

fs4u

Estimation

‘How To’ Booklet 34

Estimation

A quick estimate can help you to spot mistakes in your calculations. Round off numbers to make them easier, and then use them to get an approximate answer. Compare this estimate with your calculator answer. Make sure they are about the same size.

Example - Susan used a calculator to work out.

$$\frac{37.5 \times 51.72}{12.5 \times 9.6} = 161.625$$

Without using your calculator show why her answer is not sensible.

Answer

Round each number as shown.

$$\begin{array}{rcl} 37.5 & = & 40 \\ 51.72 & = & 50 \\ 12.5 & = & 10 \\ 9.6 & = & 10 \end{array}$$

This calculation is roughly

$$\frac{40 \times 50}{10 \times 10} = \frac{2000}{100} = 20$$

Susan's answer is far too big, so it is not sensible. The actual answer is 16.1625.

Activity 1

In these calculations round each number to one significant figure and then say which answers are obviously wrong. Do not use a calculator.

An estimate of the answer to a calculation is often all you need in real-life situations. Rounding off all numbers to one significant figure usually gives a calculation you can do in your head.

a	$8.67 \times 51.9 = 44.9973$
b	$33.29 \times 3.2 = 106.528$
c	$521 \div 97.6 = 0.5338$
d	$7.5 \times 4.2 \times 0.95 = 29.526$
e	$22.6 \times 5.3^2 = 6348.34$
f	$\frac{42.6 \times 38.6}{27.6 \times 12.13} = 413.88$
g	$\frac{5.125 \times 11.48}{8.712} = 6.753$
h	$\frac{9.616 \times 12.16}{17.71} = 66.025$

Activity 2

1	Sara has £3.50 to spend on balloons for the party. One balloon costs 24p. Estimate how many balloons she can buy.
2	Peaches cost 18 pence each. Estimate how many you can buy for £2.
3	A carton holds 12 bottles of grapefruit juice. There are 827 cartons in a warehouse. Approximately how many bottles are in the warehouse?
4	Rachel and Ben sold 146 raffle tickets every day for 16 days. Estimate the number of tickets they sold.
5	Pete travels, on average, 192 miles each working day. Estimate the distance he travels in 28 working days.