Surname	Centre Number	Candidate Number
Other Names		0

GCSE

4370/04

S16-4370-04

MATHEMATICS – LINEAR
PAPER 2
FOUNDATION TIER

A.M. THURSDAY, 9 June 2016

1 hour 45 minutes

ADDITIONAL MATERIALS

A calculator will be required for this paper.

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.

Take π as 3·14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **14**.

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**7**	
2.	**4**	
3.	**7**	
4.	**5**	
5.	**3**	
6.	**5**	
7.	**4**	
8.	**2**	
9.	**4**	
10.	**8**	
11.	**6**	
12.	**9**	
13.	**3**	
14.	**7**	
15.	**4**	
16.	**5**	
17.	**8**	
18.	**5**	
19.	**4**	
Total	**100**	

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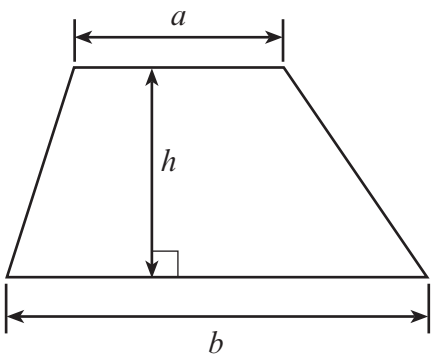
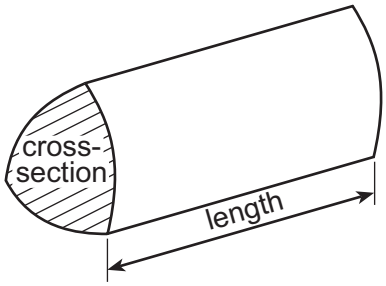
Formula List

Area of trapezium $= \frac{1}{2}(a + b)h$



Volume of prism = area of cross-section × length



Examiner only

1. *(a)* Sioned decides to build a patio.
Complete the following bill for the items she buys. [4]

Item	Cost
5 sacks of chippings at £20.50 per sack	£ 102.50
92 paving stones at £6.68 each	£
8 jumbo bags of sand at £39.99 per bag	£
12 bags of cement at £4.15 per bag	£
Total	£

(b) Sioned had saved £2000 to pay a builder for laying the paving stones.
The builder worked for 86 hours and charged £18.75 per hour.
After paying the builder, how much money did she have left over? [3]

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2. Circle the quantity that is an appropriate estimate for each of the following. [4]

Weight of a dinner plate	650 kg	650 g	650 mg	65 g
Volume of water in a full bucket	5 litres	500 cm^3	50 ml	5 cl
Width of a door	80 km	80 m	80 mm	80 cm
Area of the floor of a bedroom	9 m^2	900 cm^2	90 mm^2	900 cm^3

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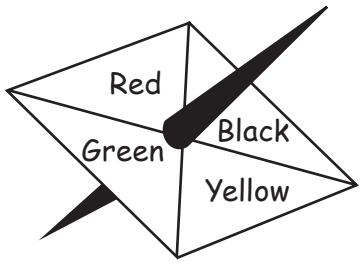
3.



A spinner can land on any of its 4 sections coloured Red (R), Black (B), Green (G) and Yellow (Y).
The spinner is spun 40 times and the results are shown below.

R	B	G	Y	R	R	Y	Y	R	Y
G	Y	Y	B	Y	G	B	Y	Y	B
Y	R	B	Y	G	B	Y	R	B	R
G	B	Y	G	B	R	B	Y	B	R

(a) Complete the frequency table below. [2]

Colour	Tally	Frequency
R		
B		
G		
Y		

(b) Write down the mode ..... [1]

