

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Secondary Education
June 2007



MATHEMATICS (SPECIFICATION A)
Foundation Tier
Paper 2 Calculator

3301/2F
F

Monday 11 June 2007 9.00 am to 10.30 am

<p>For this paper you must have:</p> <ul style="list-style-type: none"> • a calculator • mathematical instruments. 	
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For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22	
TOTAL	
Examiner's Initials	

Time allowed: 1 hour 30 minutes

Instructions

- Use blue or black ink or ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- Answer the questions in the spaces provided.
- Use a calculator where appropriate.
- Do all rough work in this book.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information

- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. They must be tagged securely to this answer book.

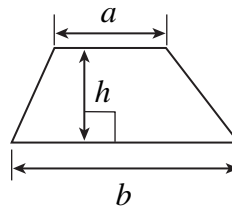
Advice

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

Formula Sheet: Foundation Tier

You may need to use the following formula:

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



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

1 Complete this shopping bill.

6 bottles of water at £0.89 each	
2 packets of biscuits at £1.35 each	
Total	£

(3 marks)

2 (a) Write $\frac{1}{4}$ as a decimal.

Answer (1 mark)

(b) Circle each value that is greater than $\frac{1}{2}$

43% 0.052 $\frac{3}{5}$ 6% 0.91

(2 marks)

(c) Abigail starts with the number 18.

How many times does she need to add on 4 before she gets to 50?

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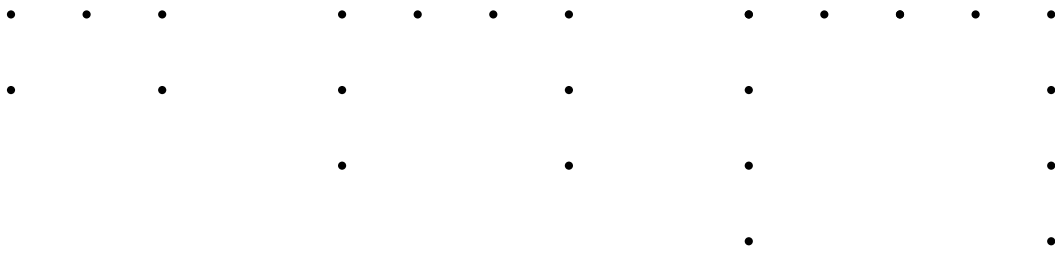
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Answer (3 marks)

Turn over ►

3 Chi San is making patterns with dots.



Pattern 1

Pattern 2

Pattern 3

(a) In the space below draw Pattern 4.

(1 mark)

(b) Complete the table for the number of dots in each pattern.

Pattern number	1	2	3	4	5
Number of dots	5	8	11		

(1 mark)

(c) Which pattern number has 32 dots?

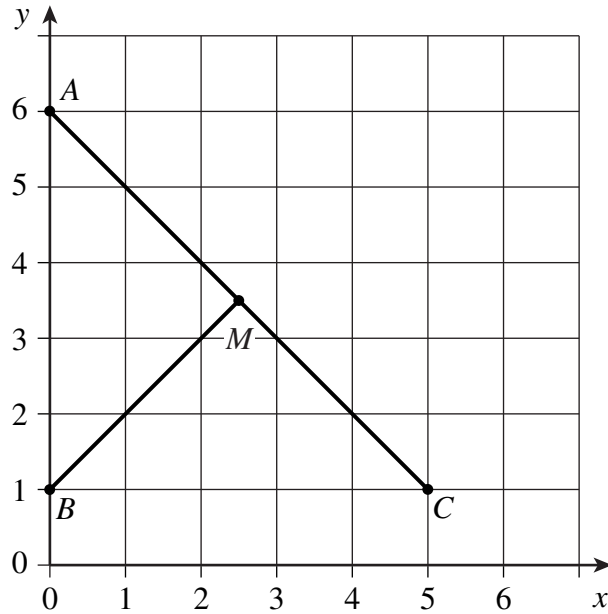
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Answer (2 marks)

4



- (a) Write down the coordinates of the point A .

A (..... ,) (1 mark)

- (b) The line BM is extended to a point D so that the lines AC and BD are the same length.

