



Using a calculator

- Using a calculator for more complex calculations
- Writing answers in a format consistent with the question
- Converting time given in decimal format into hours, minutes and seconds

Keywords

You should know

explanation 1a

explanation 1b

1 Work out each answer using a calculator.

Check your answer by doing the calculation in your head.

a $\frac{6+4}{2}$

b $\frac{6}{2} + 4$

c $6 + \frac{4}{2}$

d $\frac{20-8}{4}$

e $\frac{20}{4} - 8$

f $20 - \frac{8}{4}$

g $\frac{5^2+15}{10}$

h $\frac{5^2}{10} + 15$

i $5^2 + \frac{15}{10}$

j $\frac{(12-8)^2}{2}$

k $\frac{12^2-8^2}{2}$

l $\frac{12^2}{2} - \frac{8^2}{2}$

2 Use a calculator to work these out.

a $\frac{3.6+2.1^2}{6-5.1}$

b $\frac{22^2-3.8^2}{17+8}$

c $\frac{48-(3.7+9.8)^2}{5}$

d $4.1 \times (8.6-2.5)^2$

e $(3.2 \times 6.8)^2 - (8.1 \times 2.1)^2$

f $\left(\frac{3.8}{19}\right)^2 - 3.6$

g $\frac{8.5}{10 \times 3.4} + 6.2$

h $\sqrt{\frac{4.5 \times 8}{4}}$

i $\sqrt{\frac{28 \times 3}{4.2 \times 5}} + 9$

3 The formula for converting degrees Celsius ($^{\circ}\text{C}$) to degrees

Fahrenheit ($^{\circ}\text{F}$) is $F = \frac{9}{5}C + 32$.

a Use a calculator to convert these temperatures from $^{\circ}\text{C}$ to $^{\circ}\text{F}$.

i 30°C

ii 18°C

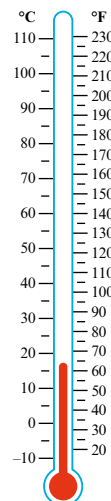
iii 0°C

iv -5°C

v -40°C

b In order to estimate each answer, the formula can be rewritten as $F \approx 2C + 30$.

Without a calculator, estimate the answers to part **a** using this formula.



- 4** The formula for converting degrees Fahrenheit ($^{\circ}\text{F}$) to degrees Celsius ($^{\circ}\text{C}$) is $C = \frac{5}{9}(F - 32)$.

a Use a calculator to convert these temperatures from $^{\circ}\text{F}$ to $^{\circ}\text{C}$.
Give your answers to 1 d.p.

i 100°F **ii** 70°F **iii** 0°F **iv** 32°F **v** -40°F

b In order to estimate each answer, the formula can be rewritten as $C \approx \frac{1}{2}F - 15$.

Without a calculator, estimate the answers to part **a** using this formula.

explanation 2

Use the following information to answer questions **5–8**.

These were the approximate exchange rates between pounds (£) and some other currencies in December 2007.

£1 = 1.41 euros

£1 = 228.49 Japanese yen

£1 = 2.06 US dollars

£1 = 15.21 Chinese yuan



- 5** Assuming there are no additional bank charges, calculate how many pounds would be exchanged for these amounts.

- | | |
|---|---------------------------|
| a 1000 euros | b 500 US dollars |
| c 10 000 Japanese yen | d 600 Chinese yuan |
| e 400 euros and 8000 Japanese yen | |
| f 450 US dollars, 320 Chinese yuan and 6500 Japanese yen | |

- 6 a** How many US dollars would be exchanged for 500 euros?
b How many Chinese yuan would be exchanged for 650 Japanese yen?
c How many euros would be exchanged for 100 Japanese yen?
d How many US dollars would be exchanged for 10.20 Chinese yuan?

- 7 a** A family of four pay \$67 for a meal whilst on holiday in the USA. Calculate the cost of the meal in pounds.
- b** A couple pay 650 yuan for an extra tour whilst visiting China. Calculate the price of the tour in pounds.
- c** An American on holiday in Europe pays 86 euros for a train journey. Calculate the cost of the train in US dollars.
- 8 a** Work out the new exchange rate for each of the currencies if the value of pounds increased by 15% .
- b** Work out the new exchange rate for each of the currencies if the value of pounds decreased by 7%.

explanation 3

- 9** Change each of these parts of a day into hours.
- a** 0.5 of a day **b** 0.75 of a day **c** 0.625 of a day
- 10** Change each of these parts of an hour into minutes.
- a** 0.2 of an hour **b** 0.75 of an hour **c** 0.85 of an hour
- d** 0.66... of an hour **e** 0.35 of an hour **f** 0.95 of an hour
- 11** Change each of these times into hours and minutes.
- a** 3.5 hours **b** 4.75 hours **c** 1.8 hours
- d** 1.1 hours **e** 7.65 hours **f** 12.35 hours
- 12** A pupil spends $\frac{1}{3}$ of the day sleeping and $\frac{1}{10}$ of the day eating.
- a** Calculate the total amount of time he spends either eating or sleeping. Give your answer in hours and minutes.
- b** He spends $\frac{1}{4}$ of the remaining time playing with friends. How many hours and minutes is this?

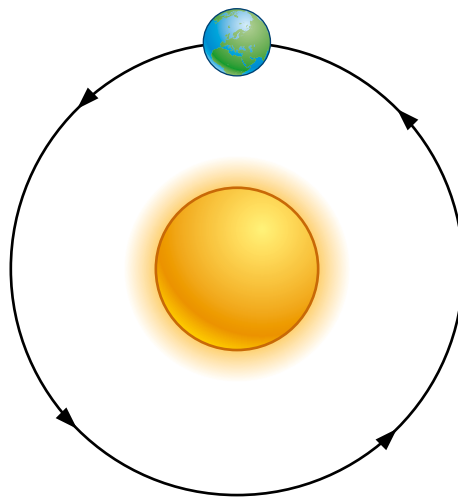
- 13** Over a period of 5 hours in an evening, Katya spends $\frac{1}{4}$ of the time doing her homework, $\frac{1}{3}$ of her time watching television, $\frac{1}{8}$ of her time talking to friends on the phone and the rest of the time doing other things.

Calculate the following.

- a** The amount of time in hours and minutes spent doing homework.
 - b** The amount of time in hours and minutes spent watching television.
 - c** The amount of time in hours and minutes spent talking to friends.
 - d** The fraction of her evening spent doing other things.
 - e** The time in hours and minutes spent doing other things.
- 14** The earth takes approximately 365 days (1 year) to orbit the sun. It therefore takes 365 days to do a full 360° rotation around the sun.

Calculate the number of days, hours and minutes the Earth takes to rotate the following number of degrees around the sun.

- a** 180° **b** 90° **c** 10°
- d** 1° **e** 17°



- 15** The Earth takes 24 hours (1 day) to rotate 360° on its axis. Calculate the number of hours and minutes the Earth takes to rotate the following number of degrees on its axis.

- a** 60° **b** 45° **c** 20° **d** 1° **e** 19°