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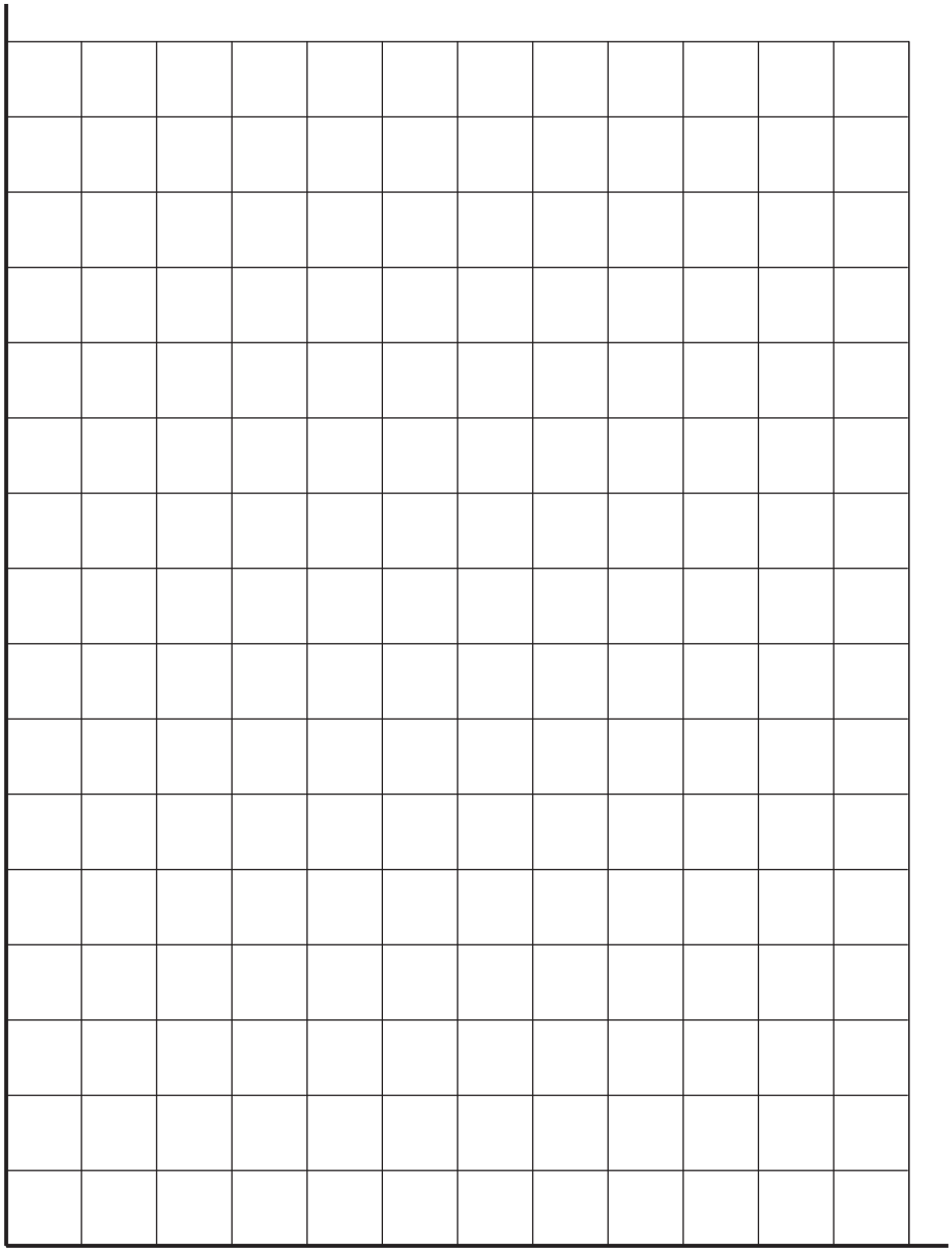
(c) Using the graph paper below, draw a suitable bar chart of the data given in the table. [4]



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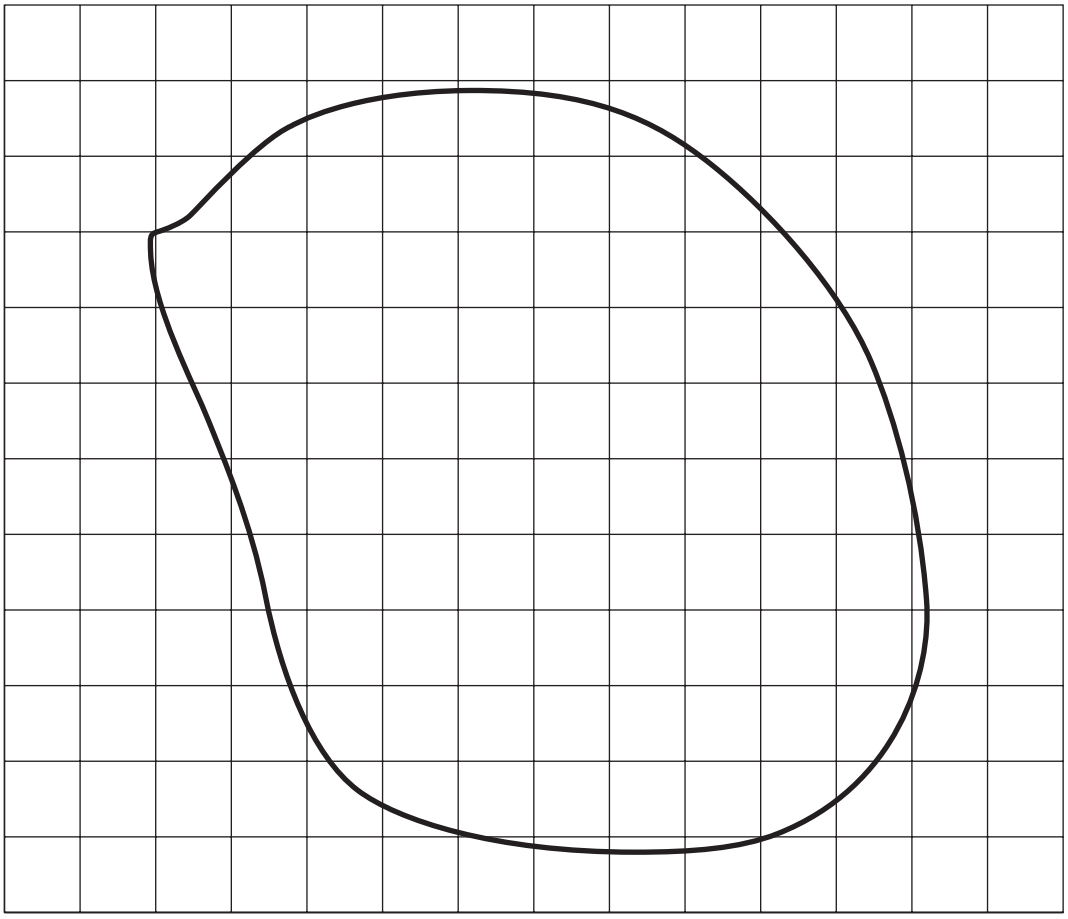
4. *(a)*



