

Bounds in Calculations *stretch*

ANSWERS 

1



A square has sides of 7.4 cm, to 1 decimal place.
Find the upper bound of its perimeter.

$$4 \times 7.45$$

$$29.8 \text{ cm}$$

Answer

2



A cube has edges of 5 cm, to the nearest cm.
Find the lower bound of its volume.

$$4.5^3$$

$$91.125 \text{ cm}^3$$

Answer

3



A tank holds 250 litres of water, to the nearest 10 litres. It empties at 12 litres a minute, to the nearest litre.
Find the greatest possible time it takes to empty, to 2 decimal places.

most water, slowest flow

$$255 \div 11.5$$

$$22.17 \text{ minutes}$$

Answer

4



A rectangle is 9 cm long and w cm wide, both to the nearest cm.
The upper bound of its area is 61.75 cm^2 .
Find w .

$$\text{upper bound of } w = 61.75 \div 9.5 = 6.5$$

$$6.5 - 0.5$$

$$w = 6$$

Answer

5



$p = 40$ and $q = 8$, both to the nearest whole number. Ola finds the least possible value of $\frac{p}{q}$ by working out $39.5 \div 7.5$.
Explain her mistake and find the right value, to 2 decimal places.

dividing by the lower bound of q makes it bigger

$$39.5 \div 8.5$$

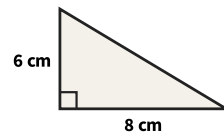
$$4.65$$

Answer

6



The two shorter sides of a right-angled triangle are 6 cm and 8 cm, to the nearest cm.
Find the upper bound of its longest side, to 2 decimal places.



$$6.5^2 + 8.5^2 = 114.5$$

$$\sqrt{114.5}$$

$$10.70 \text{ cm}$$

Answer

7



A ticket price went up from £40 to £46, both to the nearest pound.
Find the greatest possible percentage increase, to 2 decimal places.

$$(46.5 - 39.5) \div 39.5 \times 100$$

$$17.72\%$$

Answer

8



Two planks are 1.2 m and 0.85 m long, to the nearest cm. They go end to end in a gap of 2.04 m, to the nearest cm.
Will they definitely fit?
Show how you know.

$$\text{longest planks: } 1.205 + 0.855 = 2.06$$

$$\text{shortest gap: } 2.035$$

$$\text{No: } 2.06 \text{ m} > 2.035 \text{ m}$$

Reason