GCSE HIGHER · REVISION MAT 1

Upper and lower bounds

1 A length is 5.3 cm to 1 decimal place.

Write down its lower and upper bounds.

2 $x = 40$ to the nearest 10.

$y = 6$ to the nearest whole number.

Find the upper bound of $x + y$.

3 Explain why the upper bound of $a - b$ uses the upper bound of a and the lower bound of b.

4 A rectangle is 8 cm by 5 cm, both to the nearest cm.

Find the largest possible area.

5 A runner covers 100 m (nearest m) in 12.5 s (1 d.p.).

Show that the upper bound of the speed is about 8.07 m/s.

6 A mass is 250 g to the nearest 10 g.

Its volume is 40 cm^3 to the nearest cm^3.

Find the lower bound of its density.

7 $a = 7.2$ to 1 d.p.

Show that the upper bound of a^2 is 52.5625.

8 $a = 23.4$ and $b = 4.6$, both to 1 d.p.

Find $k = \frac{a}{b}$ to a suitable degree of accuracy.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 1

Upper and lower bounds

1 **5.25 cm and 5.35 cm**

2 45 + 6.5

51.5

3 **Subtracting the smallest possible *b* from the largest possible *a* gives the biggest difference.**

4 8.5 × 5.5

46.75 cm²

5 $\frac{100.5}{12.45}$

= 8.072... m/s

6 $\frac{245}{40.5}$

6.05 g/cm³

7 Upper bound of *a* is 7.25

$7.25^2 = 52.5625$

8 UB: $\frac{23.45}{4.55} = 5.15...$

LB: $\frac{23.35}{4.65} = 5.02...$

Both round to 5, so $k = 5$ (1 s.f.)