The above shape is the outline of a pond.
It is drawn on a square grid where each square represents 5 m^2.
Estimate the area of the surface of the pond. [3]

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Area of the surface of the pond = ... m^2

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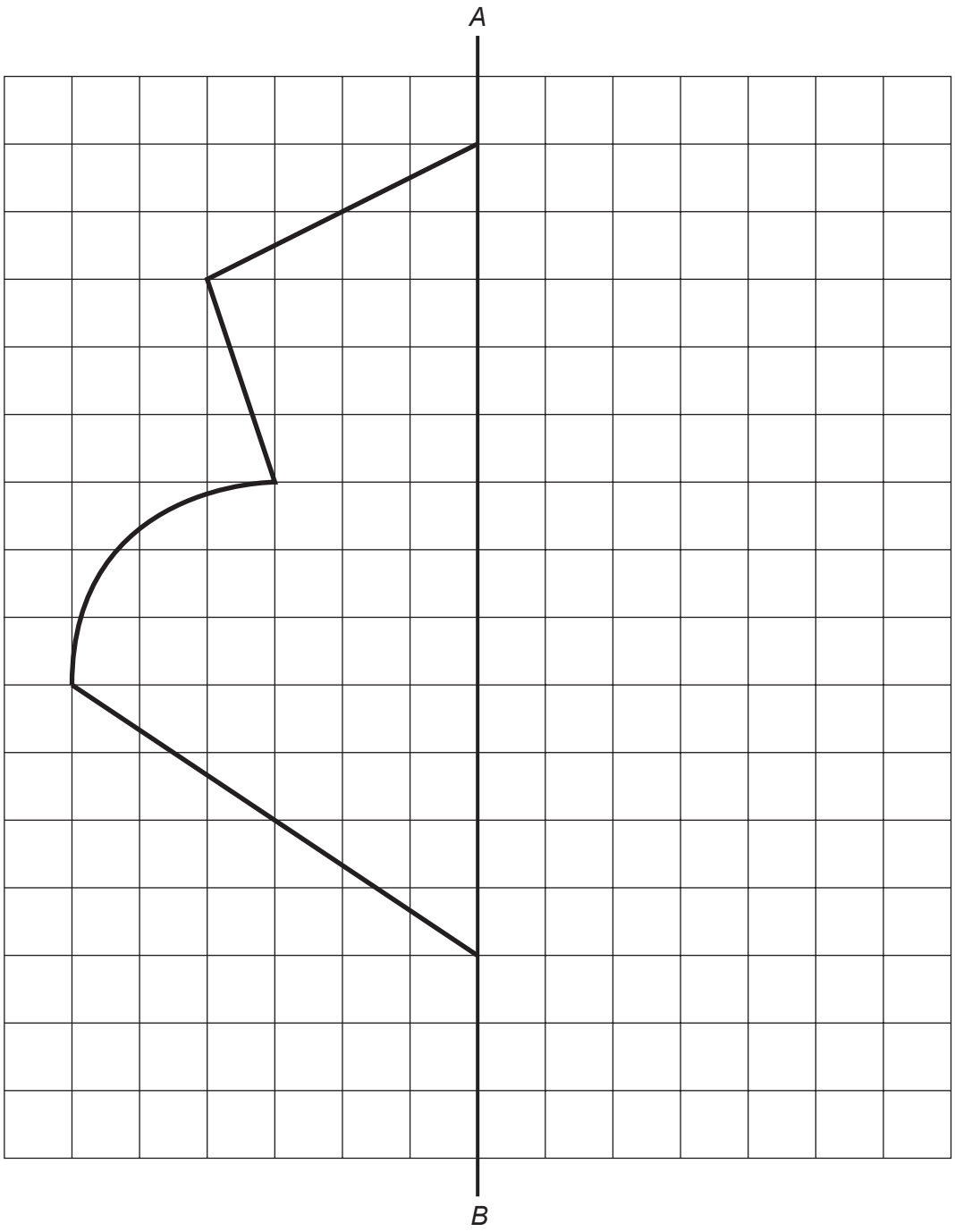
(b) Complete the following figure so that it is symmetrical about the line *AB*. [2]



