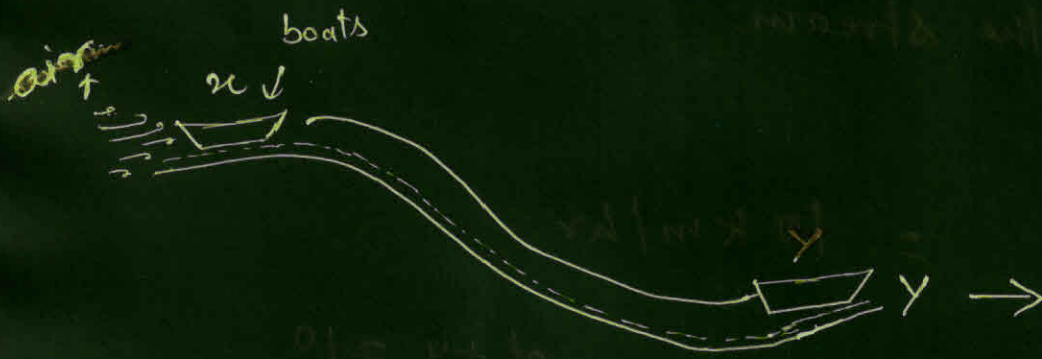


* — Boats & Stream — *



Boat = x
Stream = y

Down stream
= $x + y$



Up-stream
= $x - y$

Boat speed > stream

Q:- The speed of a boat in down stream & up-stream are 12 km/hr and 8 km/hr find the speed of the boat.

$$x + y = 12$$

$$x - y = 8$$

$$2x = 20$$

$x = 10$

Ans

Q1- A boat covers 1 km distance in 6 min while going down stream & in $7\frac{1}{2}$ min. Find the speed of the stream.

$$\frac{1}{6} = 10 \text{ km/hr}$$

$$\frac{1}{6} = \frac{1}{10}$$

$$\begin{array}{r} x + y = 10 \\ x - y = 8 \\ \hline \end{array}$$

$$2y = 2$$

$$\boxed{y = 1} \text{ Ans}$$

$$\frac{1}{\frac{15}{2 \times 60}} = \frac{1}{8} = 8 \text{ km/hr}$$

Q2- In the same time a boat can cover double the distance along the stream as compare to against the stream find the speed of boat. if speed of stream 3 km/hr.

Let

$$x + y = 4$$

$$\begin{array}{r} x - y = 2 \\ \hline \end{array}$$

$$2y = 2$$

$$y = 1 \text{ --- } 3 \text{ km/hr}$$

$$x = 3 \times 3 = 9 \text{ km/hr Ans}$$

Q1: The Speed of a boat is 7.5 km/hr. & It was found that it took double the time to cover a distance against the stream as compare to along the stream. find the speed of the stream.

$$\begin{array}{r} x + y = 2 \\ x - y = 2 \\ \hline \end{array}$$

$$2y = 2$$

$$y = 1 \quad \times \frac{15}{6} \quad \boxed{2.5} \text{ Ans}$$

$$x = 3 \quad \times \frac{15}{6} \quad \frac{15}{2}$$

$$\therefore \frac{7.5 \times 2}{2} = \frac{15}{2}$$

Q2: A Boat can cover 30^{km} distance along the stream and against the stream in total 8 hours if speed of the boat is 4 times to the speed of stream. then find the speed of the stream.

$$\boxed{\begin{array}{l} S = x \\ B = 4x \end{array}}$$

$$\frac{30}{4x + x} + \frac{30}{4x - x} = 8 \text{ hr}$$

$$\frac{6}{x} + \frac{10}{x} = \frac{16}{2x} = 8$$

$$\frac{16}{2x} = 8$$

$$16 = 8x$$

$$\boxed{x = 2} \text{ Ans}$$

Q1 - A Boat cover certain distance with up-stream & down-stream both in total 5 hours. If the speed of boat & stream are 10 km/hr & 4 km/hr. then find the distance.

$$\frac{x}{10+4} + \frac{x}{10-4} = 5$$

$$\frac{x}{14} + \frac{x}{6} = 5$$

$$\frac{8x + 7x}{42} = 5$$

$$15x = 5 \times 42$$

$$x = 21 \text{ km}$$

Q1 - A Boat takes total 33 mins. To cover a distance of 6 km. find down-stream & up-stream both. If the speed of stream is 2 km/hr then find the speed of boat.

Ans 1-

$$\frac{6}{x+2} + \frac{6}{x-2} = \frac{33}{10} = \frac{11}{20}$$

$$\frac{6}{2x} + \frac{6}{20}$$

$$a) 20$$

$$b) 22 \checkmark$$

$$c) 24$$

$$d) 28$$

$$\frac{6}{4} + \frac{3}{10}$$

$$\frac{5+6}{20} = \frac{11}{20}$$

Q:- A Boat can cover 24 km up-stream & 36 km down-stream in 14 hours. & It can cover 25 km up-stream & 45 km down-stream in 15 hours find the speed of the boat.

$$\frac{24}{x-y} + \frac{36}{x+y} = 14$$

$$\frac{25}{x-y} + \frac{45}{x+y} = 15 \quad \therefore \begin{cases} \frac{1}{x-y} = a \\ \frac{1}{x+y} = b \end{cases}$$

$$24a + 36b = 14$$

$$12a + 18b = 7 \quad \text{--- (1)}$$

$$2(5a + 9b) = (3) \times 2$$

$$10a + 18b = 6$$

$$\underline{12a + 18b = 7}$$

$$+ 2a = +1$$

$a = \frac{1}{2}$
$b = \frac{1}{18}$

$$x - y = 2$$

$$x + y = 18$$

$$\underline{2x = 20}$$

$$\boxed{x = 10} \quad \text{Ans}$$