Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24 – 25	
26 – 27	
28 – 29	
30	
TOTAL	

AQA

General Certificate of Secondary Education
Foundation Tier
November 2014

Mathematics (Linear) 4365/2F

Paper 2

F

Friday 7 November 2014 9.00 am to 10.45 am

For this paper you must have:
- a calculator
- mathematical instruments.

Time allowed
- 1 hour 45 minutes

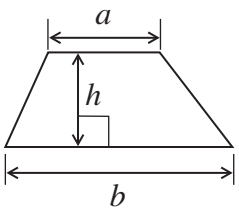
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 105.
- The quality of your written communication is specifically assessed in Questions 8, 9 and 24. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, tracing paper and graph paper. These must be tagged securely to this answer book.

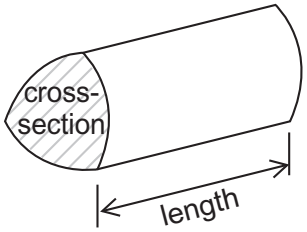
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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



Volume of prism = area of cross section × length



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

1 Here is a number sequence.

31 26 21 16 11 ...

1 (a) What is the next term in the sequence?

[1 mark]

Answer .....

1 (b) Write down the rule for continuing the sequence.

[1 mark]

Answer .....

1 (c) What is the first **negative** term in the sequence?

[1 mark]

Answer .....

1 (d) Here are the first five terms of another number sequence.

2 4 8 16 32 ...

Tick whether each of the following is true or false.

[3 marks]

All the numbers in this sequence are even	True	☐	False	☐
To continue the sequence you add 2	True	☐	False	☐
48 is a number in this sequence	True	☐	False	☐

6

2 Here is a menu in a café.

Menu	
Cheese on toast	£1.99
Ham sandwich	£2.49
Burger	£2.99
Crisps	55p
Tea	95p
Coffee	£1.20
Orange juice	£1.70
Cola	75p

2 (a) Alice buys a burger and a cola.

How much does she pay?

[1 mark]

.....

Answer £ .....

2 (b) Tom buys cheese on toast, orange juice and crisps.
He pays with a £5 note.

How much change does he get back?

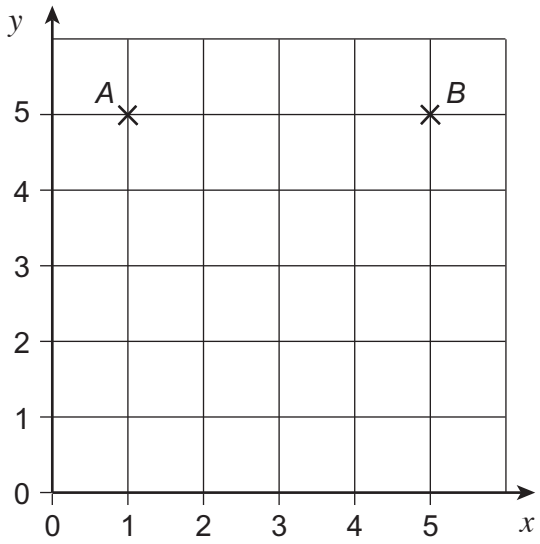
[3 marks]

.....

.....

Answer ..... p

3 Points *A* and *B* are shown on the centimetre grid.



3 (a) Write down the coordinates of the midpoint of *AB*.

[1 mark]

Answer (..... , ...)

3 (b) Point *C* is plotted so that

its y-coordinate is 3

and

ABC is a right-angled triangle.

Write down the coordinates of **three** possible points for *C*.

[3 marks]

Answer (..... , 3), (..... , 3) and (..... , 3)

8

4 20 students give information about how they travel to school.

Half the students travel by bus.

