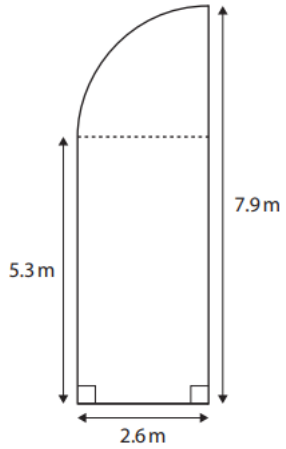
Functional Skills Maths | Level 2
Calculator Long Question Scaffolded Paper 1

1.

Jessie needs to cover a wooden floor with varnish.

The floor is in the shape of a rectangle and a quarter circle.



A tin of varnish

- covers 6 m^2
- costs £5.41

Jessie has £25 to buy the tins of varnish she needs to cover this wooden floor.

Is £25 enough to buy all the tins of varnish Jessie needs?

(6)

a. Work out the area of the rectangle.

b. What is the formula for finding the area of a circle?

c. Imagine the top part of the wooden floor is a full circle. Work out the area of the circle.

d. Work out the area of the actual quarter circle shape.

e. Work out the total area of the whole shape.

f. Work out how many tins of varnish are needed.

g. How much would the tins cost in total?

h. Is £25 enough?

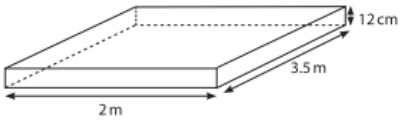
2.

Nicola wants to put a flat roof on a bike store.

The roof will be

- made of concrete
- in the shape of a cuboid as shown.

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$



Nicola wants to put a metal strip along 2 of the longest edges of the roof.

She knows

- the density of concrete is 2300 kg per m^3
- the mass of 1 metre of metal strip is 5 kg.

Work out the total mass of the concrete and the strips she wants.

(5)

a. Find the total mass of both metal strips.

b. Convert all the roof measurements to metres (where needed).

c. Work out the volume of the concrete roof in m^3.

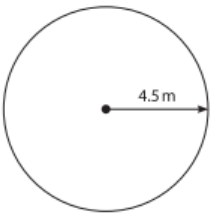
d. Rearrange the density formula to make the mass the subject.

e. Use this formula to find the mass of the concrete.

f. Add the mass of the metal strips to the mass of the concrete to find the total mass of the roof.

3.

Joanna is a landscape gardener.
She has to fill a circular space with flowers.



The radius of the circular space is 4.5 metres.

Joanna will plant 40 flowers per square metre of space.

She will plant 4 times as many red flowers as white flowers.

How many red flowers will she plant?

(5)

a. What is the formula for the area of a circle?

b. Using the formula and pi to 2 d.p. work out the area of the circle.

c. Work out how many flowers would fill the space.

d. Work out the share of red and white flowers as a ratio.

e. Work out the total number of parts in the ratio.

f. Work out the number of white flowers.

g. Work out the total number of red flowers.

4.

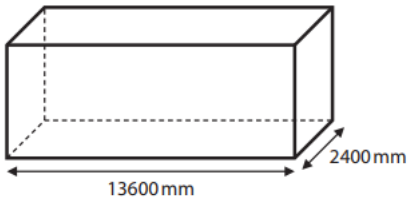
A team of workers deliver identical fridges.

The team will use the average time to fully load an old lorry to predict the time to fully load a new lorry.

The table shows the times it took to fully load the old lorry with 24 fridges.

Time (mins)	52	60	55	59	54	63	56

The diagram shows the space available for fridges in the new lorry.
The space is in the shape of a cuboid.



Each fridge needs a rectangular floor space 1000 mm by 800 mm.

The team do not stack fridges.

They think it will take less than 90 minutes to fully load the new lorry.

Are they correct?

(6)

a. Find the average time to fully load 24 fridges.

b. Work out the average time to load one fridge.

c. Using the dimensions of a fridge and the new lorry, how many fridges will fit along the length of the lorry?

d. Using the dimensions of a fridge and the new lorry, how many fridges will fit along the width of the lorry?

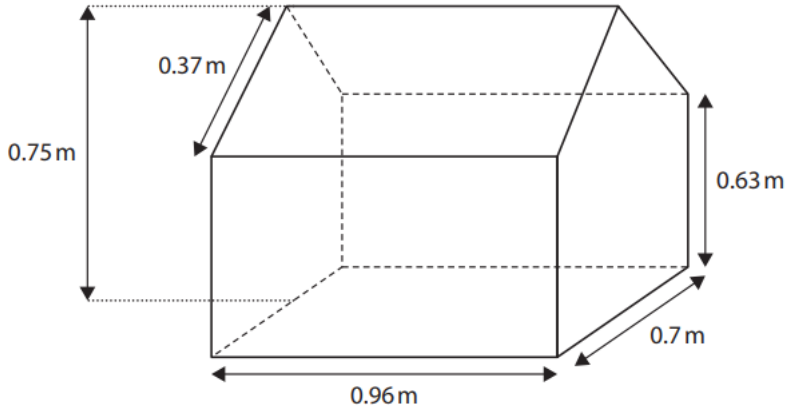
e. Work out how many fridges fit onto the new lorry in total.

f. Using the time to fit one fridge, work out the time it would take to load the total number of fridges that fit in the new lorry.

g. Are they correct? Show why you think this.

5.

Here is a diagram of a dolls house Jayden has made.



Two faces are each in the shape of a pentagon with a vertical line of symmetry.
All other faces are rectangular.
The base angles of each pentagon are right angles.

Jayden wants to cover all the surfaces of the dolls house with paint.
He knows the total area of the base and the roof is $1.3824\,m^2$

Jayden has enough paint to cover $3.5\,m^2$

Has Jayden got enough paint to cover all the surfaces of the dolls house?
Show why you think this.

(5)

a. Work out the area of one long rectangular side.

b. Double this to find the area of both long rectangular sides.

c. Divide the pentagonal sides into a rectangle and a triangle.

d. Work out the area of the rectangle.

e. Work out the missing height of the triangle.

f. Work out the area of the triangle.

g. Work out the area of the pentagonal side.

h. Double this to find the area of both pentagonal sides.

i. Find the total surface area including the base and roof.

j. Does Jayden have enough paint? Show why you think this.