(i) Draw the line BD . (1 mark)

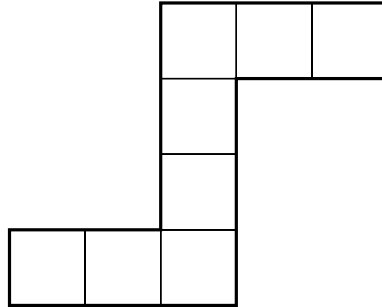
- (ii) Write down the coordinates of D .

D (..... ,) (1 mark)

Turn over for the next question

Turn over ►

5 A shape is made of 1 cm squares.



(a) Work out the perimeter of the shape.

Answer cm (1 mark)

(b) Work out the area of the shape.

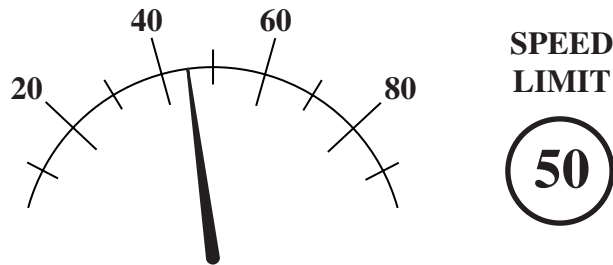
Answer cm² (1 mark)

(c) Write down the order of rotational symmetry of the shape.

Answer (1 mark)

- 6 (a) The arrow shows the speed of a car.
The speed limit is 50 mph.

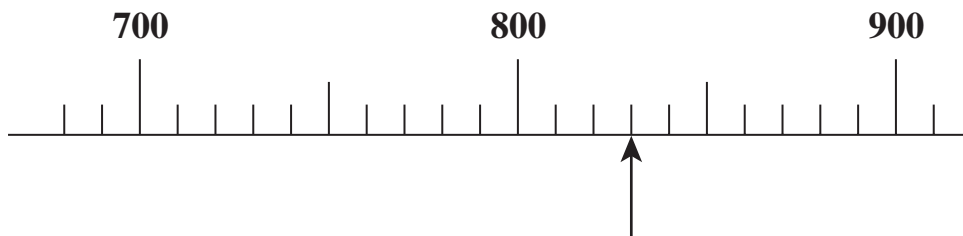
How much below the speed limit is the speed of the car?



.....
.....

Answer mph (2 marks)

- (b) Write down the value shown by the arrow on this scale.

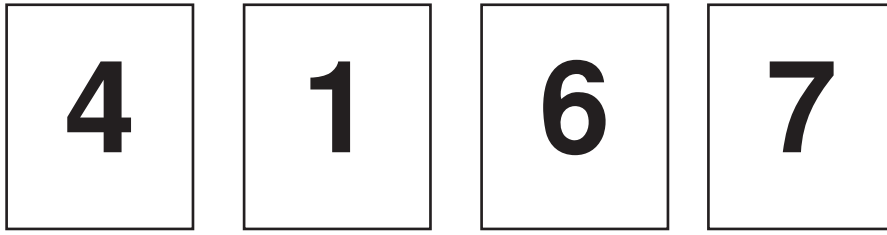


Answer (1 mark)

Turn over for the next question

Turn over ►

7 Jack is using these cards to make numbers.



(a) Write down the largest number he can make using all of the cards.

Answer (1 mark)

(b) Write down the smallest **even** number he can make using all of the cards.

Answer (2 marks)

8 (a) Kim buys 4 birthday cards at £1.55 each.

What change does she get from £10?

.....

Answer £ (2 marks)

(b) Each week Kim receives pocket money.
 She gets £5.50 each week plus £3.75 for every hour she helps in the garden.
 One week she helps for 3 hours in the garden.

Work out her total pocket money for that week.

.....

Answer £ (2 marks)

- 9 (a) A sequence of numbers starts

9 7 5 3

Write down the next two numbers in this sequence.

.....

Answer, (2 marks)

- (b) A different sequence uses this rule.

Add the last two numbers then halve the result
--

- (i) The sequence of numbers starts

12 4 8 6

Work out the next two numbers in this sequence.

.....

.....

Answer, (2 marks)

- (ii) Jenna says that the rule to find the next number in this sequence could also be:
"Find the mean of the last two numbers."

Is Jenna right?

Explain your answer.

