

Direct Proportion: Worded Problems *extend*

ANSWERS 

1



A car uses 6.4 litres of fuel for every 100 km. Fuel costs 148.9p a litre. Jo drives 345 miles. Use 5 miles = 8 km. Find the cost of the fuel, to the nearest penny.

$$345 \text{ miles} = 552 \text{ km}, 35.328 \text{ litres}$$

$$35.328 \times 1.489 = 52.603...$$

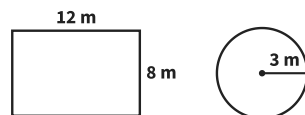
$$\pounds 52.60$$

Answer

2



The cost of fencing is directly proportional to its length. Fencing a 12 m by 8 m rectangle costs £1240. Find the cost of fencing round a circular pond of radius 3 m, to the nearest penny.



$$1240 \div 40 = \pounds 31 \text{ a metre}$$

$$31 \times 6\pi = 584.336...$$

$$\pounds 584.34$$

Answer

3



w is directly proportional to t . When t increases by 6, w increases by 15. Find w when $t = 10$.

$$k(t + 6) - kt = 15$$

$$k = 2.5, 2.5 \times 10$$

$$w = 25$$

Answer

4



Spring A stretches 3 cm for a load of 4 N. Spring B stretches 5 cm for a load of 8 N. Each extension is directly proportional to the load. The same load stretches A 4.5 cm more than B. Find the load.

$$A: 0.75 \text{ cm/N}, B: 0.625 \text{ cm/N}$$

$$0.125F = 4.5$$

$$36 \text{ N}$$

Answer

5



The mass of fertiliser needed is directly proportional to the area of a lawn. A square lawn needs 2.5 kg. Each side of the lawn is increased by 30%. How much fertiliser is needed now?

$$\text{area} \times 1.3^2 = 1.69; 2.5 \times 1.69$$

$$4.225 \text{ kg}$$

Answer

6



On a map, distances are directly proportional to real distances: 2.5 cm on the map is 1.5 km. A field has an area of 6 cm^2 on the map. Find its real area in hectares ($1 \text{ hectare} = 10\,000 \text{ m}^2$).

$$1 \text{ cm is } 600 \text{ m, so } 1 \text{ cm}^2 \text{ is } 360\,000 \text{ m}^2$$

$$6 \times 360\,000 = 2\,160\,000 \text{ m}^2$$

$$216 \text{ hectares}$$

Answer

7



The cost of apples is directly proportional to their mass. a kg of apples cost £ b . Find an expression for the cost, in pounds, of n grams of apples.

$$1 \text{ kg costs } \pounds \frac{b}{a}$$

$$n \text{ g} = \frac{n}{1000} \text{ kg}$$

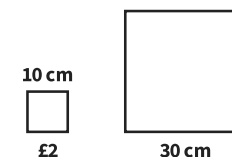
$$\pounds \frac{bn}{1000a}$$

Answer

8



The cost of a square print is directly proportional to its area. A 10 cm print costs £2. Ana says a 30 cm print costs £6. Show that she is wrong and find the correct cost.



$$\text{the area is 9 times as big, not 3 times}$$

$$2 \times 9 = 18$$

$$\pounds 18$$

Answer