GCSE HIGHER · REVISION MAT 4

# Upper and lower bounds

**1** A length is 300 m to the nearest 100 m.

Write down its bounds.

**2** $a = 15$ and $b = 4$, both to the nearest whole number.

Find the lower bound of $a - b$.

**3** Is 2.95 a possible value of a number that is 3.0 to 1 d.p.?

Explain.

**4** A triangle has base 10 cm and height 6 cm, both to the nearest cm.

Find the smallest possible area.

**5** $a = 9$ to the nearest whole number and $b = 2.0$ to 1 d.p.

Show that the upper bound of $\frac{a}{b}$ is 4.87, to 2 d.p.

**6** Water flows at 12 litres per minute (nearest litre).

A tank holds 500 litres (nearest 10 litres).

Find the longest possible time to fill it.

**7** Explain why the lower bound of $a \div b$ uses the lower bound of $a$ and the upper bound of $b$.

**8** A rectangle has area 50 cm² (nearest cm²) and width 4.0 cm (1 d.p.).

Find its length to a suitable degree of accuracy.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

# Upper and lower bounds

**1** **250 m and 350 m**

**2** $14.5 - 4.5$

**10**

**3** $2.95 \leq x < 3.05$

**Yes: 2.95 is the lower bound and is included.**

**4** $\frac{1}{2} \times 9.5 \times 5.5$

**26.125 cm²**

**5** $\frac{9.5}{1.95}$

**= 4.871...**

**6** $\frac{505}{11.5}$

**43.9 minutes**

**7** **Dividing the smallest *a* by the largest *b* gives the smallest result.**

**8** UB: $\frac{50.5}{3.95} = 12.78$

LB: $\frac{49.5}{4.05} = 12.22$

**They only agree to 1 s.f.: 10 cm**