BRIDGING WORK FOR CORE MATHS

Core maths has been designed to maintain and develop real- life skills. What you study is not purely theoretical or abstract; it can be applied on a day-to-day basis in work, study or life and includes a financial maths element. It will also help with other A-level subjects – for example science, geography, business studies, psychology and economics.

Although focusing on more applied uses of mathematics is it important that you have a good foundation of mathematical knowledge. It is therefore important that you use the time between the end of school and the start of the course to revise/relearn/learn the topics below.

Links have been provided to worksheets and **clicking the videos** will take you to the correct YouTube page, if these don't work then all documents and videos have been taken from Corbett Maths just search for the topics.
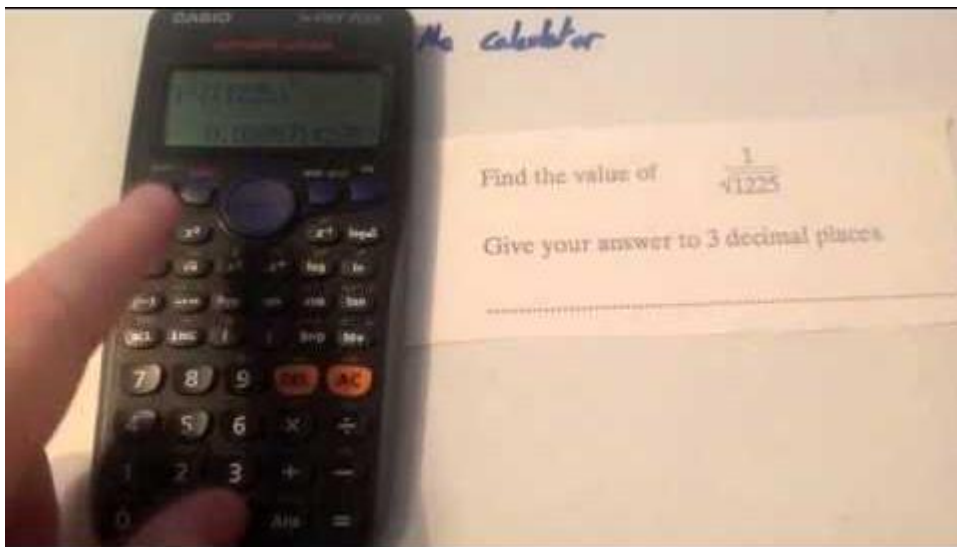
Many of these topics you will be familiar with, however you must make sure that this is the case before moving on. Use these hyperlinks to help navigate the page.

The final pages are the 1st transition piece, this is the only piece of work which is compulsory and must be completed by the start of the year.
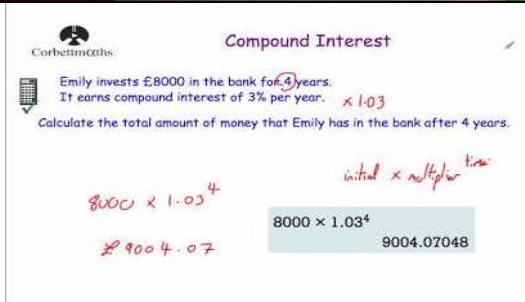
Using a Calculator

Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2013/02/use-of-a-calculator-pdf1.pdf