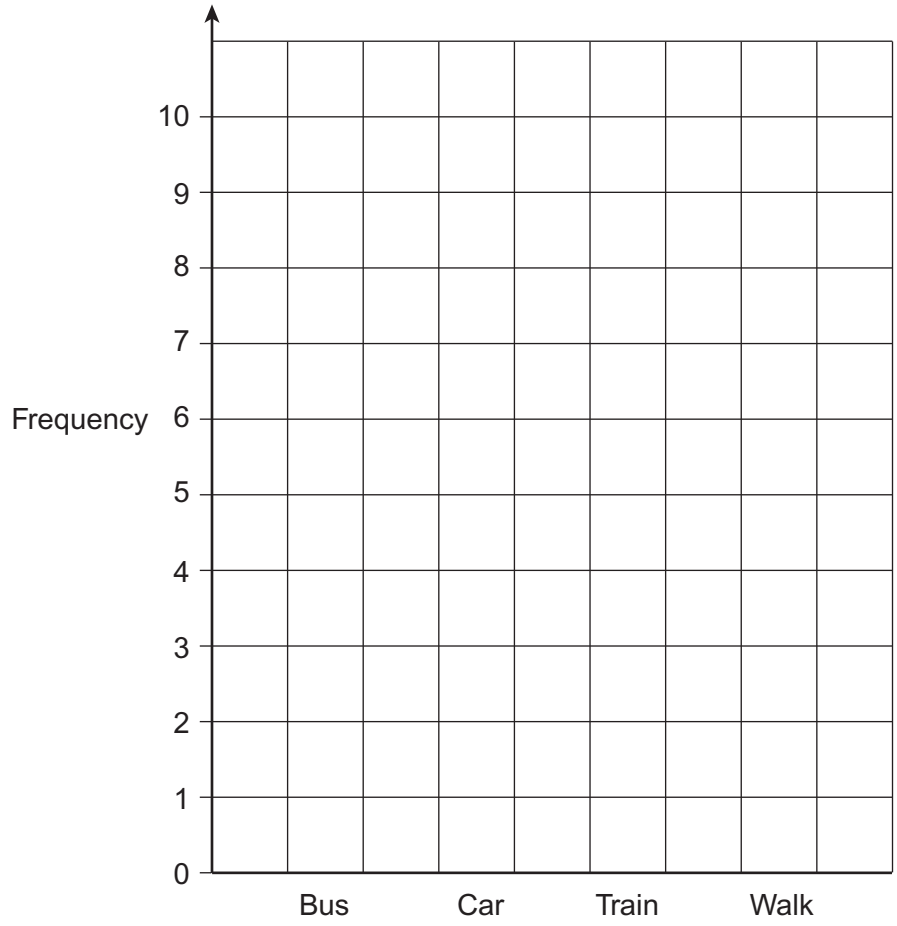
7 students travel by car.

Twice as many students travel by train as walk.

Show this information on a bar chart.

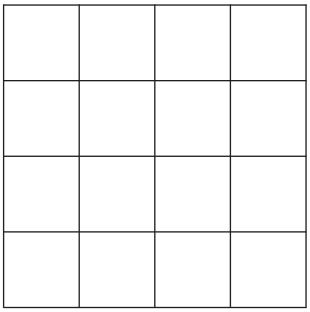
[4 marks]

How students travel to school

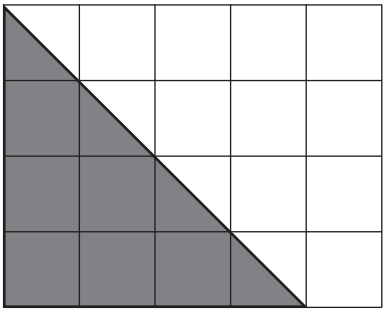


5 (a) Shade 75% of this grid.

[1 mark]



5 (b) Here is another grid.



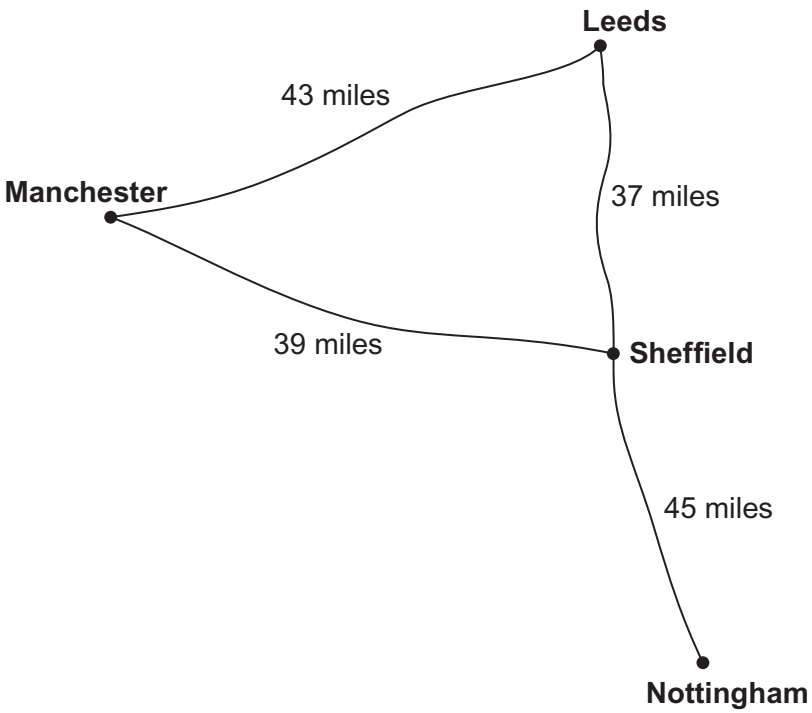
Which **two** fractions represent the shaded part of this grid?
Circle your answers.

