

Chapter-19.
Problem on Boat and Stream
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1. $x+y=8$
 $x-y=2$
 $x = \frac{10}{2} = 5 \text{ km/h}$
2. $\frac{2}{x+y} = \frac{20}{60} = \frac{1}{3}, \frac{2}{x-y} = \frac{1}{4}$
 $= x+y=6 \quad x-y=4$
Speed of stream = $\frac{6-4}{2} = 1 \text{ km/h}$
3. Speed of Man = 6 km/h, speed of stream = 2km/h
 $\frac{d}{8} + \frac{d}{4} = 3 \text{ hr}$
By option = d = 8 km
St. by $\frac{8}{8} + \frac{8}{4} = 1+2 = 3 \text{ hrs}$
4. $x+y=6$
 $x-y=3$
Average speed = $\frac{2 \times 6 \times 3}{6+3} = 4 \text{ km/h}$
5. $\frac{91}{10+x} + \frac{91}{10-x} = 20$
By option $x=3$
 $\frac{91}{13} + \frac{91}{7} = 20 \text{ hrs}$
6. $x+y = 36 \times \frac{18}{5}$
 $x-y = 6$
7. $\frac{30}{x+y} = 2 \quad \frac{15}{x-y} = 5$
 $x+y = 15 \quad x-y = 3$
 $x = \frac{18}{2} \quad y = \frac{12}{2}$
 $= 9 \text{ km/h} \quad = 6 \text{ km/h}$
8. $x+y = 6 \quad \frac{30}{x+y} = 5 = x+y = 6$
 $x-y = 4 \quad \frac{20}{x-y} = 5 = x-y = 4$
 $y = \frac{6-4}{2} = 1 \text{ km/h}$
9. माना दूरी d g' तब धारा की चाल x km/h है
 $2 \times \frac{d}{x+4} = \frac{d}{4-x}$
 $8-2x = x+4$
 $3x = 4$
 $x = \frac{4}{3} = 1.3 \text{ km/h}$

10. $\frac{10}{x+y} + \frac{10}{x-y} = 55 \text{ min}$
 $\frac{10}{x+2} + \frac{10}{x-2} = \frac{11}{12} \text{ hrs}$
By option, $x = 22$
 $\frac{10}{24} + \frac{10}{20} = \frac{5}{12} + \frac{5}{10}$
 $= \frac{50}{120} + \frac{60}{120}$
 $= \frac{11}{12}$
11. time = $\frac{68}{13+4} = \frac{68}{17} = 4 \text{ hrs}$
12. $x+y = 15$
 $Y = 2.5$
 $X = 12.5$
 $x-y = 12.5 - 2.5 = 10 \text{ km/h}$
Alternate
 $= 15-2x \quad 2.5$
 $15-5 = 10 \text{ km/h}$
13. $\frac{d}{x-y} = 8 \text{ hr } 48 \text{ min} \Rightarrow d = \frac{44}{5} (x-y) \quad \dots(i)$
 $\frac{d}{x+y} = 4 \Rightarrow d = 4(x+y) \quad \dots(ii)$
11
 $\frac{44}{5} (x-y) = 4(x+y)$
 $11(x-y) = 5x+5y$
 $11x - 11y = 5x+5y$
 $6x = 16y$
 $x : y = 16 : 6$
 $x : y = 8 : 3$
14. $\frac{30}{15+y} + \frac{30}{15-y} = \frac{9}{2}$
By option $y = 5$
 $\frac{30}{20} + \frac{30}{10}$
 $\frac{3}{2} + 3 = \frac{9}{2} \text{ hrs}$
15. $\frac{11}{x+y} + \frac{5}{x-y} = 1$
By option $x = 8$
 $\frac{11}{8+3} + \frac{5}{8-3} = \frac{11}{11} + \frac{5}{5} = 2 \text{ hrs}$
16. $2(x+y) = 16$
 $x+y = 8$
 $x-y = 4$
 $x = \frac{8+4}{2} = \frac{12}{2} = 6 \text{ km/h}$
17. धारा की दिशा में नाव की चाल = $15+3$
Time = 12 min

$$\text{Distance} = 18 \times \frac{1}{2} \times \frac{1}{60} = \frac{18}{5} = 3.6 \text{ km}$$

$$18. \frac{36}{10+x} + \frac{3}{2} = \frac{36}{10-x}$$

by option $x = 2$

$$3 + \frac{3}{2} = \frac{36}{8}$$

$$\frac{9}{2} = \frac{9}{2}$$

$$19. \frac{d}{6} + \frac{d}{4} = 1$$

I

$D = 2.4$ by option

$$\frac{2.4}{6} + \frac{2.4}{6}$$

$$.4 + .6 = 1$$

II

$$4d + 16d = 24$$

$$10d = 24$$

$$D = 2.4 \text{ km}$$

$$20. 1(3+x) = \frac{3}{2}(x-3)$$

$$6 + 2x = 3x - 9$$

$$X = 15 \text{ km/h}$$

$$21. A - B = 2$$

$$A + B = \frac{1}{10} \times 60 = 6 \Rightarrow A = \frac{6+2}{2} = 4 \text{ km/h}$$

$$\text{Time to cover 5 km in still water} = \frac{5}{4}$$

$$\left(1 + \frac{1}{4}\right) \text{ hrs} = 1 \text{ hrs } 15 \text{ min}$$

$$22. A - B = \frac{3}{4} \times 60^4 \text{ km/h}$$

$$= 4 \text{ km/h}$$

$$= \frac{45}{4} = 11.25$$

3

$$A + B = \frac{42}{15} \times 60 = 6 \text{ km/h}$$

$$A = \frac{4+6}{2} = \frac{10}{2}$$

$$A = 5 \text{ km/h}$$

$$23. \text{Time} = \frac{1050}{10.5} + \frac{1050}{7.5}$$

$$10 + 14 = 24 \text{ hrs}$$

$$24. 2 \frac{d}{x+y} = \frac{d}{x-y}$$

$$2x - 2y = x + y$$

$$x = 3y$$

$$x : y = 3 : 1$$

$$25. \frac{48}{x+y=8} + \frac{48}{x-y=6} = 14$$

$$\begin{array}{l} 48 \\ \swarrow \quad \searrow \\ 8 \quad \quad 6 \end{array} \quad 6+8 = 14 \text{ sates by}$$

$$Y = \frac{8-6}{2} = 1 \text{ km/h}$$

26. (*) Solved himself