Answers

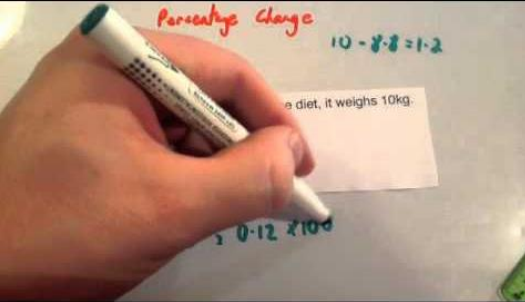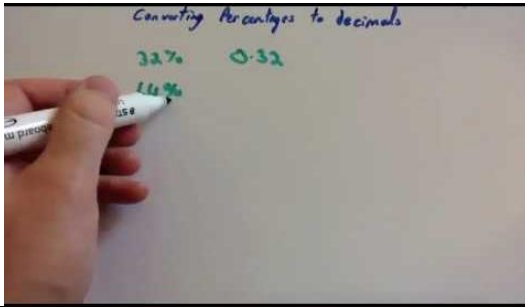https://corbettmaths.com/2017/06/07/use-of-a-calculator-answer/
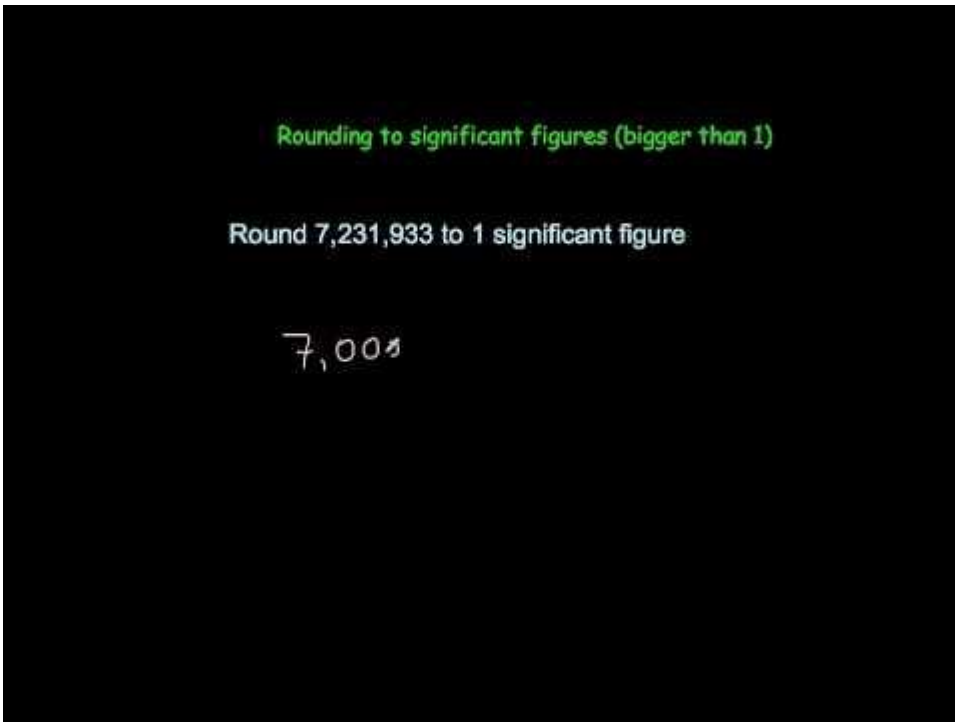
Percentages

Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2013/02/percentages-to-decimals-pdf2.pdf

https://corbettmaths.com/wp-content/uploads/2018/12/Decimals-to-Percentages-worksheet.pdf

https://corbettmaths.com/2019/09/26/percentage-change-textbook-exercise/

https://corbettmaths.com/wp-content/uploads/2013/02/multipliers-pdf.pdf

https://corbettmaths.com/wp-content/uploads/2019/09/Compound-Interest-pdf-1.pdf

https://corbettmaths.com/2019/09/27/reverse-percentages-2/

Answers

https://corbettmaths.com/2017/06/30/percentages-to-decimals-answers/

https://corbettmaths.com/wp-content/uploads/2018/12/Decimals-to-Percentages-pdf.pdf

https://corbettmaths.com/2018/10/09/percentage-change-answers/

https://corbettmaths.com/2016/12/30/multipliers-answers/

https://corbettmaths.com/2017/01/02/compound-interest-answers/

https://corbettmaths.com/2019/10/10/reverse-percentages-textbook-answers/

Rounding

Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2013/02/rounding-significant-figures-pdf.pdf