[2 marks]

$\frac{2}{5}$ $\frac{1}{3}$ $\frac{10}{20}$ $\frac{4}{12}$ $\frac{8}{20}$

7

6 The diagram shows distances between four cities.



6 (a) Cory travels from Nottingham to Manchester on the shortest route.

How far does he travel?

[1 mark]

.....

Answer ..... miles

6 (b) Jim travels from Leeds to Sheffield and back to Leeds.
He does this 5 times a week.

How far does he travel in **one** week?

[2 marks]

.....

.....

Answer ..... miles

7 (a) Use your calculator to work out $6.7 + 21.5 - 3.09$

[1 mark]

Answer .....

7 (b) Use your calculator to work out 265×89

[1 mark]

Answer .....

7 (c) Use your calculator to work out $\sqrt{227}$
Write down your full calculator display.

[1 mark]

Answer .....

7 (d) Give your answer to part (c) to 1 decimal place.

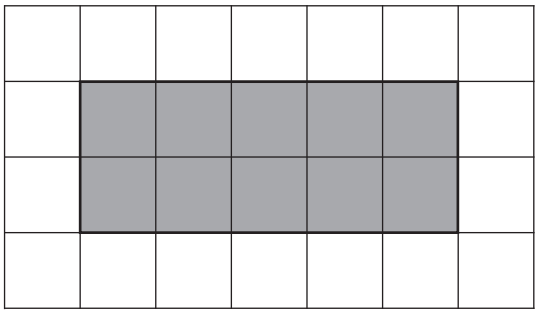
[1 mark]

Answer .....

Turn over for the next question

7

***8 (a)** The diagram shows a rectangle on a centimetre grid.



The **perimeter** of this rectangle is 14 cm

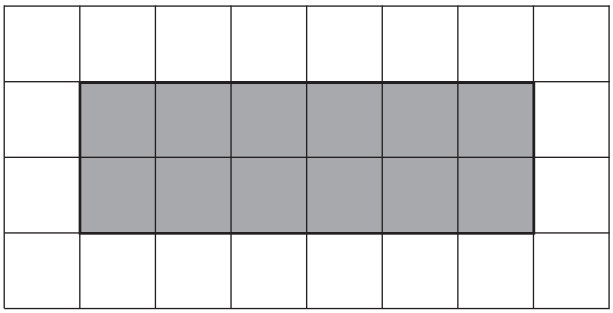
Why is it **not** possible to draw a square of perimeter 14 cm using whole squares on a centimetre grid?

[1 mark]

.....

.....

***8 (b)** Here is another rectangle on a centimetre grid.



The **area** of this rectangle is 12 cm^2

Why is it **not** possible to draw a square of area 12 cm^2 using whole squares on a centimetre grid?

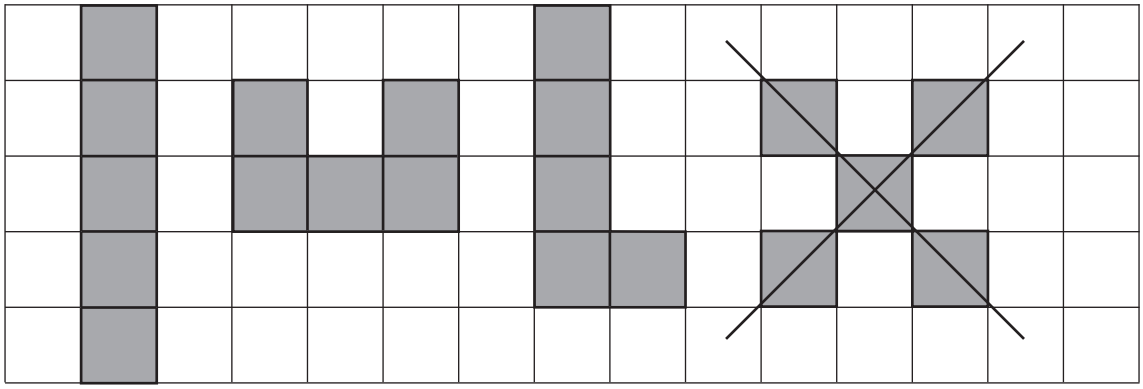
[1 mark]

.....

.....

8 (c) A Pentomino is a shape that has five squares joined to each other.
The squares cannot overlap or be joined corner to corner.

A, *B* and *C* are Pentominoes.
D is **NOT** a Pentomino.