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5. *(a)* Which of the following shapes are congruent? [1]

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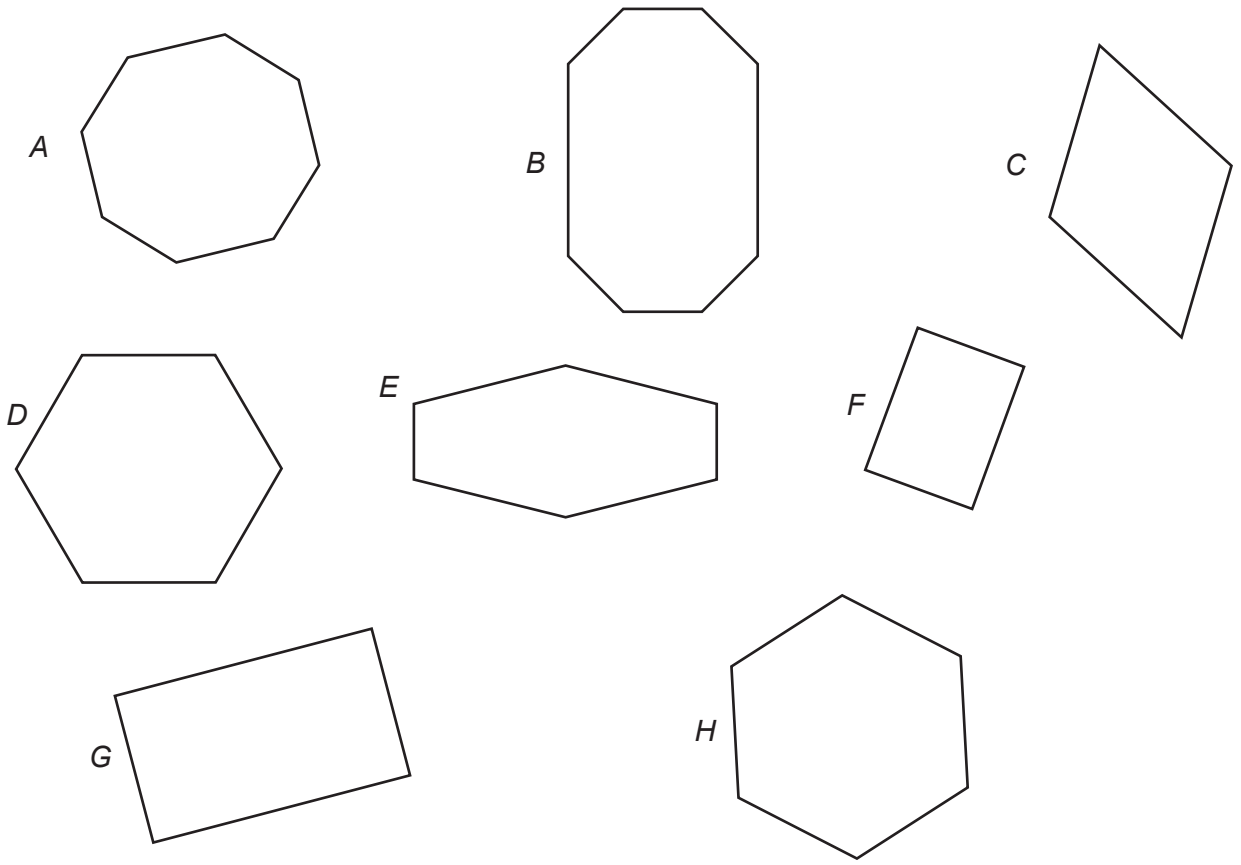
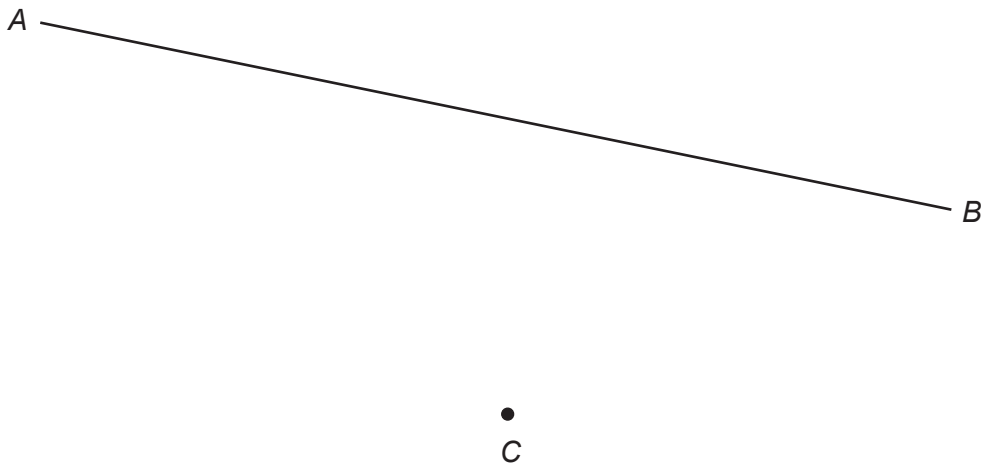


