

- 7 A kilowatt hour is the accepted commercial unit for selling energy. How many joules of energy are there in 60 kWh?
- 9 A joule is defined as the energy required to exert a force of 1 newton for a distance of 1 metre. Write down the combination of SI units which describe a joule.

$$1 \text{ newton} = 1 \text{ kilogram} \times 1 \text{ metre per second per second} = 1 \text{ kg m s}^{-2}$$

Quantity	Name	Symbol
Force	newton	N
Pressure	pascal	Pa
Energy	joule	J
Power	watt	W
Frequency	hertz	Hz

Quantity	Name	Symbol	SI equivalent
Time	minute	min	60 s
	hour	h	3600 s
Mass	tonne	t	1000 kg
Capacity	litre	L	0.001 m ³
Area	hectare	ha	10 000 m ²
Angle	degree	°	$\frac{\pi}{180}$ rad
Temperature	degree Celsius	°C	$K - 273.15$
Pressure	millibar	mb	100 Pa
Distance at sea	Nautical mile	Nm	1.852 km
Speed at sea	Knot	kn	1.852 km h ⁻¹
Energy	Kilowatt hour	kWh	3.6 MJ

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7 216 000 000 J

9 $1 \text{ kg m}^2 \text{ s}^{-2}$

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Measurement

- E** Rounding numbers
- F** Rates

Syllabus reference: 1.2, 1.3, 1.4, 1.5

E

ROUNDING NUMBERS

RULES FOR ROUNDING OFF

- If the digit after the one being rounded off is **less than 5** (0, 1, 2, 3, or 4) we round **down**.
- If the digit after the one being rounded off is **5 or more** (5, 6, 7, 8, 9) we round **up**.

Round off to the accuracy given:

\$15,000
↓

a The cost of an overseas holiday is \$15387. {to the nearest \$1000}

b The mass of a horse is 468 kg. {to the nearest ten kg} 470

c A weekly wage of €610. {to the nearest €100} €600

d The flight has length 5735 km. {to the nearest 100 km} 5700

e The annual amount of water used in a household was 117489 litres. {to the nearest kilolitre}

117000 k

f The monthly income for a business was £28817. {to the nearest £1000}

£29,000

Find, giving your answers correct to 2 decimal places where necessary:

a $(16.8 + 12.4) \times 17.1$

499.32

b $16.8 + 12.4 \times 17.1$

228.84

c $127 \div 9 - 5$

9.11



...

ROUNDING OFF TO SIGNIFICANT FIGURES

To round off to n significant figures, we look at the $(n + 1)$ th digit.

- If it is 0, 1, 2, 3 or 4 we do not change the n th digit.
- If it is 5, 6, 7, 8 or 9 we increase the n th digit by 1.

We delete all digits after the n th digit, replacing by 0s if necessary.

Write correct to 3 significant figures:

a 43 620

~~43600~~

43600

b 10 076

~~10760~~

10100

c $0.\bar{6}$

0.667

d 0.036 821

~~0.037~~

0.0368

e 0.318 6

~~0.3190~~

0.319

f 0.719 6

~~0.72~~

0.720

g $0.\bar{63}$

~~0.636~~

—

h 0.063 71

~~0.0637~~

~~18.~~
18.
19.0

i 18.997

j 256 800

~~257,000~~

Any time you round in 1.B., you will round to **THREE** significant figures (3 sig figs).
(unless the problem specifies where you should round - follow directions)

If you are able to give an exact answer, give an exact answer and do not round at all.

Any time you round in 1.B., you will round to **THREE** significant figures (3 sig figs).

(unless the problem specifies where you should round - follow directions)