A *B* *C* *D*

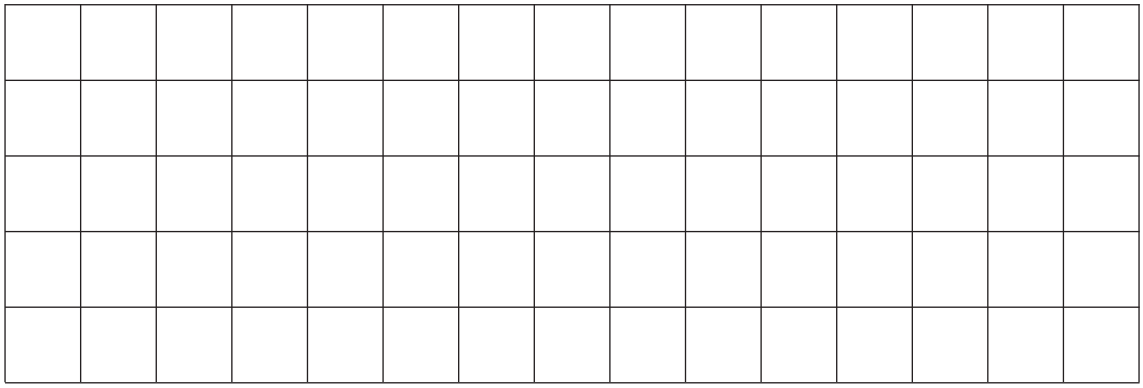
On this square grid, draw a different Pentomino that has

no lines of symmetry

and

rotational symmetry of order 2

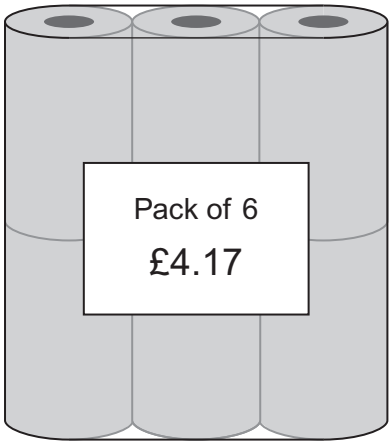
[2 marks]



4

Turn over ▶

***9** Kitchen rolls are sold in a pack of 2 or a pack of 6



Which pack is the better value for money?
You **must** show your working.

[3 marks]

.....

.....

.....

.....

.....

.....

Answer .....

10 Andrew is paid £850 a month.

Each month he

spends 60% of his pay
saves the rest.

How many months will it take Andrew to save £1700?

[4 marks]

.....

.....

.....

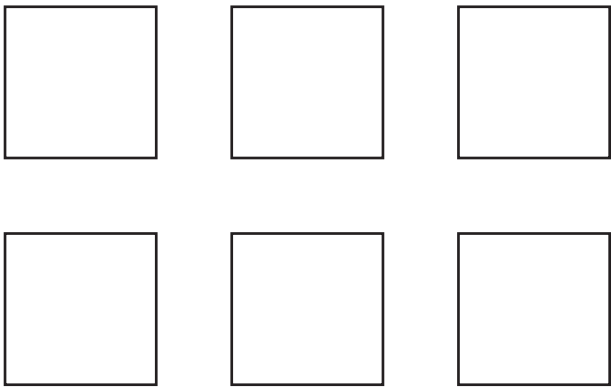
.....

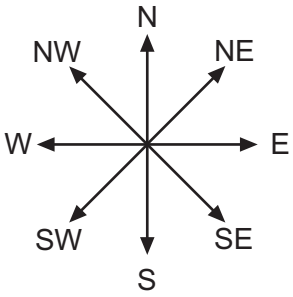
Answer .....

Turn over for the next question

7

11 The diagram shows the positions of six chairs in a classroom.





Five students are sitting on the chairs so that

Ben is North-East of Adam

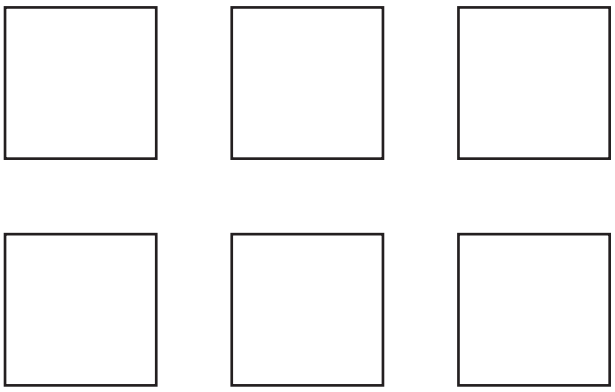
Cath is East of Ben

Darren is South-East of Emily.

On the plan below, show where each student is sitting.

[3 marks]

Answer



12 Four teams A, B, C and D play matches against each other.
The teams play each other **once**.

Complete the list of matches.
One match has been done for you.