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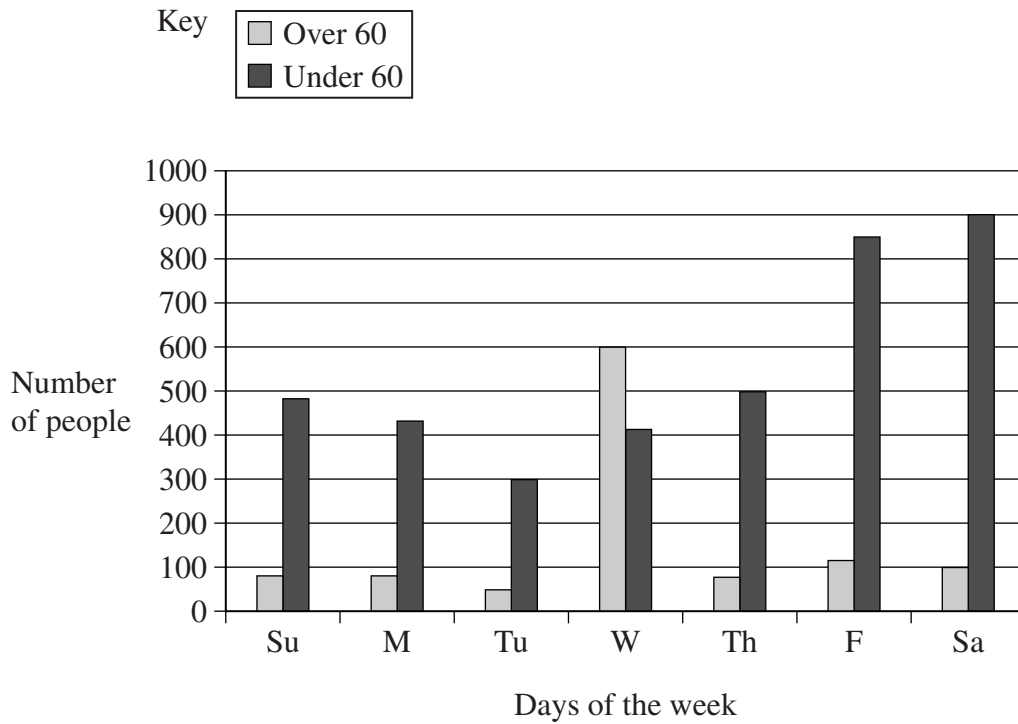
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(1 mark)

Turn over for the next question

Turn over ►

- 10** A survey was carried out on the ages of people going to the cinema in Westhampton during one week.
The chart shows the results.



- (a) (i) How many people Under 60 went to the cinema that Thursday?

Answer (1 mark)

- (ii) Which day of the week has the lowest number of people going to the cinema?

.....

Answer (1 mark)

- (iii) For those people Over 60, one day of the week is half price.

Which day of the week do you think this is?

Answer (1 mark)

(b) Amy says “For those people Under 60 all days of the week are equally popular for going to the cinema.”

Is she right?
Explain your answer.

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

(1 mark)

(c) A person who went to the cinema on the Saturday was picked at random.

What is the probability that the person was Over 60 ?

.....
.....

Answer (2 marks)

11 In a pole vault competition Sabine cleared a height of 5.05 m to take second place. Yelena won the competition by 3 cm.

What height did Yelena clear ?

.....
.....

Answer m (1 mark)

Turn over for the next question

Turn over ►

12 (a) Calculate the cube of 8.7

.....

Answer (1 mark)

(b) Calculate $\sqrt{\frac{7}{2.3}}$

.....

Answer (1 mark)

(c) Calculate $\frac{(8.7 + 4.2)}{1.75}$

.....

Answer (1 mark)

13 Insert brackets on the left-hand side of each of the following to make them correct.

(a) $3 + 5 - 2 \div 3 = 2$ (1 mark)

(b) $3 + 5 - 2 \div 3 = 4$ (1 mark)

14 A school band is going on a concert tour to Paris.

- (a) The concert programme is translated into French at a cost of £1.80
The programme has 45 words.
Calculate the cost per word of the translation.

.....
.....

Answer pence (2 marks)

- (b) The band is performing the concert at three places.
Posters are printed for the concerts.

	Number of small posters	Number of large posters
1st concert	100	20
2nd concert	200	50
3rd concert	0	10

Small posters cost 8p each.
Large posters cost 12p each.

- (i) Calculate the total cost of printing the posters.

