions and Answers Pdf

1. A man can row 6 Km/h in still water. If the river is running at 2 Km/h, it takes 3 hours more in upstream than to go downstream for the same distance. How far is the place?

a. 24 Km

b. 28 Km

c. 3 Km

d. None of these

Ans: A

The required distance

$$= \frac{(x^2 - y^2)t}{2y} = \frac{(36-4)3}{2\times 2} = 24 \text{ Km.}$$

2. If a boat goes 7 km upstream in 42 minutes and the speed of the stream is 3 kmph, then the speed of the boat in still water is
   a. 4 .2 km / hr
   b. 9 km / hr
   c. 13 km /hr
   d. 21 km / hr -→C

   Ans:

   Rate upstream $= \left(\frac{7}{42} \times 60\right)$ kmph = 10 kmph.

   Speed of stream = 3 kmph.

   Let speed in still water be x km / hr. Then, speed upstream = $(x - 3)$ km / hr.

   $\therefore \quad x - 3 = 10 \quad$ or $\quad x = 13$ km / hr.

3. 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 -→C

   Ans:

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.

4. Speed of a boat in standing water is 9 kmph and the speed of the stream is 1.5 kmph. A man rows to a place at a distance of 105 km and comes back to the starting point. The total time taken by him is
   a. 16 hours
   b. 18 hours
   c. 20 hours
   d. 24 hours -→D

   Ans:

   Speed upstream = 7.5 kmph; Speed downstream = 10.5 kmph.

   $\therefore$ Total time taken = $\left(\frac{105}{7.5} + \frac{105}{10.5}\right)$ hours = 24 hours.

5. The speed of a boat in still water is 15 km / hr and the rate of current is 3 km / hr. The distance travelled downstream in 12 minutes is
   a. 1.2 km
   b. 1.8 km
   c. 2.4 km
   d. 3.6 km -→D

   Ans:

Speed downstream = (15 + 3) kmph = 18 kmph.

Distance travelled = $\left(18 \times \frac{12}{60}\right)$ km = 3.6 km.

6. A man can row upstream at 7 kmph and downstream at 10 kmph. Find man's rate in still water and the rate of current.

a. 1.5 km/hr
b. 1.8 km/hr
c. 2.1 km/hr
d. 2.7 km/hr

Ans: A

Rate in still water $= \frac{1}{2}(10+7)$ km/hr $= 8.5$ km/hr.

Rate of current $= \frac{1}{2}(10-7)$ km/hr $= 1.5$ km/hr.

7. 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 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 A first?

Clearly, the cyclist moves both ways at a speed of 12 km/hr.
So, average speed of the cyclist = 12 km/hr.
The boat sailor moves downstream @ (10 + 4) *i.e.*, 14 km/hr and upstream (10 − 4) *i.e.*, 6 km/hr.

So, average speed of the boat sailor $= \left(\frac{2 \times 14 \times 6}{14+6}\right)$ km/hr

$= \frac{42}{5}$ km/hr $= 8.4$ km/hr.

Since the average speed of the cyclist is greater, he will return to A first.

8. The speed of a boat when travelling downstream is 32 km/hr, whereas when travelling upstream it is 28 km/hr, what is the speed of the boat in still water and at the speed of the stream?
   a. 2 km/hr
   b. 3 km/hr
   c. 4 km/hr
   d. 5 km/hr

   Ans: A

. Speed of boat in still water $= \frac{1}{2}(32+28)$ km/hr $= 30$ km/hr.

Speed of stream $= \frac{1}{2}(32-28)$ km/hr $= 2$ km/hr.

9. A Boat goes 8 km in one hour along the stream and 2 km in one hour against the stream. The speed in km/hr of the stream is
   a. 2
   b. 3
   c. 4
   d. 5

   Ans: B

   $$\text{Speed of the stream} = \frac{1}{2}(8-2)\text{ km/hr} = 3\text{ km/hr.}$$

10. A boatman rows 1 km in 5 minutes, along the stream and 6 km in 1 hour against the stream. The speed of the stream is

a. 3 kmph

b. 6 kmph

c. 10 kmph

d. 12 kmph

Ans: A

$$\text{Rate downstream} = \left(\frac{1}{5}\times 60\right)\text{kmph} = 12\text{ kmph;}$$

$$\text{Rate upstream} = 6\text{ kmph.}$$

$$\text{Speed of the stream} = \frac{1}{2}(12-6)\text{ kmph} = 3\text{ kmph.}$$

11. A boat takes 8 hours to cover a distance while travelling upstream, whereas while travelling downstream it takes 6 hours. If the speed of the current is 4 kmph, what is the speed of the boat in still water?
   a. 12 kmph
   b. 16 kmph
   c. 28 kmph
   d. Cannot be determined

   Ans: C

Let the speed of the boat in still water be x kmph.

Then, Speed downstream = $(x + 4)$ kmph,

Speed upstream = $(x - 4)$ kmph.

$\therefore\ (x + 4) \times 6 = (x - 4) \times 8$

$\Rightarrow 6x + 24 = 8x - 32 \Rightarrow 2x = 56 \Rightarrow x = 28$ kmph.

12. A man can swim in still water at a rate of 4 km/hr. The width of the river is 1 km. How long will he take to cross the river straight, if the speed of the current is 3 km/hr?

a. 10 min

b. 15 min

c. 18 min

d. 20 min

Ans: B

Required time = Time taken to cover 1 km @ 4 kmph

$$= \left(\frac{1}{4} \times 60\right) \text{min} = 15 \text{ min.}$$

13. Twice the speed downstream is equal to the thrice the speed upstream, the ratio of speed in still water to the speed of the current is

a. 1:5

b. 5:1

c. 1:3

d. 2:3 →b

Ans:

(b) Let, speed in still water = x Km/h.

Speed of current = y Km/h.

Speed downstream = $(x + y)$ Km/h.

Speed upstream = $(x - y)$ Km/h.

$\therefore \quad 2(x + y) = 3(x - y)$

$\therefore \quad x = 5y$

or, $\frac{x}{y} = \frac{5}{1}$ or 5:1.

14. A boat can travel 36 km upstream in 5 hours. If the speed of the stream is 2.4 kmph, how much time will the boat take to cover a distance of 78 km downstream?

a. 5
b. 6.5
c. 5.5
d. 8
Ans: B

Distance covered by a boat in 5 hours = 36 km

Rate upstream of boat $= \frac{36}{5} = 7.2$ kmph

Speed of stream = 2.4 kmph

$\therefore$ Speed of boat in still water

= (7.2 + 2.4) kmph

= 9.6 kmph

$\therefore$ Rate downstream of boat

= (9.6 + 2.4) kmph

= 12 kmph

$\therefore$ Time taken in covering 78 km distance $= \frac{78}{12} = 6.5$ hours.

14. The speed of a boat in still water is 8 Km/h. If its speed downstream be 15 Km/h, then speed of the stream is
    a. 7.5 Km/h
    b. 7 Km/h
    c. 9 Km/h
    d. None of these -→b

    Ans:

    Speed of the boat downstream = 15 Km/h.

Speed of the boat in still water = 8 Km/h.

Let the speed of the stream = y Km/h.

We have, 15 = 8 + y

Therefore, y = 15 – 8 = 7 Km/h.