[2 marks]

A plays B

13 I am thinking of three positive numbers.

The mode is 5

The median is 5

The range is 9

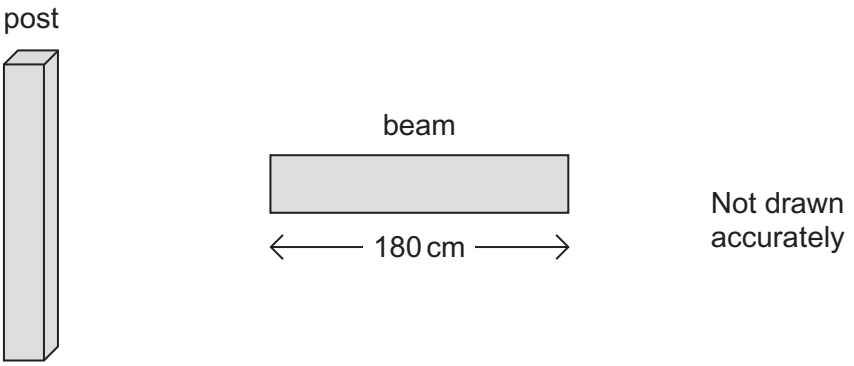
Work out the three numbers.

[2 marks]

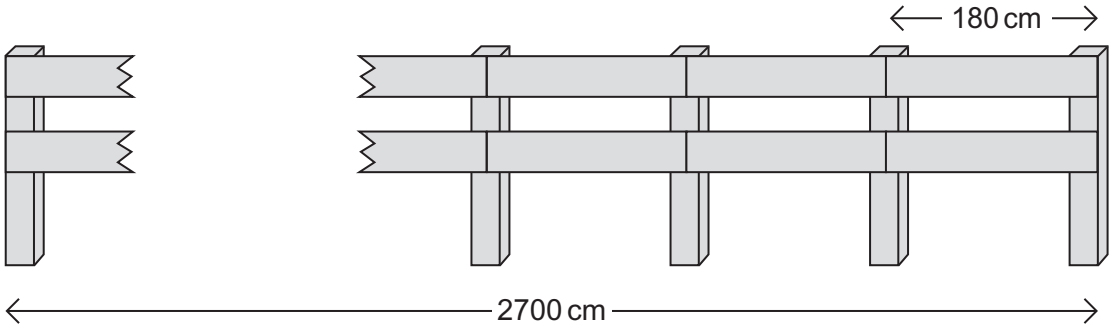
Answer ..... , ... , ...

7

14 A farmer is building a fence using posts and beams.



The total length of the fence is 2700 cm



14 (a) How many **beams** and **posts** are in the fence?

[3 marks]

.....

.....

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.....

.....

Beams .....

Posts .....

14 (b) 40 beams and 21 posts are used in another fence.

Use this formula to work out the cost of this fence in £

Cost (£) = $5B + 9P$

B is the number of beams.
P is the number of posts.

[2 marks]

.....

.....

Answer £ .....

15 Here are the marks of a student in four exams.

65 80 76 69

The student takes a fifth exam.
His mean mark for the five exams is 70

Work out his mark in the **fifth** exam.

[3 marks]

.....

.....

.....

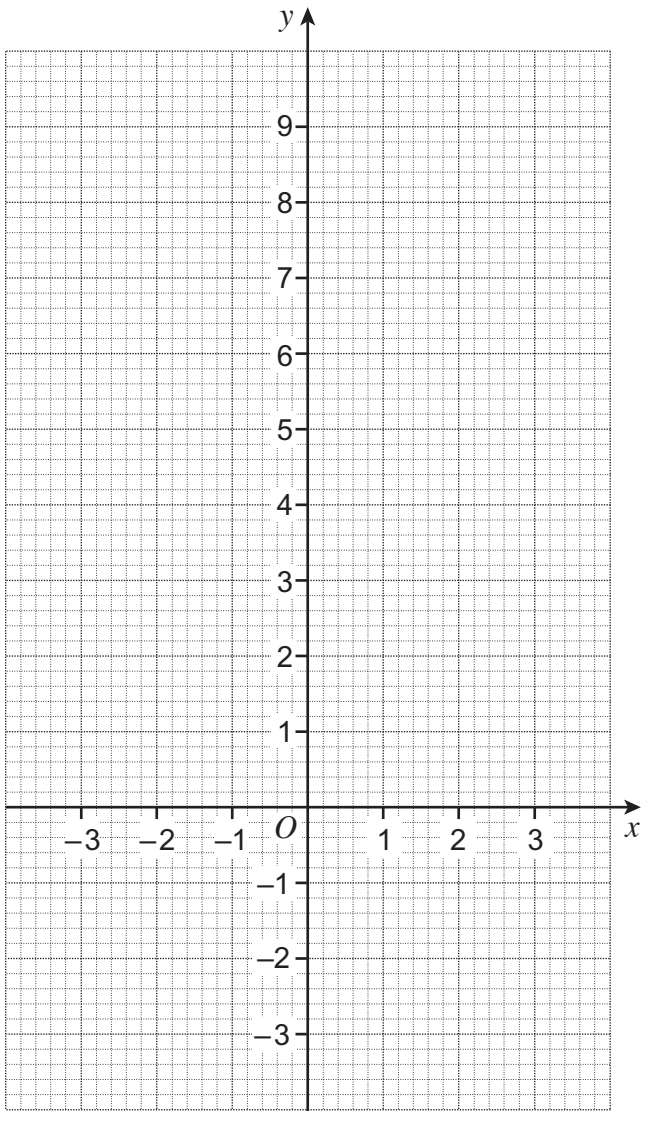
Answer .....

