

Boats and Streams

1. A travel bus normally reaches its destination at 60 kmph in 20 hours. Find the speed of that travel bus at which it travels to reduce the time by 5 hours?

- A. 80 kmph
- B. 60 kmph
- C. 50 kmph
- D. 40 kmph

Answer & Explanation

Answer :

80 kmph

Explanation :

$$60 \times 20 = x \times 15 \quad x = 80 \text{ kmph}$$

2. 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 & Explanation

Answer :

10 km/hr

Explanation :

$$\text{Man's rate still in water} = (15 - 2.5) \text{ km/hr} = 12.5 \text{ km/hr}$$
$$\text{Man's rate against the current} = (12.5 - 2.5) = 10 \text{ km/hr}$$

3. A truck travelled to a place Q from P, The first 50 km at 10 kmph faster than the usual speed, but it returned the same distance at 10 kmph slower than usual speed. If the total time taken by the truck is 12 hours, then how many hours will travel at the faster speed?

- A. 8 hours
- B. 6 hours
- C. 2 hours
- D. 3 hours

Answer & Explanation

Answer :

2 hours

Explanation :

Total time taken, $\{50/(x - 10)\} + 50/(x+10)\} = 12$ hours By solving the equation, we get $x = 15$ time is taken by the truck at faster speed = $50/(15+10) = 2$ hours.

4. 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?

- A. 7 km/hr
- B. 8 km/hr
- C. 8.4 km/hr
- D. 9.2 km/hr

Answer & Explanation

Answer :

8.4 km/hr

Explanation :

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 at $(10+4)$ i.e, 14 km/hr and upstream at $(10-4)$ i.e, 6 km/hr So average speed of the boat sailor = $(2 \cdot 14 \cdot 6 / (14+6))$ km/hr = $42/5$ km/hr = 8.4 km/hr since the average speed of the cyclist is greater he will return to A first.

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

- A. 6 km/hr
- B. 7 km/hr
- C. 9 km/hr
- D. 8 km/hr

Answer & Explanation

Answer :

9 km/hr

Explanation :

Let man's rate upstream be X km/ph. Then his rate downstream = $3x$ km/ph Rate in still water = $1/2 (3x+x)$ km/ph = $2x$ $2x = 18$ so $X = 9$ Rate upstream = 9 km/hr; Rate downstream = 27 km/hr Hence rate of stream = $1/2 (27-9)$ km/hr = 9 km/hr

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

- A. 5 km/hr
- B. 4 km/hr
- C. 6 km/hr
- D. 7 km/hr

Answer & Explanation

Answer :

6 km/hr

Explanation :

Rate downstream = $(16/2)$ km/ph = 8km/ph Rate upstream = $(16/4)$ km/ph = 4km/ph

Speed in still water = $1/2 (8+4) = 6$ km/ph

7. If Rahul rows 15 km upstream in 3 hours and 21 km downstream in 3 hours, then the speed of the stream is

- A. 5 km/hr
- B. 4 km/hr
- C. 2 km/hr
- D. 1 km/hr

Answer & Explanation

Answer :

1 km/hr

Explanation :

Rate upstream = $(15/3)$ km/ph Rate downstream $(21/3)$ km/ph = 7 km/ph. Speed of stream $(1/2)(7 - 5)$ km/ph = 1 km/ph

8. 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 mins
- D. 1 hr 30 mins

Answer & Explanation

Answer :

1 hr 15 mins

Explanation :

Rate downstream = $(1/10 \times 60)$ km/hr = 6 km/hr; Rate upstream = 2 km/hr Speed in still water = $1/2 (6+2)$ km /hr = 4 km/hr Required time = $(5/4)$ hrs = $1 \frac{1}{4}$ hrs = 1 hr 15 min

9. If a man rows at the rate of 5 km/ph in still water and his rate against the current is 3.5 km/ph then the man's rate along the current is:

- A. 4.25 km/hr
- B. 6 km/ph
- C. 6.5 km/hr
- D. 8.5 km/ph

Answer & Explanation

Answer :

6.5 km/hr

Explanation :

Let the rate along the current be X km/ph. Then $1/2 (x+3.5) = 5$ $x = 6.5$ km/ph

10. If a boat goes 7 km upstream in 42 minutes and the speed of the stream is 3 km/ph 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

Answer & Explanation

Answer :

13 km/hr

Explanation :