Answers
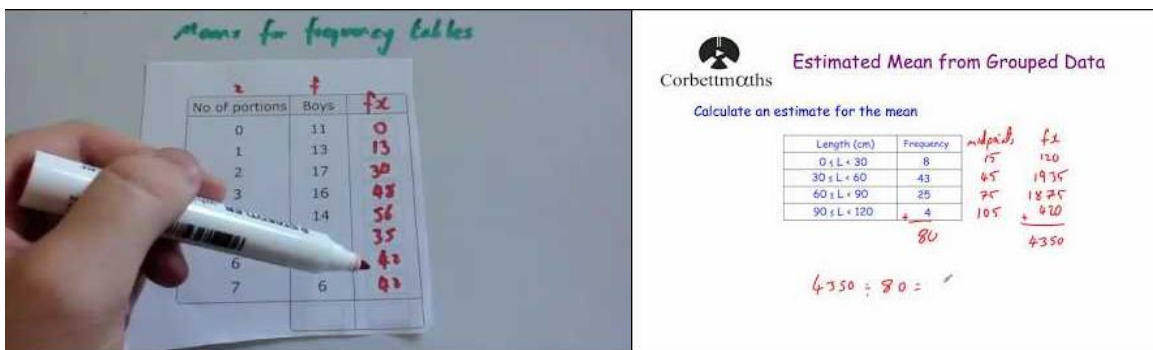
https://corbettmaths.com/2017/07/01/rounding-significant-figures-answers/

Mean from a tables

Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2013/02/mean-from-a-frequency-table-pdf3.pdf

https://corbettmaths.com/wp-content/uploads/2018/09/Estimated-Mean-pdf.pdf

Answers

https://corbettmaths.com/2016/09/11/mean-from-frequency-tables-answers/

https://corbettmaths.com/2018/09/20/estimated-mean-answers/

Types of Data

Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2019/01/Qualitative-Quantitative-Data-pdf.pdf

https://corbettmaths.com/wp-content/uploads/2019/01/Continuous-Discrete-pdf.pdf

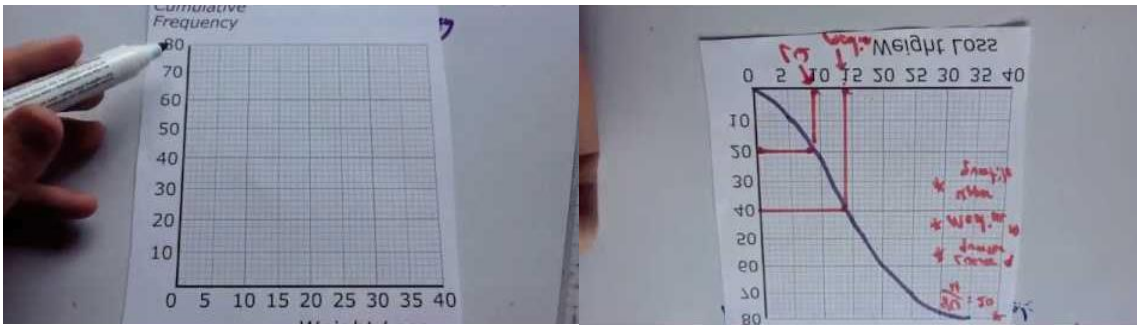https://corbettmaths.com/wp-content/uploads/2019/01/Primary-Secondary-Data-pdf.pdf

Answers

https://corbettmaths.com/wp-content/uploads/2019/01/Qualitative-Quantitative-Answers.pdf

https://corbettmaths.com/wp-content/uploads/2019/01/Continuous-Discrete-Answers.pdf#

https://corbettmaths.com/wp-content/uploads/2019/01/Primary-Secondary-Data-answers-pdf.pdf

Cumulative Frequency
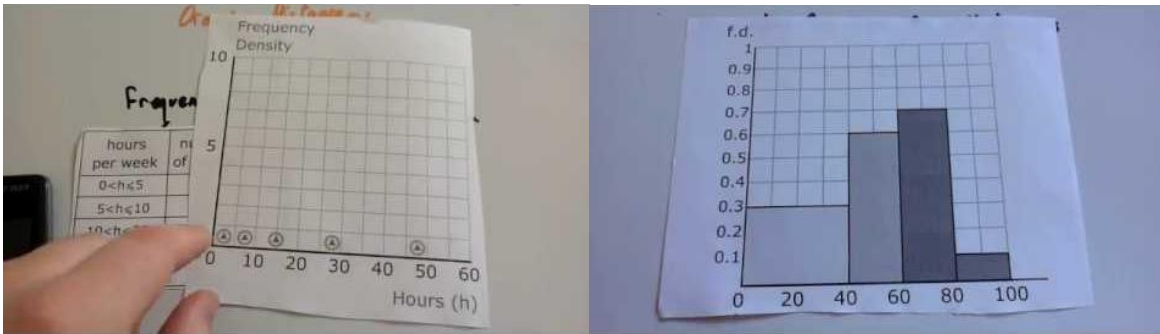
Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2019/02/Cumulative-Frequency.pdf

