

End of Unit Test

Name: Answers

Calculations and Accuracy - HIGHER



Q1. Use approximations to estimate the value of $\frac{20.02 \times 0.49}{1.99}$

$20.02 \approx 20, 0.49 \approx 0.5, 1.99 \approx 2$

$\frac{20 \times 0.5}{2} = \frac{10}{2} = 5$

Answer 5

(Total 3 marks)

Q2. Use approximations to estimate the value of $\frac{3.92^2}{0.48}$

$3.92 \approx 4, 0.48 \approx 0.5$

$\frac{4^2}{0.5} = \frac{16}{0.5} = 32$

Answer 32

(Total 2 marks)

Q3. $x = 400$ to 1 significant figure.
 $y = 25$ to 2 significant figures.

Work out the maximum **integer** value of $\frac{x}{y}$

Upper bound = $UB \div LB$
 $= 450 \div 24.5$
 $= 18.3673469...$

Answer 18

(Total 3 marks)

- Q4.** Luke has a rectangular garden. The length is 40 m. The width is 25 m. Both measurements are given to the nearest metre.
Mira also has a garden. The area is 970 m² to the nearest 10 m². Mira thinks her garden has a bigger area.
Is she correct? Tick a box. You **must** show your working.

Correct Incorrect Cannot tell

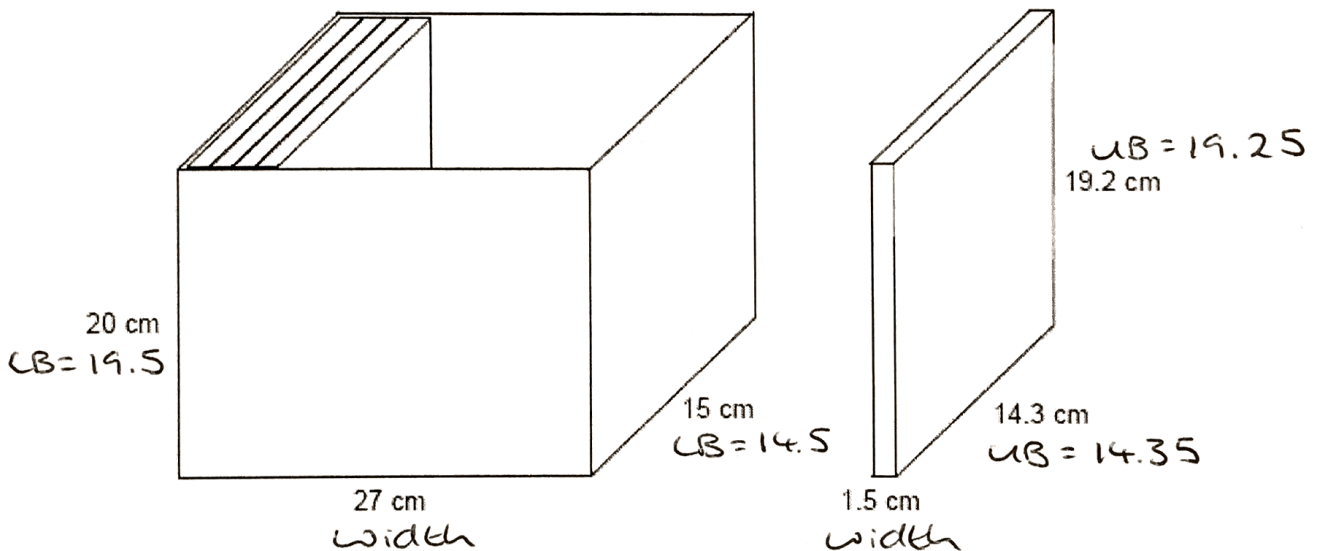
..... Luke : $39.5 \leq L < 40.5$, $24.5 \leq W < 25.5$,
..... $967.75 \text{ m}^2 \leq A < 1032.75 \text{ m}^2$

..... Mira : $965 \text{ m}^2 \leq A < 975 \text{ m}^2$

..... Too much overlap to tell.

(Total 3 marks)

- Q5.** A box is a cuboid with dimensions 27 cm by 15 cm by 20 cm. These dimensions are to the nearest **centimetre**. DVD cases are cuboids with dimensions 1.5 cm by 14.3 cm by 19.2 cm. These dimensions are to the nearest **millimetre**.



Show that 17 DVD cases, stacked as shown, will definitely fit in the box.

..... DVD box : $26.5 \leq W < 27.5$

..... DVD case : $1.45 \text{ cm} \leq w < 1.55 \text{ cm}$

..... $26.5 \div 1.55 = 17.096 \approx 17$

..... 17 DVDs will definitely fit.

(Total 4 marks)

Q6. The maximum safe load of a bridge is 1500 kg to the nearest 10 kg. An average soldier is 75 kg to the nearest kilogram. Work out an estimate for the maximum number of soldiers that can **safely** cross the bridge at the same time.

$$1495 \text{ kg} \leq \text{bridge} < 1505 \text{ kg}$$

$$74.5 \text{ kg} \leq \text{soldier} < 75.5 \text{ kg}$$

$$1495 \div 75.5 = 19.80132\dots$$

.....
.....
.....
.....
.....

Answer ... 19 soldiers

(Total 5 marks)
(Total for test = 20 marks)