

## Estimating

### Starter

1. (Review of last lesson)

Round: (a) 56.607 to 3 s.f. (b) 789312 to 2 s.f. (c) 3095.83 to 3 s.f.

2. In each question (i)-(iv), you are given different ways to estimate the calculation. Decide with a partner which one would be the best way to estimate the answer. Give a reason for your answer.

(i)  $203 \div 5.7$

(a)  $200 \div 5$

(b)  $200 \div 6$

(ii)  $8.6 \div 0.139$

(a)  $9 \div 0$

(b)  $9 \div 0.1$

(c)  $8.6 \div 0.1$

(iii)  $1.5 \times 3.5$

(a)  $2 \times 4$

(b)  $1 \times 3$

(c)  $2 \times 3$

(d)  $1 \times 4$

(iv)  $83.2 \div 8.5$

(a)  $81 \div 9$

(b)  $80 \div 8$

(c)  $85 \div 10$

2. The shortest street in the UK, Ebenezer Place in Wick, is 2.06 m long. The Trans-Canada Highway, one of the world's longest roads, is approximately 7821 km in length. Approximately, how many times longer than the street is the highway?

A 4, 000,000

B 400,000

C 40,000

D 4,000

E 400

### Notes

Guidelines for estimating:

- Look for nice numbers that allow you to do the calculation mentally and quickly.
- A good guide is to round all numbers to 1 significant figure.
- When multiplying or dividing never approximate a number to zero.
- When multiplying numbers, try to round one up and one down (lower one up, higher one down).
- When dividing numbers, try to round both numbers up or both numbers down.
- Look for number that will cancel.

### Notation

Use the approximation  $\approx$  symbol when estimating.

What is wrong with this calculation:  $6.7 \times 8.2 \approx 7 \times 8 \approx 56$ ?

The second  $\approx$  should be an = sign because  $7 \times 8$  is 56.

**E.g. 1** Write down the calculation that is the best way to estimate these calculations. Give the estimate as well.

(a)  $8.98 \times 24.6$

(b)  $6.35^2$

(c) 
$$\frac{198 \times 71.6}{11.3 \times 0.83}$$

(d)  $0.09 \times 59.6$

**Working:** (a)  $8.98 \times 24.6 \approx 10 \times 25 = 250$   
 $8.98 \times 24.6 \approx 9 \times 25 = 225$  might be ok but  $9 \times 25$  is harder than  $10 \times 25$

**E.g. 2** A nautical mile is approximately 1.853 km. Estimate how many km are in 214 nautical miles.

**E.g. 3** An ounce is about 28.35 grams. Estimate the number of ounces in 614 grams.

**Video:** [Estimating](#)

[Solutions to Starter and E.g.s](#)

**Exercise**

p75 Ex 4.6 Qu 1-10

**Summary**

Estimations must be done mentally.

Round numbers to 1 significant figure.

[Textbook answers \(only available during a lockdown\)](#)