8

16 Use this table of values to draw the graph of $y = 2x + 3$ for values of x from –3 to 3

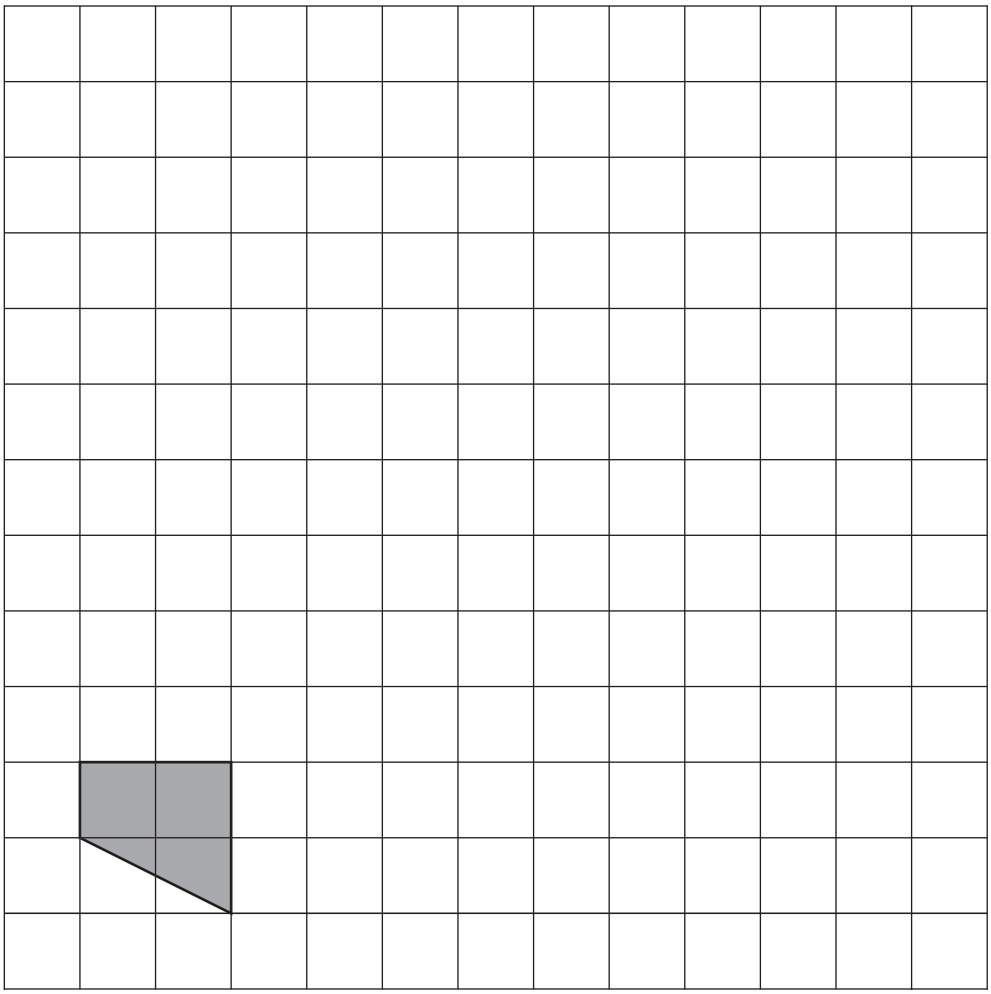
[2 marks]

x	– 3	0	3
y	– 3	3	9



17 Enlarge the shape by scale factor 3

[2 marks]



Turn over for the next question

4

18 A car is travelling at 95 km/h
The speed limit on the road is 60 mph

Is the car travelling below the speed limit?
You **must** show your working.

You may use the conversion scale **below** to help you.

[3 marks]

.....

.....

.....

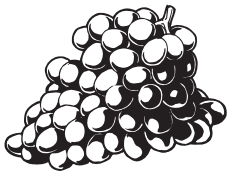
.....

.....

.....