(b) (i) Measure, in centimetres, the length of the line *AB*. [1]

Length of *AB* = ... cm



(ii) Draw a line perpendicular to *AB* that passes through *C*. [1]

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6. *(a)* Describe **in words** the rule for continuing each of the following sequences.

(i) 60 53 46 39 32 ..... [1]

Rule:

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(ii) 81 27 9 3 1 ..... [1]

Rule:

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(b) (i) A household gets m bottles of milk every day (Sunday to Saturday).
Write down, in terms of m, the total number of bottles of milk received in a week. [1]

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(ii) David has x triangles. Altogether, these triangles have y sides.
Write down a formula for x in terms of y. [2]

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7. *(a)* Mary's salary of £14 000 is increased by 3%.
How much is this increase? [2]

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(b) Calculate $\frac{4}{5}$ of 65. [2]

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8. What is the perimeter of a square that has an area of 64 cm^2? [2]

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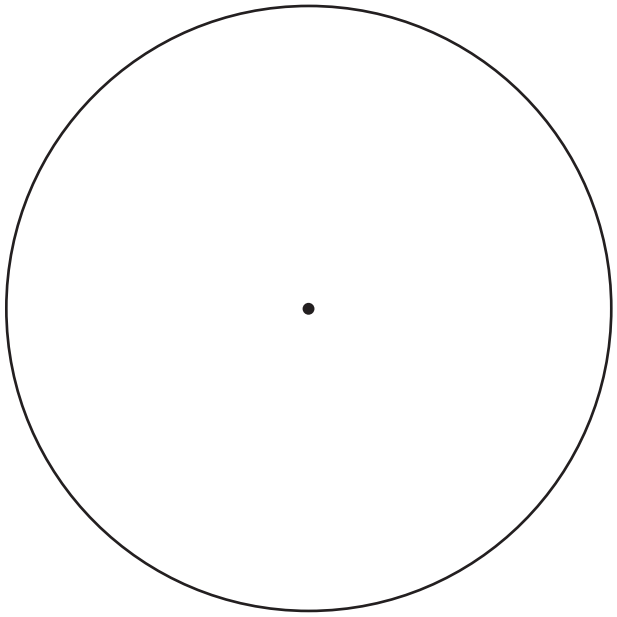
9. Ninety pupils were asked what they drank with their breakfast.
Of these pupils, 40 drank tea, 25 drank coffee, 16 drank milk and 9 drank other drinks.
Draw a pie chart to illustrate the different drinks that the pupils had with their breakfast.
You should show how you calculate the angles of your pie chart. [4]



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10. The ages, in years, of 8 members of a fitness club were:

55 37 34 42 46 29 31 62

(a) Find the median of their ages. [2]

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(b) Find the range of their ages. [1]

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(c) Find the mean of their ages. [3]

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(d) Assuming that the membership has not changed in the last four years, what were the mean and range of their ages four years ago? [2]

mean = ... range = ...

