



Date : 25th Dec 2023

Quantitative Aptitude – Boats and Streams

English

Q:1 The speed of a water boat along the current is 15 km/hr, and against the current, it is 12 km/hr. Find the speed of the current in m/sec.

1. 0.526 m/sec
2. 2 m/sec
3. 0.416 m/sec
4. 5 m/sec

Q:2 The speed of a boat in still water is 5 km/hour. It takes the 5/7th time in going downstream to the time taken in going upstream. Find the speed of the stream. (Approximate)

1. 1.5 km/hour
2. 0.9 km/hour
3. 2 km/hour
5. 0.8 km/hour

Q:3 The speeds of a swimmer in upstream and downstream directions are 5.34 m/s and 9.58 m/s respectively. What is the speed of the stream? (in km/hr)

1. 2.12
2. 4.352
3. 6.753

4. 7.632

Q:4 A boat covers 48km upstream and 72 km downstream in 12 hours, while it covers 72 km upstream and 48 km downstream in 13 hours. Find the speed of the stream.

1. 1 Km/hr
2. 1.5 Km/hr
3. 2 Km/hr
4. 3 Km/hr

Q:5 A rower takes 15 hours to cover a distance of 60 km upstream while it takes 12 hours to cover the same distance downstream. What will be the speed of the rower in still water?

1. 4.39 km/h
2. 5.78 km/h
3. 6.39 km/h
4. 9.56 km/h

Q:6 If the speed of a boat in still water is 15 km/h and the speed of the stream is 8 km/h then, find the total time taken by boat to cover 70 km

downstream and 20 km upstream.

1. 9.3 hrs
2. 6.4 hrs
3. 8.7 hrs
4. 5.9 hrs

Q:7 If the speed of a boat in still water is 25 km/hr and the speed of the current is 5 km/hr then, find the time taken by the boat to cover 135 km downstream.

1. 5 hour and 30 minutes
2. 4 hours
3. 5 hours
4. 4 hours and 30 minutes

Q:8 A boat sails 36 km of a river towards upstream in 6 hours. How long will it take to cover the same distance downstream, if the speed of current is one-seventh the speed of the boat in still water?

1. 4.25 hours
2. 4 hours
3. 3.5 hours
4. 4.5 hours

Q:9 A ship crosses a bridge of length 200 meters in 40 seconds while going upstream but it takes 50% less time to cross the same bridge while going downstream. What is the speed of the ship in still water?

1. 10 m/s
2. 7.5 m/s
3. 12.5 m/s
4. 5 m/s

Q:10 Two boats A and B travel downstream in the same direction from two different places which are 32 km away from each other. The speed of boats A and B in still water is 18 km/h and 16 km/h respectively. The speed of the stream is 11 km/h. If both boats travel downstream, how much time they will meet each other?

1. 12 hours
2. 16 hours
3. 14 hours
4. 10 hours

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Answer Key

1. (3)	2. (5)	3. (4)	4. (3)	5. (3)
6. (4)	7. (4)	8. (4)	9. (2)	10. (2)

Answers and Solutions

Q:1 The correct answer is **Option 3** i.e. **0.416 m/sec.**

Speed of boat along stream = 15 km/hr

Speed of boat against stream = 12 km/hr

So, Speed of current = $(15 - 12)/2 = 1.5 \text{ km/hr}$

= $(1.5 \times 5/18) \text{ m/sec}$

= $5/12 = 0.416 \text{ m/sec}$

Hence, The speed of the stream = 0.416 m/sec.

Q:2 The correct answer is **Option 5** i.e. **0.8 km/hour**

Let speed of the stream be x km/hour

Let the boat takes 7 hours to go upstream

So it takes 5 hours to go downstream

Since distance is constant, Speed \times time is equal in both cases

Hence, $(5 + x)5 = (5 - x)7$

$\Rightarrow 5x + 25 = 35 - 7x$

$\Rightarrow 12x = 10$

$\Rightarrow x = 10/12 \approx 0.8$

Hence the speed of current is 0.8 km/hour

Q:3 The correct answer is **Option 4** i.e. **7.632.**

Upstream Speed = Speed in still water - Speed of stream

Downstream Speed = Speed in still water + Speed of stream

Speed of stream = $(\text{Speed in downstream} - \text{Speed in upstream})/2$

$\Rightarrow (9.58 - 5.34)/2$

$\Rightarrow 2.12 \text{ m/s} = 2.12 \times 18/5$

$\Rightarrow 7.632 \text{ km/hr}$

Q:4 The correct answer is **option 3** i.e. **2 Km/hr**

Let $D_1 = 48$ and $D_2 = 72$

Let the speed of boat be S_B and speed of stream be S_S ,

When it covers 48 km upstream and 72

km downstream in 12 hours

$D_1/(S_B - S_S) + D_2/(S_B + S_S) = 12 \text{ hours.}$

When it covers 48 km upstream and 72 km downstream in 13 hours

$D_1/(S_B + S_S) + D_2/(S_B - S_S) = 13 \text{ hours}$

Let $1/(S_B - S_S) = x$ and $1/(S_B + S_S) = y$

Then

$48x + 72y = 12 \dots\dots\dots (i)$

and

$72x + 48y = 13 \dots\dots\dots (ii)$

Adding equation (i) and (ii),

$120x + 120y = 25 \Rightarrow x + y = 5/24 \dots\dots\dots (iii)$

On subtracting (ii) and (i)