Answers

https://corbettmaths.com/wp-content/uploads/2019/02/Cumulative-frequency-graphs-1.pdf

Histograms

Video Links

Worksheet

https://corbettmaths.com/wp-content/uploads/2019/04/Histograms.pdf

Answers

https://corbettmaths.com/wp-content/uploads/2019/04/Histograms-answers.pdf

Unit Conversion

Video Links

Metric Units: Distances

Metric Units: Mass

Metric Units: Capacity

Worksheets

https://corbettmaths.com/wp-content/uploads/2013/02/metric-units-pdf1.pdf

Answers

https://corbettmaths.com/wp-content/uploads/2015/03/units-answers.pdf

Compound Units (Speed, Density and Pressure)

Video Links

Worksheets

https://corbettmaths.com/wp-content/uploads/2018/09/Speed-Distance-Time-pdf.pdf

https://corbettmaths.com/wp-content/uploads/2013/02/density-pdf2.pdf

https://corbettmaths.com/wp-content/uploads/2013/02/pressure-pdf1.pdf

Answers

https://corbettmaths.com/wp-content/uploads/2018/09/Speed-Answers.pdf

https://corbettmaths.com/wp-content/uploads/2019/08/Density.pdf

https://corbettmaths.com/wp-content/uploads/2019/08/Pressure.pdf

Gradients and Straight-Line Graphs

Video Links

Worksheets

https://corbettmaths.com/wp-content/uploads/2018/12/Gradient-pdf.pdf

https://corbettmaths.com/wp-content/uploads/2018/12/Equation-of-a-Line-pdf.pdf

Answers

https://corbettmaths.com/wp-content/uploads/2018/12/Gradient-Answers.pdf

https://corbettmaths.com/wp-content/uploads/2018/12/Equation-of-a-Line-Answers.pdf
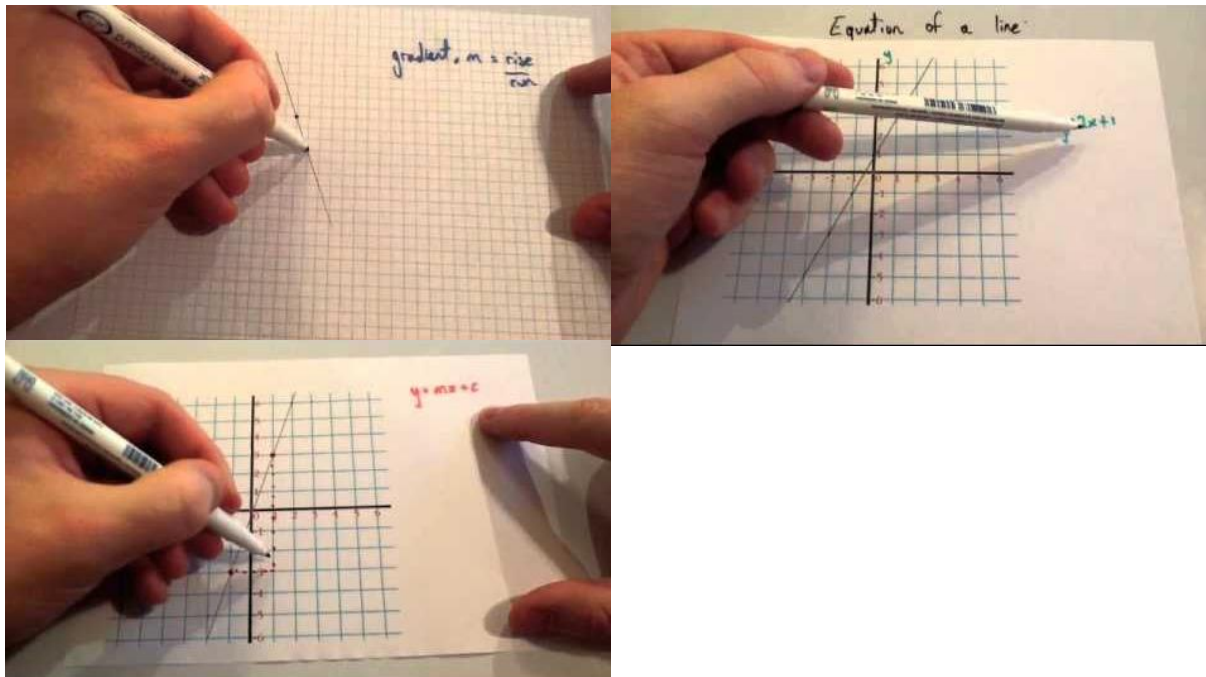
Transition Piece

