Speeds That Add or Take Away

PR11-V1 · storyboard · PR11 Speeds that add or take away. Read each picture with its sentences.

Picture 1

Two trains 60 km apart move towards each other at 20 km/h each. A bee flies between them at 30 km/h. How far does it fly?

$$20 + 20 = 40 \text{ km/h}$$ the gap closes

$$60 \div 40 = 1.5 \text{ h}$$

$$\boxed{30 \times 1.5 = 45 \text{ km}}$$

1. Two trains 60 kilometres apart move towards each other at 20 kilometres per hour each.
2. A bee flies between them at 30.
3. How far does it fly before they meet?
4. The gap closes at 20 plus 20, that is 40 kilometres per hour.
5. So they meet after 1.5 hours.
6. The bee flies the whole time: 30 times 1.5 is 45 kilometres.

Picture 2

Trap towards each other

$$\times \; 20 - 20 = 0$$

$$\checkmark \; 20 + 20 = 40$$

7. Watch for the trap: taking away when they come towards each other.
8. Towards each other, add.

Picture 3

Barry rows 5 km/h in still water on a river flowing at 3 km/h. He goes downstream at noon and must be home at 5 p.m.

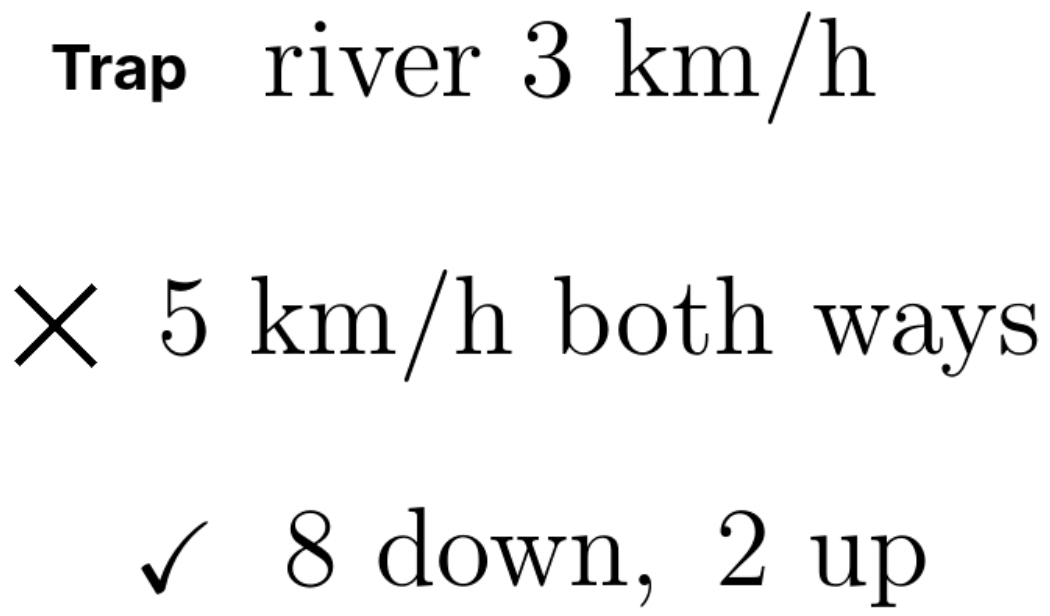
$5 + 3 = 8, \quad 5 - 3 = 2$ down and up, km/h

$d + u = 5, \quad 8d = 2u$ same distance each way

$\boxed{d = 1, \quad u = 4}$ turn at 1 p.m.

9. Barry rows 5 kilometres per hour in still water, on a river flowing at 3.
10. He goes downstream at noon and must be home at 5 pm.
11. When should he turn around?
12. He goes 8 downstream and 2 upstream.
13. The times add to 5 hours, and he covers the same distance each way.
14. So d is 1 and u is 4.
15. He turns around at 1 pm.

Picture 4



16. Watch for the second trap: forgetting the current.
17. It helps one way and hinders the other.