

## 3.3 Rounding

When you are asked to **round** a number you will be told how accurate your answer should be. This is called the **degree of accuracy**.

Whatever the degree of accuracy, the method is always the same.

- Look at the digit in the position of the required degree of accuracy. What you do to this digit depends on the value of the digit to the right of it.
- If the value of the digit to its right is 5 or more, increase the original digit by 1. If the value of the digit to the right is less than 5, leave the original digit as it is.

You may be asked to round a number to the nearest 10, 100, 1000 or even one million. You may also be asked to round a decimal number to the nearest whole number, or to one or two decimal places (1 d.p. or 2 d.p.).

### Worked example 3.3

Round each number to the given degree of accuracy.

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| a 376 to the nearest 100            | b 23 252 to the nearest 1000        |
| c 26 580 000 to the nearest million | d 12.67 to the nearest whole number |
| e 2.706 to 1 d.p.                   | f 0.4692 to 2 d.p.                  |

a  $376 = 400$  (nearest 100)

376 to the nearest 100 will be 300 or 400. The digit in the hundreds column is 3. The number to the right of the 3 is 7. 7 is more than 5 so round the 3 up to 4.

b  $23\ 252 = 23\ 000$  (nearest 1000)

The answer will be 23 000 or 24 000. The digit in the thousands column is 3. The number to the right of the 3 is 2. 2 is less than 5, so the 3 stays the same.

c  $26\ 580\ 000 = 27\ 000\ 000$  (nearest million)

The digit in the millions column is 6. The number to the right of the 6 is 5, so round the 6 up to 7.

d  $12.67 = 13$  (nearest whole number)

The digit in the units column is 2. The number to the right is 6, so round the 2 round up to 3.

e  $2.706 = 2.7$  (1 d.p.)

The number in the tenths column is 7. The number to the right is 0, so the 7 stays the same.

f  $0.4692 = 0.47$  (2 d.p.)

The number in the hundredths column is 6. The number to the right is 9, so round the 6 up to 7.

### Exercise 3.3

1 Round each number to the given degree of accuracy.

a 42 (nearest 10)

b 157 (nearest 10)

c 232 (nearest 100)

d 476 (nearest 100)

e 4380 (nearest 1000)

f 12 575 (nearest 1000)

g 32 479 (nearest 10 000)

h 125 450 (nearest 10 000)

i 452 985 (nearest 100 000)

j 1 427 546 (nearest 100 000)

k 7 856 920 (nearest million)

l 25 499 500 (nearest million)

2 Round each number to the given degree of accuracy.

a 75.2 (nearest whole number)

b 9.55 (nearest whole number)

c 19.924 (nearest whole number)

d 11.45 (1 d.p.)

e 0.929 (1 d.p.)

f 125.881 (1 d.p.)

g 9.453 (2 d.p.)

h 12.915 (2 d.p.)

i 0.0759 (2 d.p.)

j 146.798 (2 d.p.)