The following pages include the transition piece for Core Maths. As mentioned at the beginning this is the only piece of work which is compulsory for the start of the year.

You can either print it off and complete it on the paper or just use lined/squared paper

Name: Teacher:

Core Mathematics
GCSE Knowledge Assessment
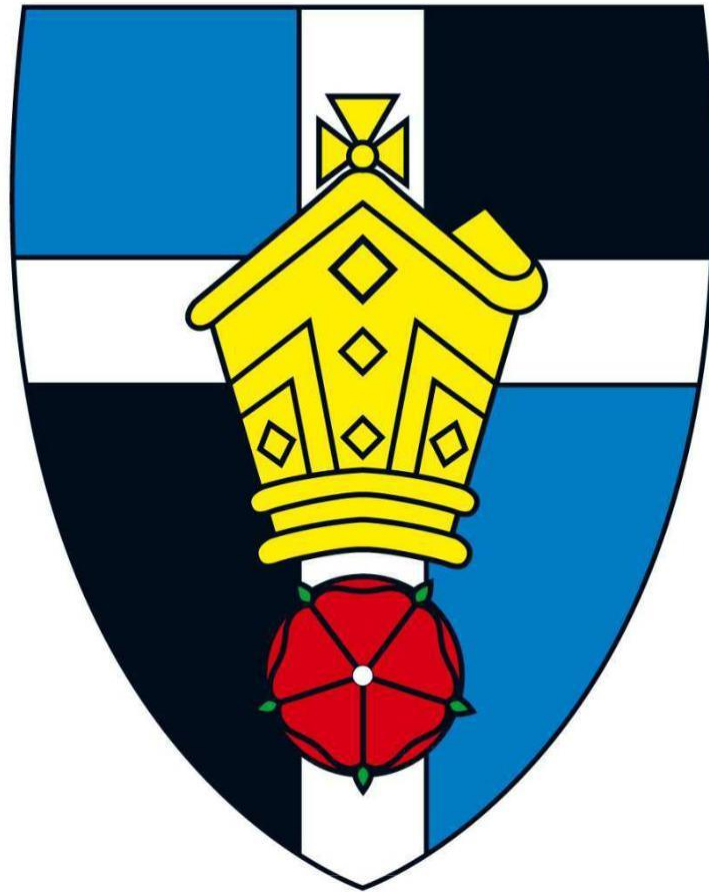
Notes to candidates
- The total mark for this paper is 51.
- Show ALL your working out.
- Answer ALL questions.
- Write your answers in the spaces provided
- Ask if you need additional paper to write on.
- Use any spare time at the end to check your answers.