Answer .....

19



Grapes

Apples

£2.40 per kg

Paul buys 0.5 kg of grapes and 0.6 kg of apples.
The total cost is £3.12

Work out the cost of 1 kg of grapes.

[3 marks]

.....

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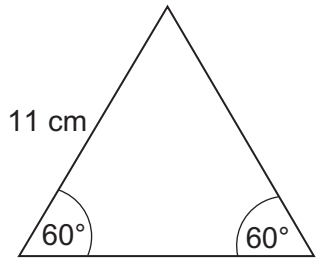
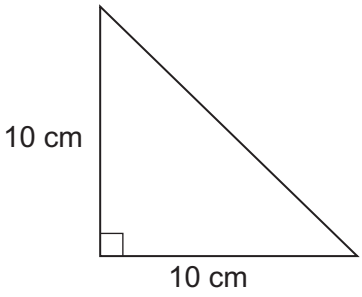
Answer £ .....

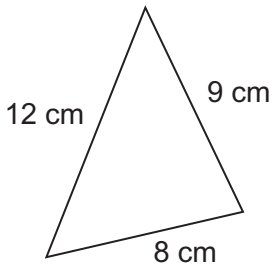
Turn over for the next question

6

20 One of these triangles is picked at random.







Not drawn accurately

Work out the probability that its perimeter is less than 30 cm
You **must** show your working.

[3 marks]

.....

.....

.....

.....

.....

.....

Answer .....

21 Here is an advert.

Hair Salon

Trim and Colour	£65.50
Wash and Dry	£15.50
Perm	£68.00

Special Offer
10% off

Jen has a Trim and Colour.
She uses the special offer.

How much does she pay?

[2 marks]

.....

.....

.....

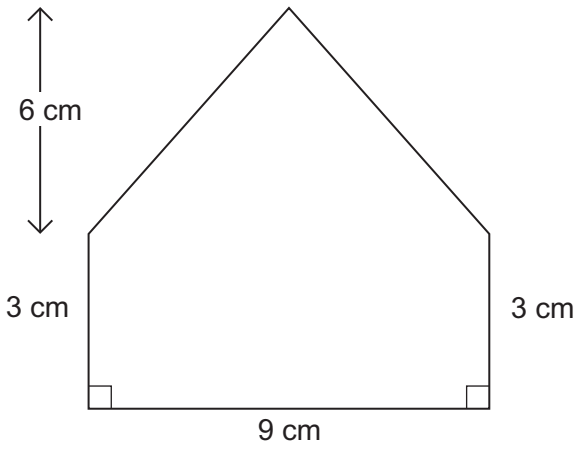
.....

.....

Answer £ .....

5

22 Work out the area of this shape.



Not drawn accurately

[3 marks]

.....

.....

.....

.....

.....

.....

Answer ..... cm^2

23 A box contains some cards.
Each card has a question.
Each question is about History, Languages, Movies or Sport.

The questions have three levels Easy, Medium or Difficult.

The table shows the probability for each type of question.

	Easy	**Medium**	**Difficult**
History	0.15	0.2	0.05
Languages	0.1	0.08	0.02
Movies	0.01	0.03	0.06
Sport	0.12	0.07	0.11

A card is picked at random.

23 (a) What is the probability that it is a **Sport** question?

[1 mark]

.....

Answer .....

23 (b) What is the probability that it is a **Medium** level question about **Languages** or **Movies**?

[1 mark]

.....

Answer .....

23 (c) There are 200 cards in the box altogether.

How many **Easy** questions are about **History**?

[2 marks]

.....

Answer .....

7

24 Here are the numbers of people in a restaurant on the first 15 days in December.

24	21	13	33	41
25	29	11	47	44
28	30	39	48	35

***24 (a)** Show the data on an ordered stem-and-leaf diagram.

Remember to complete the key.

[4 marks]

Key: ..... | ..... represents ..... people

.....	.....
.....	.....
.....	.....
.....	.....

24 (b) Some people go to the restaurant on 16th December.
For the first 16 days in December the median number of people in the restaurant is 31

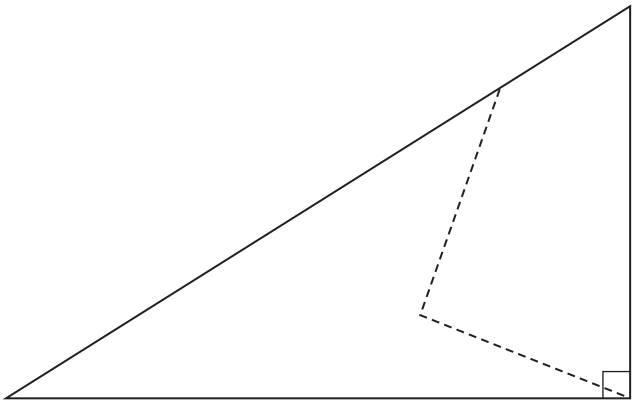
How many people went to the restaurant on 16th December?