Examiner only

11. *(a)* Simplify $9x + 5y - 7x + 2y$. [2]

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(b) A number is divided by 4.
3 is added to the answer to get 11.
What was the number? [2]

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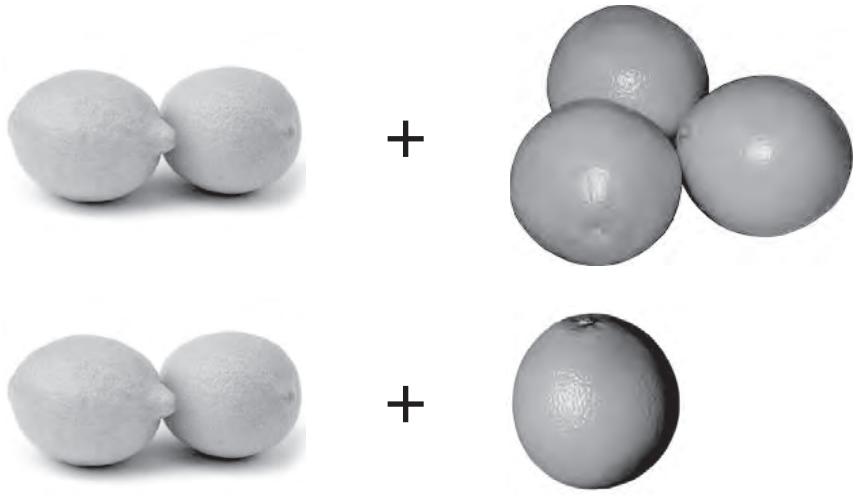
(c) Two lemons and three oranges cost £1.40.
Two lemons and one orange cost 80p.
How much does one orange cost? [2]



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12. *(a)* Calculate 28% of £42. [2]

(b) The total cost of 6 loaves and 14 baguettes is £16.54.
One loaf costs £1.24. Find the cost of one baguette. [4]

(c) Giving full reasons, find which of the following fractions is nearest to $\frac{2}{5}$:

$\frac{6}{10}$ $\frac{9}{25}$ $\frac{21}{50}$ [3]

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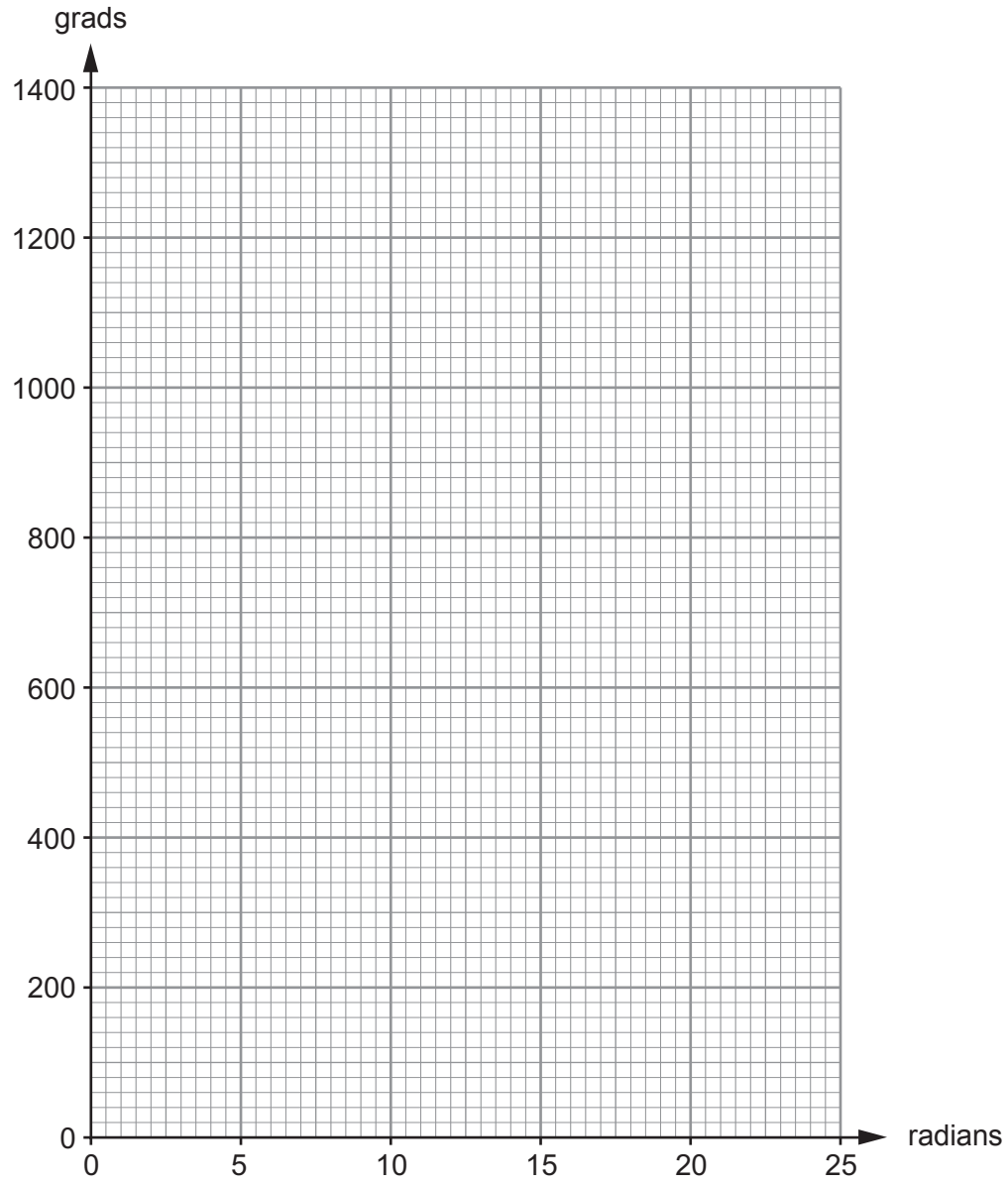
13. *(a)* Angles can be measured in **radians** or **grads**, as well as in degrees.
The table gives 3 angles, measured in radians and in grads.