Formulae: Higher Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of prism = area of cross section × length
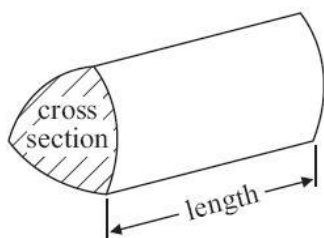
Area of trapezium = $\dfrac{1}{2}(a + b)h$
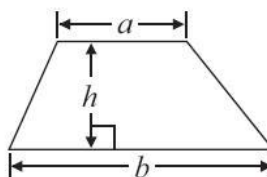
Volume of sphere $\dfrac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$
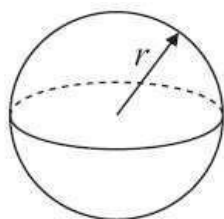
Volume of cone $\dfrac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$
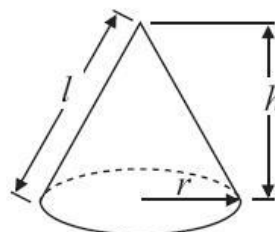
In any triangle ABC
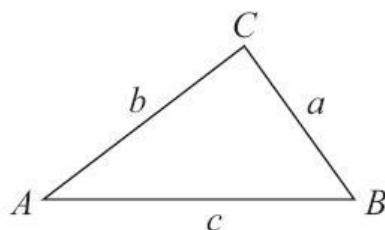
The Quadratic Equation
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

Sine Rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$

2

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Sophie walked from her home to her friend's house.

The travel graph shows Sophie's journey to her friend's house.

(a)
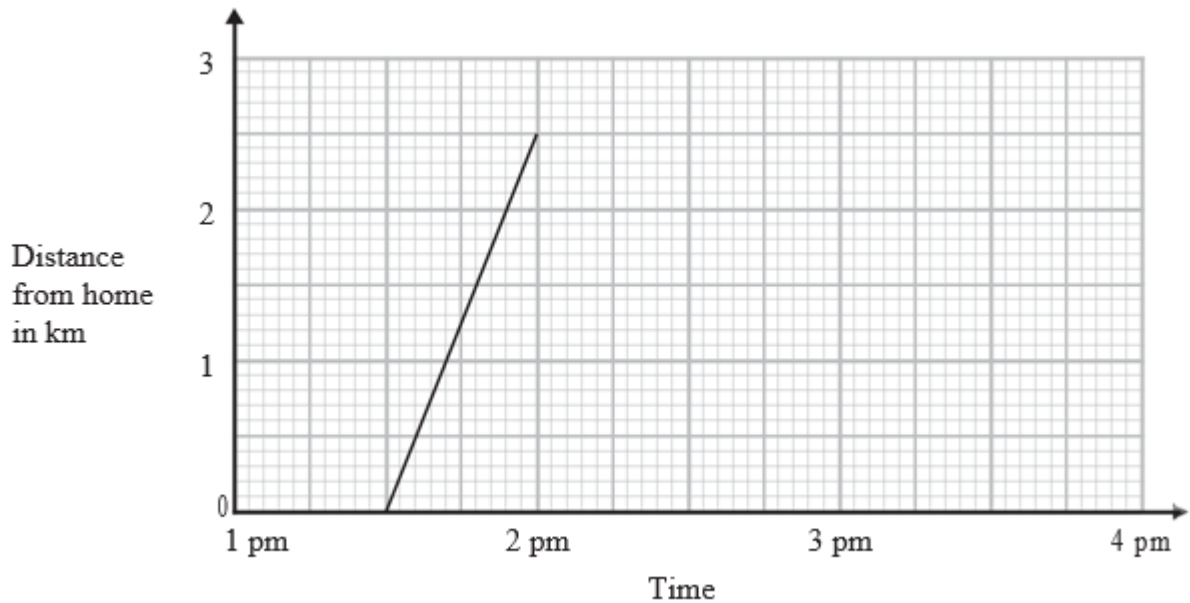
What time did Sophie get to her friend's house?

....

(1)

Sophie spent 1 hour at her friend's house. She then walked home at a steady speed. It took her 45 minutes to walk home.

(b) Complete the travel graph for this information.

(2)

(c) What was the total distance Sophie walked?

.... km

(1)

(Total for Question 1 is 4 marks)

3

*2 Here are the ingredients needed to make 20 cookies.

Cookies

Ingredients to make **20** cookies

225 g of butter
120 g of castor sugar
275 g of flour

Liz is going to make some cookies for a party.

There will be 4 adults and 14 children at the party.

Liz wants to make 2 cookies for each adult and 3 cookies for each child.