$24y - 24x = -1 \Rightarrow x - y = 1/24 \dots\dots\dots (iv)$

On adding equation (iii) and (iv)

$2x = 1/4 \Rightarrow x = 1/8 \Rightarrow (S_B - S_S) = 8 \dots\dots\dots (v)$

On subtracting (iv) and (iii)

$2y = 1/6 \Rightarrow y = 1/12 \Rightarrow (S_B + S_S) = 12 \dots\dots\dots (vi)$

Subtracting (v) from (vi),

$2S_S = 4 \Rightarrow S_S = 2$

Hence, Speed of the stream = 2 km/hr.

Q:5 The correct answer is **Option 3** i.e. **6.39 km/h.**

Distance = 85 km

Upstream time = 15 hours

Downstream time = 12 hours

Let x be the rower's speed and y be the speed of the stream.

Speed while going upstream = $(x - y)$

Speed while going downstream = $(x + y)$

$\Rightarrow 85/(x - y) = 15$

$\Rightarrow x - y = 5.7 \dots\dots\dots (1)$

$\Rightarrow 85/(x + y) = 12$

$\Rightarrow x + y = 7.08 \dots\dots\dots (2)$

Adding eq.(1) and (2) we get -

$\Rightarrow x + y + x - y = 5.7 + 7.08$

$\Rightarrow 2x = 12.78$

$\Rightarrow x = 6.39 \text{ km/h}$

Hence, The speed of rower in still water is 6.39 km/h

Q:6 The correct answer is **Option 4** i.e. **5.9 hrs.**

The speed of the boat in still water = 15 km/hr

Speed of stream = 8 km/hr

Speed of downstream = speed of the boat in still water + speed of the stream

Speed of upstream = speed of the boat in still water - speed of the stream

Distance = Time \times speed



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Time taken by boat downstream to cover 70 km =
 $70/23 = 3.04$ hrs

Time taken by boat upstream to cover 20 km =
 $20/7 = 2.86$ hrs

Total time = $3.04 + 2.86 = 5.9$ hrs

Q:7 The correct answer is **Option 4** i.e. **4 hours and 30 minutes**.

The relative speed boat downstream = (The speed of the boat + The speed of the current)

Relative speed = Distance/time

Relative speed = $(25 + 5) = 30$ km/hr

Time taken to cover 135 km = $135/30 = 9/2 = 4.5$ hours = 4 hours 30 minutes

Q:8 The correct answer is **option 4** i.e. **4.5 hours**

Given that the speed of current is one-seventh the speed of the boat

Hence let the speed of boat be $7x$ km/h and speed of stream be x km/h

When going upstream, relative speed of boat = $7x - x$

When going downstream, relative speed of boat = $7x + x$

Speed = Distance/Time

$7x - x = 36/6 = 6, x = 1$

Required time = $36/8 = 4.5$ hours

Q:9 The correct answer is **Option 2** i.e. **7.5 m/s**.

Let the speed of the ship in still water be x m/s and the speed of the stream be y m/s

While going upstream, speed = $(x - y)$ m/s

Distance = 200 m

Time taken while going upstream = 40 s

Speed = $200/40 = 5$ m/s

Hence, $(x - y) = 5$ m/s ----- (1)

While going downstream, speed = $(x + y)$ m/s

Distance = 200 m

Time taken while going downstream = $40/2 = 20$ s

Speed = $200/20 = 10$ m/s

Hence, $(x + y) = 10$ m/s ----- (2)

Adding equation (1) and (2), we get

$\Rightarrow 2x = 15 = 7.5$ m/s

Q:10 The correct answer is **Option 2** i.e. **16 hours**.

If the speed of the stream is y km/hour and the speed of the boat in still water is x km/hour.

Downstream speed = $(x + y)$ km/hour

Upstream speed = $(x - y)$ km/hour

Downstream speed of boat A = $(18 + 11) = 29$ km/h

Downstream speed of boat B = $(16 + 11) = 27$ km/h

As the boats are traveling in the same direction -

$\Rightarrow 29T - 27T = 32$

$\Rightarrow 2T = 32$

$\Rightarrow T = 16$ hours

After 16 hours of traveling both boats A and B meet.