	Angle 1	Angle 2	Angle 3
Radians	4	15	21
Grads	255	955	1337

Use the data in the table to draw a conversion graph between radians and grads. [2]



(b) Use your graph to find an estimate for 700 grads in radians. [1]

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Examiner only

14. *You will be assessed on the quality of your written communication in this question.*

Mr and Mrs Price received their electricity bill. The details were as follows:

Present meter reading	7982 units
Previous meter reading	6629 units
Charge per unit	19.3 pence per unit
VAT	5%

Find the total cost of the electricity, including VAT.
Give your answer in pounds (£), correct to the nearest penny.
You must show all your working. [7]

Examiner only

15. In 2014, the average amount of paper used per person in China was 74 kg, and in the USA it was 228 kg.

(a) Insert a value, correct to 2 significant figures, in the following statement. [2]

'In 2014, on average, each person in the USA used ..... times as much paper as each person in China.'

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(b) Between 55% and 60% of the paper used in the USA is recycled paper.
Insert values, correct to the nearest kg, in the following statement. [2]

'In 2014, of the average 228 kg of paper used by each person in the USA,

between ..... kg and ..... kg of this was recycled paper.'

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16. Some measures for mass are the same in the USA as they are in the UK.
Some measures are different.

A **pound** is the same measure in both the USA and the UK.
The measures known as **hundredweights** and **tons** are different in the USA and the UK.

1 ton = 20 hundredweight in both the USA and the UK.

USA 	UK 
1 hundredweight = 100 pounds	1 hundredweight = 112 pounds

(a) Complete the statement, [1]

43·5 tons = ... hundredweight

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Examiner only

(b) A truck in the USA carries a load of 28 USA tons.

A lorry in the UK carries a load of 26 UK tons.

Calculate the difference between the two loads **in pounds**.
Express this difference as a percentage of the load carried by the USA truck. [4]