[1 mark]

.....

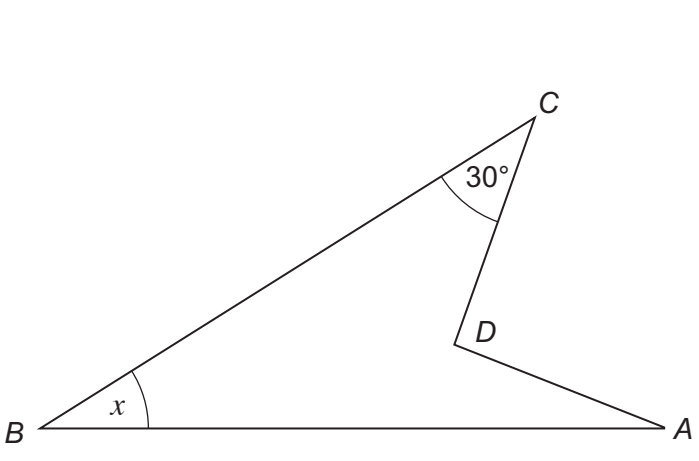
Answer .....

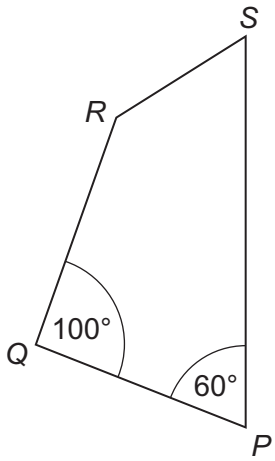
25 The diagram shows a right-angled triangle.



Not drawn accurately

The triangle is cut along the dotted lines to make two quadrilaterals, *ABCD* and *PQRS*.





Not drawn accurately

Work out the size of angle x.
You **must** show your working, which may be on the diagram.

[4 marks]

.....

.....

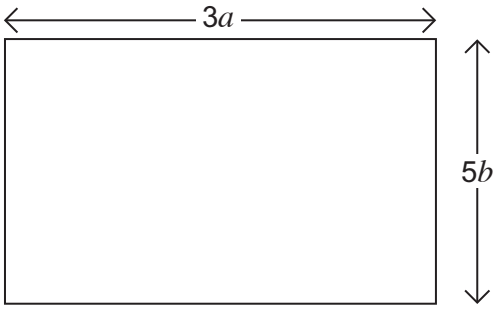
.....

.....

Answer ..... degrees

9

26 The diagram shows a rectangle.



26 (a) Write down an expression for the **perimeter** of the rectangle.

Simplify your answer.

[2 marks]

.....

Answer .....

26 (b) Write down an expression for the **area** of the rectangle.

Simplify your answer.

[2 marks]

.....

Answer .....

26 (c) You are given that a and b are prime numbers.
The **area** of the rectangle is 315 cm^2

Work out the values of a and b.

[2 marks]

Answer ..... cm and ..... cm

27 Divide 4860 in the ratio 5 : 4 : 3

[3 marks]

.....

.....

Answer ..... : ..... : .....

28 (a) Solve $5x - 2 < 6$

[2 marks]

.....

.....

Answer .....

28 (b) List the whole number values of n that satisfy $1.5 < n \leqslant 6$

[2 marks]

.....

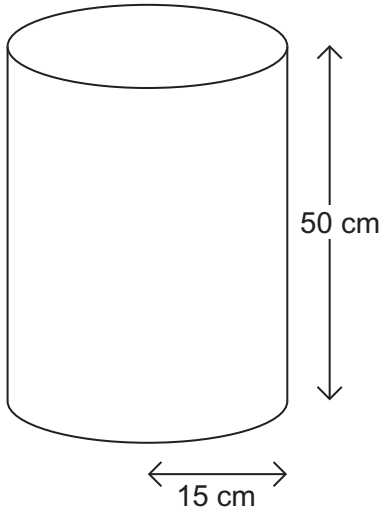
.....

Answer .....

Turn over for the next question

13

29 A tank is in the shape of a cylinder of radius 15 cm and height 50 cm



29 (a) Work out the volume of the tank.

[3 marks]

.....

.....

Answer ..... cm^3

29 (b) The volume of another tank is 33 000 cm^3

The tank is empty.
The tank is filled at the rate of 0.22 litres a second.

How many **minutes** will it take to fill the tank?

[4 marks]

.....

.....

.....

.....

.....

Answer ..... minutes

END OF QUESTIONS

7

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ANSWER IN THE SPACES PROVIDED

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED