Plan the Route

RP12-V1 · storyboard · RP12 Chain conversion factors. Read each picture with its sentences.

Picture 1

260 m² of wall?

$$\mathrm{m}^2 \to \mathrm{L} \to \mathrm{cans}$$ the route

$$260\ \mathrm{m}^2 \times 2 = 520\ \mathrm{m}^2$$ two coats

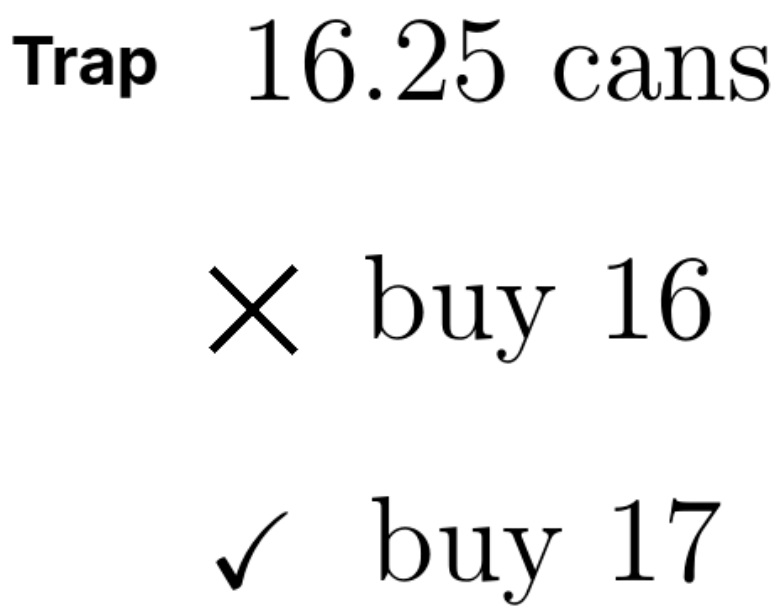
$$520\ \mathrm{m}^2 \times \frac{1\ \mathrm{L}}{8\ \mathrm{m}^2} \times \frac{1\ \mathrm{can}}{4\ \mathrm{L}} = 16.25$$

each unit cancels the one before

$$\boxed{\text{buy } 17 \text{ cans}}$$

1. One litre of paint covers 8 square metres of wall, and every wall needs two coats.
2. Paint comes in 4 litre cans.
3. How many cans are needed for 260 square metres of wall?
4. The route: square metres of wall, then litres of paint, then cans.
5. Two coats, so double the area: 520 square metres.
6. One factor for each step, so each unit cancels the one before.
7. 520 divided by 8, divided by 4, is 16.25 cans.
8. You can't buy part of a can, so round up: buy 17.
9. 16 cans would paint only 256 square metres.

Picture 2



10. Watch for the trap: rounding down when the story needs whole cans.
11. 16 cans leave some wall unpainted.

Picture 3

2 gheeps are worth 3 ghiips, 2 ghiips are worth 5 ghoops, and 3 ghoops are worth 2 ghuups. How many ghuups are 7 gheeps worth?

$$7\ \text{gheeps} \times \frac{3\ \text{ghiips}}{2\ \text{gheeps}} = 10.5\ \text{ghiips}$$ the unit you have goes underneath

$$10.5 \times \frac{5\ \text{ghoops}}{2\ \text{ghiips}} \times \frac{2\ \text{ghuups}}{3\ \text{ghoops}}$$ two more steps

$$= \boxed{17.5\ \text{ghuups}}$$

12. 2 gheeps are worth 3 ghiips, 2 ghiips are worth 5 ghoops, and 3 ghoops are worth 2 ghuups.
13. How many ghuups are 7 gheeps worth?
14. Each time, the unit you have goes underneath.
15. 7 gheeps times 3 ghiips over 2 gheeps is 10.5 ghiips.
16. Then ghiips into ghoops, and ghoops into ghuups.
17. 10.5 times 5 over 2, times 2 over 3, is 17.5 ghuups.

Picture 4

Trap $\text{gheeps} \to \text{ghiips}$

$$\times \; 7 \times \frac{2 \text{ gheeps}}{3 \text{ ghiips}}$$

$$\checkmark \; 7 \times \frac{3 \text{ ghiips}}{2 \text{ gheeps}}$$

18. Watch for the trap: one factor upside down.
19. Then the gheeps don't cancel.
20. Check that every unit is crossed out once on top and once underneath.