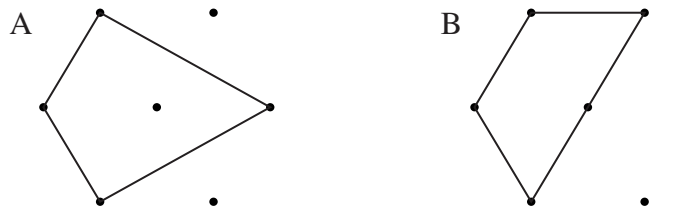
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Answer £ (3 marks)

- (ii) Write down an expression for the cost in pence of x small posters and y large posters.

Answer pence (2 marks)

15 Frank draws two quadrilaterals on a seven-point triangular grid.



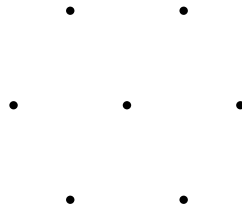
(a) (i) What special name is given to quadrilateral A?

Answer (1 mark)

(ii) What special name is given to quadrilateral B?

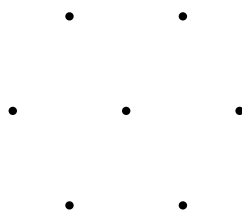
Answer (1 mark)

(b) By joining 4 dots on the seven-point grid below draw a rectangle.



(1 mark)

(c) By joining 3 dots on the seven-point grid below draw an equilateral triangle.



(1 mark)

(d) The perimeter of quadrilateral A can be found using the formula

$$P = 2a + 2b$$

Find P when $a = 3$ and $b = 5.2$

.....

Answer $P =$ (2 marks)

(e) Frank now draws a quadrilateral and a triangle.



Explain why the areas of the two shapes are the same.

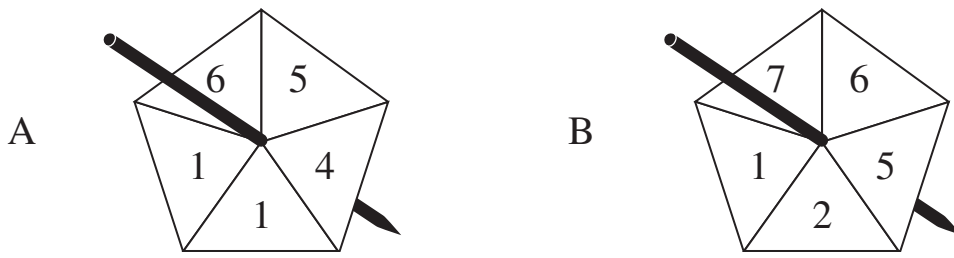
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(2 marks)

Turn over for the next question

Turn over ►

16 Two fair spinners A and B are shown.



(a) (i) What is the most likely number when spinner A is spun ?

Answer (1 mark)

(ii) Zak thinks that 7 is the most likely number when spinner B is spun.

Explain why he is wrong.

.....
.....

(1 mark)

(b) James plays a game using the two spinners.

His score is the sum of the two numbers on spinner A and spinner B.

He wins if his score is even.

James plays the game many times.

Is he likely to win more times than he loses ?

You **must** show your working.

You may use this table if you wish.

		Spinner A				
		1	1	4	5	6
Spinner B	1					
	2					
	5					
	6					
	7					

.....
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(4 marks)

17 (a) Simplify $4c - c + 2c$

.....

Answer (1 mark)

(b) Solve the equations

(i) $2x = 24$

.....

Answer $x =$ (1 mark)

(ii) $y - 9 = 11$

.....

Answer $y =$ (1 mark)

(iii) $\frac{z}{4} = 8$

.....

Answer $z =$ (1 mark)

(iv) $4w + 3 = 13$

.....

Answer $w =$ (2 marks)

Turn over ►

18 Here is part of a railway timetable.

	Departure Times			
Newcastle	0840	0935	1040	1122
York	0943	1034	1144	1225
Leeds	1010	–	1210	–
Derby	1124	1157	1324	1355
Birmingham	1215	1315	1415	1515

(a) A train leaves Newcastle at 1040.

How long is the journey to Birmingham for this train?
Give your answer in hours and minutes.

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.....

Answer hours minutes (3 marks)

(b) The 1225 train from York takes 1 hour 30 minutes to reach Derby.
The distance from York to Derby is 96 miles.

Calculate the average speed of the train in miles per hour.