Rate upstream = $(7/42 \times 60)$ km/ph = 10 km/ph Speed of stream = 3 km/ph Let speed in still water be X km/hr then upstream = $(x-3)$ km/hr $X = 13$ km/hr

11. A man rows 750 m in 675 seconds against the stream and returns in 7 and half minutes. His rowing speed in still water is

- A. 4 kmph
- B. 5 kmph
- C. 6 kmph
- D. 7 kmph

Answer & Explanation

Answer :

5 kmph

Explanation :

Rate upstream = $(750/675) = 10/9$ m/sec Rate downstream $(750/450)$ m/sec = $5/3$ m/sec

Rate in still water = $(1/2)*[(10/9) + (5/3)]$ m/sec. = $25/18$ m/sec = $(25/18)*(18/5)$ km/ph
= 5 km/ph

12. A man can row $7\frac{1}{2}$ km/ph in still water. If in a river running at 1.5 km an hour it takes him 50 minutes to row to place and back how far off is the place?

- A. 4 km
- B. 5 km
- C. 6 km
- D. 3 km

Answer & Explanation

Answer :

3 km

Explanation :

Speed downstream = $(7.5+1.5)$ km/ph = 9 km/ph Speed upstream = $(7.5 - 1.5)$ km/hr = 6 km/ph Let the required distance be X km. $x/9 + x/6 = 50/60 = 2x+3x = (5/6*18) = 5x = 15 = x = 3$ km.

13. A boat can travel with a speed of 16 km/hr in still water. If the rate of stream is 5 km/hr, then find the time taken by the boat to cover distance of 84 km downstream.

- A. 4 hours
- B. 5 hours
- C. 6 hours
- D. 7 hours

Answer & Explanation

Answer :

4 hours

Explanation :

Speed downstream = $(16 + 5) = 21$ km/ph Time = distance/speed = $84/21 = 4$ hours

14. A motorboat, whose speed is 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 & Explanation

Answer :

5

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 $30/(15+x)+30/(15-x) = 4 \frac{1}{2} \Leftrightarrow 900/225-x^2 = 9/2 \Leftrightarrow 9x^2 = 225. \Leftrightarrow x^2 = 25 \Leftrightarrow x = 5$ km/hr.

15. A man can row 40 km upstream and 55 km downstream in 13 hours. Also, he can row 30 km upstream and 44 km downstream in 10 hours. find the speed of the man in still water and the speed of the current?

- A. 3 km/hr
- B. 8 km/hr
- C. 5 km/hr
- D. 10 km/hr

Answer & Explanation

Answer :

3 km/hr

Explanation :

Let rate upstream = x km/hr and rate downstream = Y km/hr Then $40/x+55/y = 13$(1) and $30/x+44/y = 10$ Multiplying (2) by 4 and (1) by 3 and subtracting, we get $11/y = 1$ substituting $y = 11$ in (1) we get : $x=5$ Rate in still water = $1/2 (11+5)$ km/ph = 8 km/ph Rate of current = $1/2 (11-5)$ km/ph = 3 km/ph

16. A man can row $9 \frac{1}{3}$ km/hr 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. the speed of the current is/

- A. $3 \frac{1}{3}$ km/hr
- B. $3 \frac{1}{9}$ km/hr
- C. $4 \frac{2}{3}$ km/hr
- D. $4 \frac{1}{2}$ km/hr

Answer & Explanation

Answer :

$4 \frac{2}{3}$ km/hr

Explanation :

Let speed upstream be x km/hr. then, speed downstream = $3x$ km/hr. speed in still water = $\frac{1}{2}(3x+x)$ km/hr = $2x$ km/hr. Therefore $2x = \frac{28}{3} \Rightarrow x = \frac{14}{3}$. so, speed upstream = $\frac{14}{3}$ km/hr ; speed downstream = 14 km/hr Hence, speed of the current = $\frac{1}{2}(14 - \frac{14}{3})$ km/hr = $\frac{14}{3}$ km/hr = $4\frac{2}{3}$ km/hr.

17. In 1 hour a boat goes 11 km along the stream and 5 km against the stream. The speed of the boat in still water (in km/hr) is?