Liz has

500 g of butter
300 g of castor sugar
1 kg of flour

Does Liz have enough butter, enough castor sugar and enough flour to make all the cookies for the party?
You must show all your working.

(Total for Question 2 is 5 marks)

3 Greta, Hakim and Chloe wanted to know how often the letter 'e' is used in English words.

They each chose a different section from the same book written in English.
They each counted the total number of letters in their section
and the number of times the letter 'e' occurred.

The table gives information about their results.

	Greta	Hakim	Chloe
Total number of letters counted	20	1000	30 000
Frequency of letter 'e'	5	170	4100

Which of these results should give the best estimate for the probability that a letter picked at random from the book will be the letter 'e'? Give a reason for your answer.

(Total for Question 3 is 2 marks)
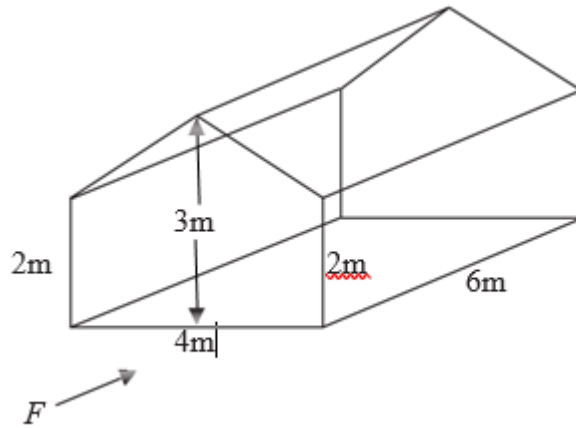
4 Here is a diagram of Jim's shed.

Diagram **NOT** accurately drawn

The shed is in the shape of a prism.
The shed is on horizontal ground.
The two ends and the two sides of the shed are vertical.

(a) On the centimetre grid, draw the front elevation of the shed from direction
  F. Use a scale of 1 cm to 1 m.
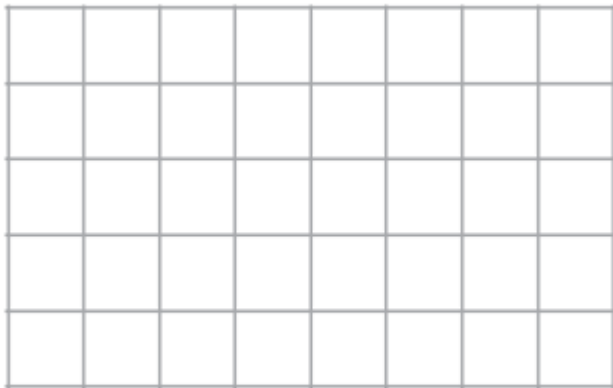
(2)

Jim is going to paint the two ends and the two sides of the shed.

Diagram **NOT**
accurately drawn

3m

side

end

2m

6m

4m
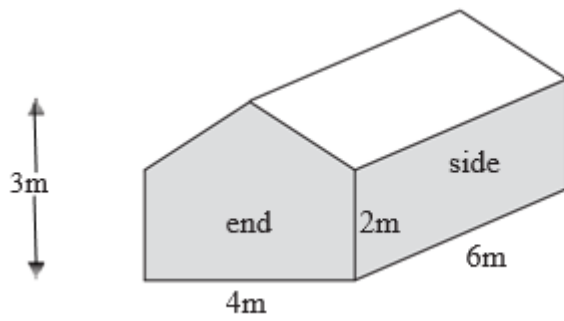
1 litre of paint will cover an area of 8 m².

Paint is sold in 1 litre tins, in 2.5 litre tins and in 5 litre tins.

1 litre
£12.99

2.5 litres
£19.98

5 litres
£29.99

Jim wants the total cost of the paint to be as little as possible.

(b) Work out the total cost of the paint.
You must show all your working.

£ ....

(6)

(Total for Question 4 is 8 marks)

5 Colin has a piece of wood 200 cm long.
He cuts the wood into pieces with lengths in the ratio 2 : 3 : 5

Work out the length of each piece of wood.