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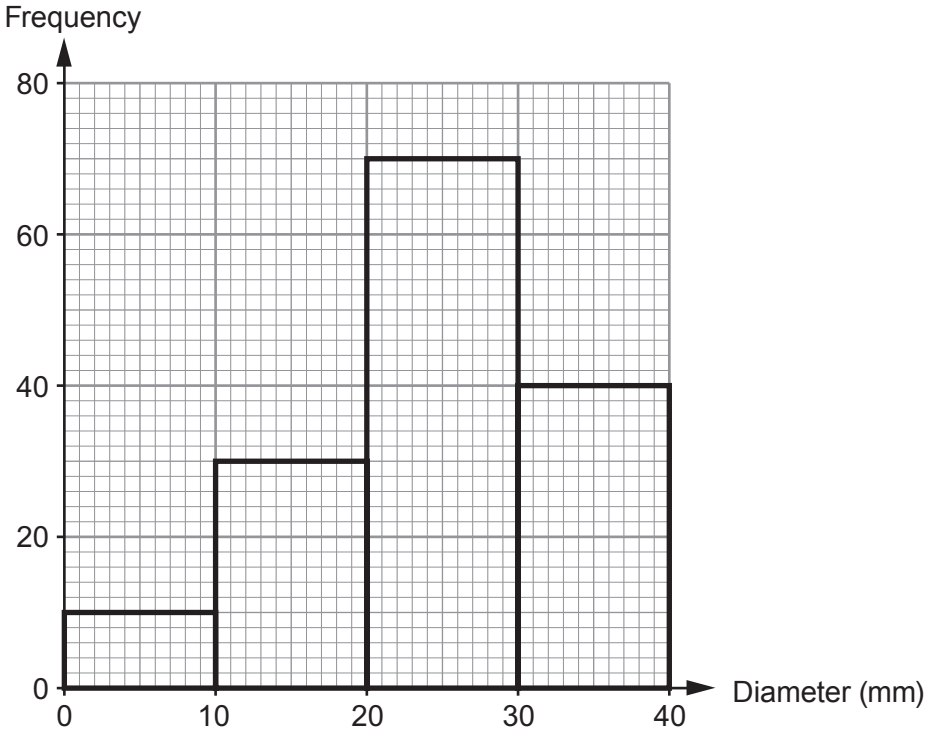
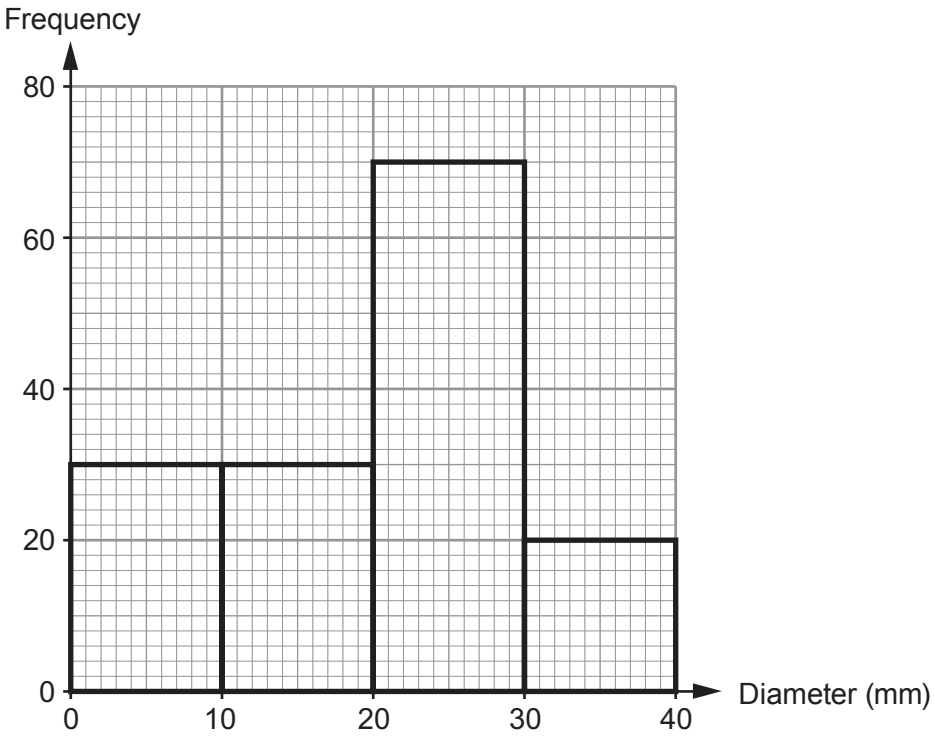
17. One day in November, Bryn and Luke cut some branches off some trees.
The grouped frequency diagrams show the diameters of the branches they cut.

Branches cut by Bryn



Branches cut by Luke



(a) How many of the branches that Luke cut had diameters between 10 mm and 30 mm? [1]

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(b) Who cut more of the branches with the greater diameters on this day? Give a reason for your answer. [1]

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(c) Calculate an estimate for the mean diameter of all the branches that Bryn cut on this day. [5]

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(d) The median diameter of the branches cut by Bryn lies in the group 20 mm to 30 mm. Explain how this can be checked using the frequency diagrams. [1]

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18. The currency in Brazil is known as the Brazilian Real, BRL.

		
Year	Pound (£)	Brazilian Real (BRL)
2010	1	2.86
2014	1	3.71

In 2010, Ava bought £3400 worth of Brazilian Real, BRL.
In 2014, Ava exchanged this money back into pounds.

Did Ava gain or lose money?
State how much money Ava gained or lost, giving your answer correct to the nearest pound.

[5]

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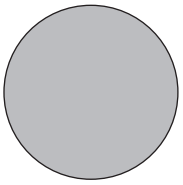
19. Rayner plans to make a circular garden pond.



She has bought 10 metres of edging to place around the circumference of the pond.

Because of where the pond is to be placed, it must have a **diameter** that is a **multiple** of 0·9 m.
Rayner decides to make the largest pond she can with the edging she has bought.

What length of edging will she have left over?
Give your answer in metres, correct to 2 decimal places. [4]

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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