- A. 3
- B. 5
- C. 8
- D. 9

Answer & Explanation

Answer :

8

Explanation :

Speed in still water = $\frac{1}{2}(11+5)$ km/ph = 8km/ph

18. A man takes twice as long to row a distance against the stream as to row the same distance in favor of the stream. The ratio of the speed of the boat (in still water) and the stream is

- A. 2:1
- B. 3:1
- C. 3:2
- D. 4:3

Answer & Explanation

Answer :

3:1

Explanation :

Let man's rate upstream be X km/ph. Then his rate downstream = $2x$ km/ph Speed in still water : Speed of stream = $(2x + x/2) : 2x - x/2 = 3x/2 : x/2 = 3:1$

19. 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

Answer & Explanation

Answer :

8:3

Explanation :

Let the man's rate upstream be x km/ph and that downstream be y km/ph. Then distance covered upstream in 8 hrs 48 mins = Distance covered downstream in 4 hours $\Rightarrow (x \cdot 8 \frac{4}{5}) = (y \cdot 4) \Rightarrow 44/5x = 4y \Rightarrow y = 11/5 x$ Required ratio = $(y+x/2) : (y-x/2) = (16x/5 \cdot 1/2) : (6x/5 \cdot 1/2) = 8/5 : 3/5 = 8:3$

20. Mr. kavin walks at $4/5$ of his normal speed and takes 60 minutes more than the usual time. What will be the new time taken by Mr.kavin?

- A. 260 minutes
- B. 235 minutes
- C. 220 minutes
- D. 300 minutes

Answer & Explanation

Answer :

300 minutes

Explanation :

$4/5$ of speed = $5/4$ of original time $5/4$ of original time = original time + 60 minutes $1/4$ of original time = 60 minutes Thus, original time = $60 \cdot 4 = 240$ minutes = $240 + 60 = 300$ minutes

21. A and B set out at the same time to walk towards each other respectively from a place P and Q 144 km apart. A walks at the constant speed of 8 km/h, while B walks 4 km in the first hour, 5 km in the second hour, 6 km in the third hour and so on. Then the "A" will meet "B" at?

- A. 26 km
- B. 36 km
- C. 56 km
- D. 72 km

Answer & Explanation

Answer :

72 km

Explanation :

Distance travelled by them in first hour = 12 km Distance travelled by them in second hour = 13 km and so on In 9 hours both will cover exactly 144 km In 9 hours each will

cover half the total distance.

22. In a stream running at 2 km/hr. a motorboat goes 6 km upstream and back again to the starting point in 33 minutes. Find the speed of the motorboat in still water?

- A. 22 km/hr
- B. 30 km/hr
- C. 35 km/hr
- D. 40 km/hr

Answer & Explanation

Answer :

22 km/hr

Explanation :

Let the speed of the motorboat in still water be x km/hr. then, speed downstream = $(x+2)$ km/hr ; speed upstream = $(x-2)$ km/hr. Therefore $6/x+2 + 6/ x-2 = 33/60 \Leftrightarrow 11x^2- 240x-44=0 \Leftrightarrow 11x^2 - 242x+2x - 44 =0 \Leftrightarrow (x-22) (11x+2) =0 \Leftrightarrow x=22$. Hence, speed of motorboat in still water = 22 km/hr.

23. Sofi started traveling from a place A to B and priya started traveling from a place B to A which are 576 km apart. They meet after 12 hours, after their meeting, sofi increased her speed by 2 km/hr and priya reduced her speed by 2 km/hr, they arrived at B and A respectively at the same time. What is their initial speed?

- A. 21 kmph, 23kmph
- B. 25kmph,27kmph
- C. 25kmph,23kmph
- D. 24kmph, 26kmph

Answer & Explanation

Answer :

25kmph,23kmph

Explanation :

Sum of their speeds = Distance/time = $576/12 = 48$ kmph Respective speed sofi and priya = $(25+23) = 48$ kmph.

24. A lions starts chasing a Giraffe. It takes 4 hours

- A. 20 km/h
- B. 50 km/h
- C. 40 km/h
- D. 70 km/h

Answer & Explanation

Answer :

20 km/h

Explanation :

Giraffe speed = x kmph $4 = 4 * x / (40 - x) x = 20$ km/h.

25. A man can row upstream at 8km/ph and downstream at 13 km/ph.The speed of the stream is?

- A. 2.5 km/hr
- B. 4.2 km/hr
- C. 5 km/hr
- D. 10.5 km/hr

Answer & Explanation

Answer :

2.5 km/hr

Explanation :

Speed of stream = $1/2(13 - 8)$ km/ph = 2.5 km/ph