.... cm

.... cm

.... cm

(Total for Question 6 is 3 marks)

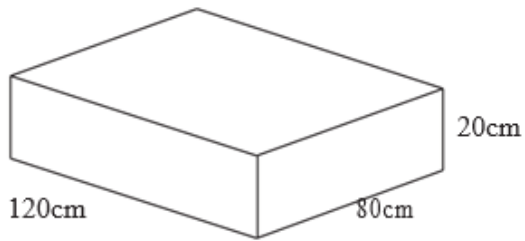*6   The diagram shows a sandpit in the shape of a cuboid.

Diagram **NOT**
accurately drawn

20cm

120cm   80cm

The sandpit is 120 cm by 80 cm by 20 cm.

The sandpit is empty.
Jade is going to put sand into the sandpit.

A bag of sand costs £2.99
There are 10 000 cm^3 of sand in a bag.
Jade has only £50 to spend on sand.

Show that Jade cannot buy enough sand to fill the sandpit completely. You must show all your
working.

(Total for Question 6 is 5 mark)
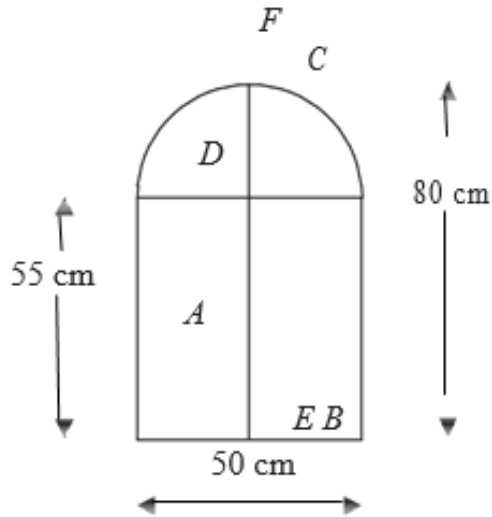
7 The diagram represents a frame for a window.

Diagram **NOT** accurately drawn

The frame is made from metal bars.

AD, *BC* and *EF* are vertical bars.
AB and *DC* are horizontal bars.

DFC is a bar in the shape of a semicircle.
E is the midpoint of *AB*.

$AB = 50$ cm
$AD = 55$ cm
$EF = 80$ cm

(a)   Work out the total length of the metal bars in the frame.

.... cm

(4)

(b)   Work out the total area of the window.

.... cm^2

(3)

8 The diagram represents a door wedge.
The door wedge is in the shape of a triangular prism.
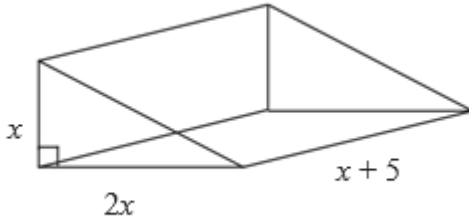

x

$x + 5$

$2x$

Diagram **NOT** accurately draw

All the measurements shown on the diagram are in centimetres. The triangular prism has a volume of 100 cm^3.

(a) Show that $x^3 + 5x^2 = 100$

(2)

(b) Use trial and improvement to
find the value of x. You must
show all your working.
Give your answer correct to 1 decimal place.

$x = $ ....

(5)

(Total for Question 8 is 7 marks)

9 A car is driven through a tunnel in 89 seconds, correct to the nearest second.
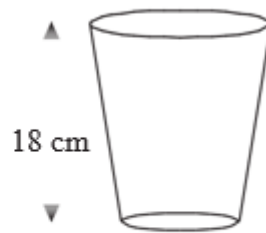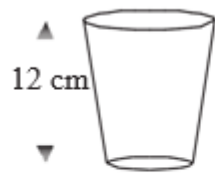
The tunnel is 2460 m long, correct to the nearest 10 metres.

The average speed limit in the tunnel is 100 km/h.

Could the average speed of this car have been greater than 100 km/h? You must show your working.

(Total for Question 9 is 4 marks)

10 Here are two plant pots.

12 cm

18 cm

Diagrams **NOT** accurately draw

Pot A and pot B are mathematically similar. Pot A has a height of 12 cm.
Pot B has a height of 18 cm.

Pot A has a volume of 1000 cm^3. Work out the volume of pot B.

(Total for Question 10 is 6 marks)