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Answer mph (3 marks)

19



A golf ball is travelling towards a hole.
The distance of the ball from the hole, s feet, after time t seconds, is given by

$$s = t^2 - 6t + 9$$

- (a) The ball drops into the hole after 3 seconds.

By working out s when $t = 3$, show that this is correct.

.....

(3 marks)

- (b) The cross-section of the hole is a circle of diameter 4.25 inches.

- (i) Calculate the circumference of this circle.

.....

Answer inches (2 marks)

- (ii) 1 inch = 2.54 cm.

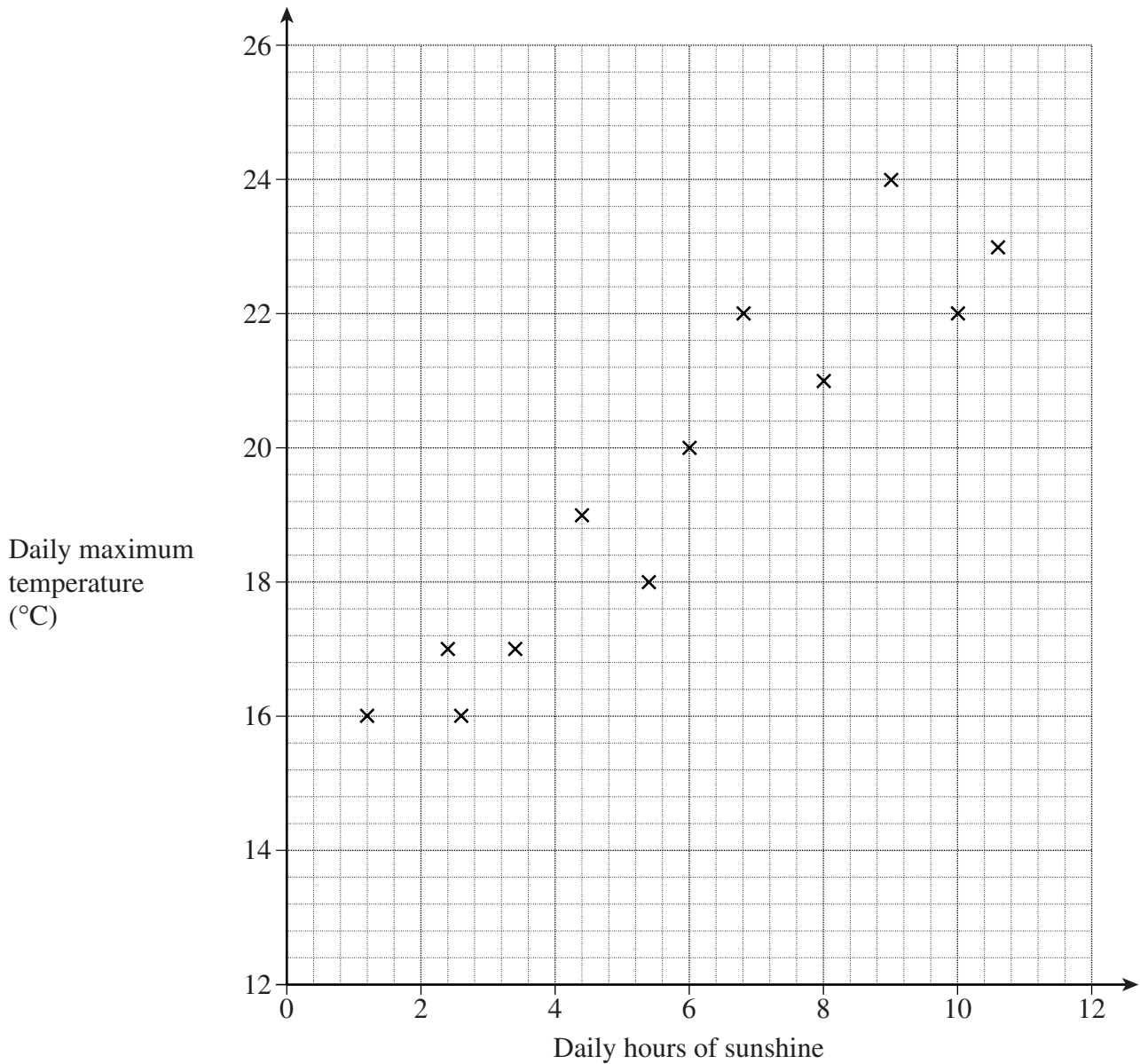
What is 4.25 inches in centimetres?
Give your answer to one decimal place.

