Shadows, Doses and Maps

PR02-V1 · storyboard · PR02 Direct proportion stories. Read each picture with its sentences.

Picture 1

Mary is 1.5 m tall and casts a 3.6 m shadow. A flagpole casts a 12.6 m shadow. How tall is it?

$$\frac{h}{12.6} = \frac{1.5}{3.6}$$ height over shadow, both sides

$$12.6 \div 3.6 = 3.5$$ or compare like quantities

$$\boxed{h = 3.5 \times 1.5 = 5.25 \text{ m}}$$

1. Mary is 1.5 metres tall and casts a 3.6 metre shadow.
2. A flagpole casts a 12.6 metre shadow.
3. How tall is it?
4. Height over shadow on both sides: h over 12.6 equals 1.5 over 3.6.
5. Or compare like quantities: the flagpole's shadow is 3.5 times Mary's.
6. So the flagpole is 3.5 times her height: 5.25 metres.

Picture 2

Trap shadow 9 m longer

$$\times\ 1.5 + 9 = 10.5 \text{ m}$$

$$\checkmark\ \ 3.5 \times 1.5 = 5.25 \text{ m}$$

7. Watch for the trap: using the difference.
8. A shadow 9 metres longer doesn't mean a pole 9 metres taller.
9. Use the factor.

Picture 3

On a map, 4 cm stand for 26 km. What distance do 11 cm stand for?

$$26 \div 4 = 6.5 \text{ km per cm}$$

$$\boxed{11 \times 6.5 = 71.5 \text{ km}}$$

10. On a map, 4 centimetres stand for 26 kilometres.
11. What distance do 11 centimetres stand for?
12. Each centimetre stands for 26 divided by 4, that is 6.5 kilometres.
13. So 11 centimetres stand for 71.5 kilometres.

Picture 4

Trap $\dfrac{\text{km}}{\text{cm}}$

$$\times \quad \frac{x}{11} = \frac{4}{26}$$

$$\checkmark \quad \frac{x}{11} = \frac{26}{4}$$

14. Watch for the second trap: the two ratios in different orders.
15. Kilometres on top on both sides.