.....

Answer cm (3 marks)

Turn over ►

- 20 A newspaper records the daily maximum temperature of twelve seaside resorts in Britain. It also records the daily hours of sunshine. The scatter graph shows the data collected for a day last July.



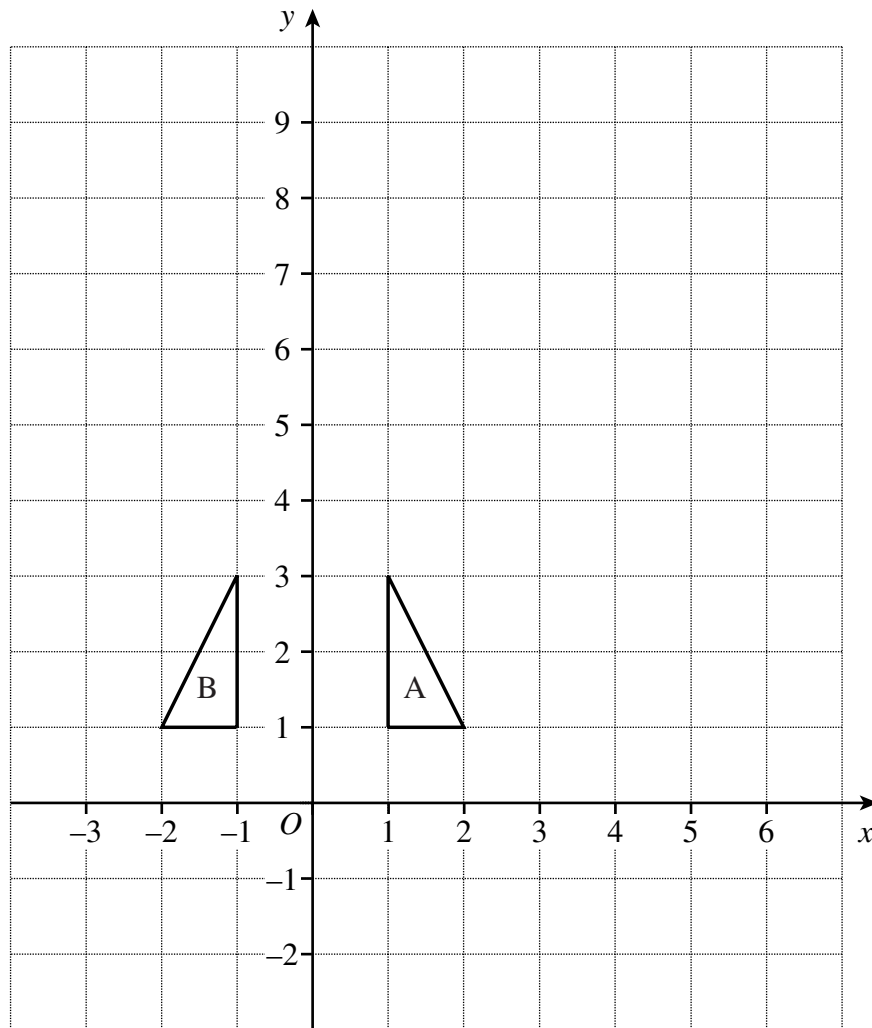
- (a) Draw a line of best fit. (1 mark)
- (b) What is the connection between daily hours of sunshine and daily maximum temperature for these resorts?

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(1 mark)

21 This question is about transformations of triangle A.



- (a) Describe fully the single transformation that takes triangle A onto triangle B.

.....

 (2 marks)

- (b) Translate triangle A, 2 units to the left and 3 units down.
 Label the new triangle C.

(1 mark)

- (c) Enlarge triangle A by a scale factor of 3, centre (0, 1).
 Label the new triangle D.

(3 marks)

Turn over ►

22 (a) Multiply out $4(x - 3)$

.....

Answer (1 mark)

(b) Factorise $x^2 + 5x$

.....

Answer (1 mark)

23 Amir works in a sports shop.
He can have a discount of 40% on anything he buys for himself.

How much will Amir pay for a pair of trainers priced at £65 ?

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Answer £ (3 marks)

END OF QUESTIONS

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