SURNAME ..... FIRST NAME .....

(Block capitals, please)

JUNIOR SCHOOL ..... SENIOR SCHOOL .....

Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Monday 16 January 2006

Please read this information before the examination starts.

- This examination is 60 minutes long.
- Please try **all** the questions.
- Write your answers on the dotted lines.
- All working should be written on the paper.
- Tracing paper may be used.
- Calculators are not allowed.

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1. (i) One day, Grace buys two apples which cost 25 pence each and a banana which costs 38 pence.

How much does she pay altogether?



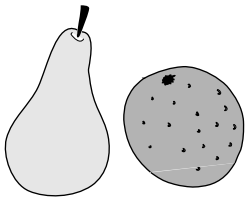
Answer: ..... pence (2)

(ii) Another day, she buys a pear and an orange.

The pear costs 28 pence.

She spends 60 pence altogether.

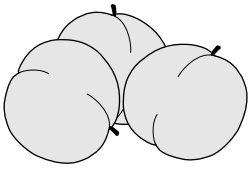
How much is the orange?



Answer: ..... pence (2)

(iii) On a third day, she spends £1.26 on three identical peaches.

How much is one peach?



Answer: ..... pence (2)

2. Look at the two number cards below.



card A card B

(i) Write down two factors of the number written on card A.

Answer: ..... and ..... (2)

(ii) By which number must you multiply the number on card B to get the number on card A?

Answer: ..... (1)

(iii) What is the difference between the numbers on the two cards?

Answer: ..... (2)

3. Here is the first part of a pattern of numbers.

1 5 9 13 17

(i) From the numbers written above, write down

(a) a prime number

Answer: ..... (1)

(b) a square number.

Answer: ..... (1)

(ii) (a) Write in words the rule to get the next number in the pattern.

Answer: ..... (1)

(b) Write down the next four numbers in the pattern.

Answer: ..... , ... , ... , ... (2)

(iii) (a) Which of your numbers in (ii) (b) above are multiples of three?

Answer: ..... (1)

(b) What do you notice about the position of the multiples of three in this pattern of numbers?

Answer: ..... (1)

4. Five members of a family measured their height.
They recorded their measurements in this table.

name	height
Jane	*1.5 m*
Bob	*1.9 m*
Tracy	*85 cm*
Fiona	*1.2 m*
David	*1.14 m*



(i) Who is the tallest member of this family?

Answer: ..... (1)

(ii) Write Fiona's height in centimetres.

Answer: ..... cm (1)

(iii) Find the range of heights.

Answer: ..... metres (2)

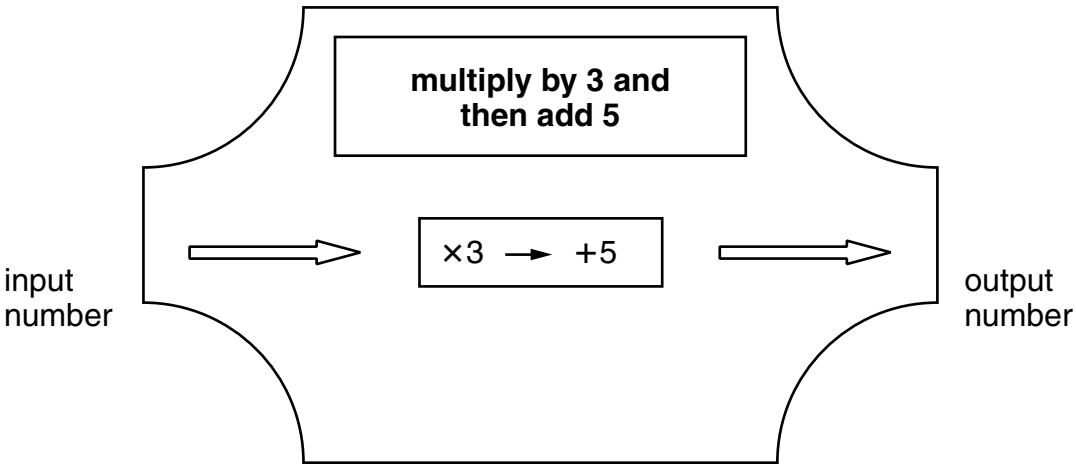
(iv) How much taller is Fiona than David?

Answer: ..... cm (2)

(v) Write the heights of the family in order, starting with the smallest.

Answer: ..... , ... , ... , ... , ... (3)

5. (a) The number machine below changes numbers according to the rule **multiply by 3 and then add 5**



Write the missing **input** and **output** numbers for the machine.

input	→	× 3 + 5	→	**output**	
5				20	
4				.....	(1)
11				.....	(1)
.....				8	(1)

(b) I think of a number, halve it and then subtract 1

The result is 5

Which number am I thinking of?

Answer: ..... (2)

6. There are 24 children in a class.
   18 of the children are boys.

   (i) What percentage of the class is boys?

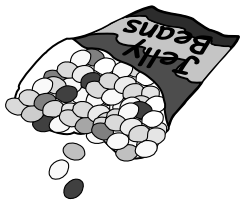
Answer: ..... % (2)

One day, all the boys in the class were present but half of the girls were absent.

(ii) What fraction of the children present was boys?

Answer: ..... (3)

7. Jane counts the number of jelly beans of each colour in a bag.

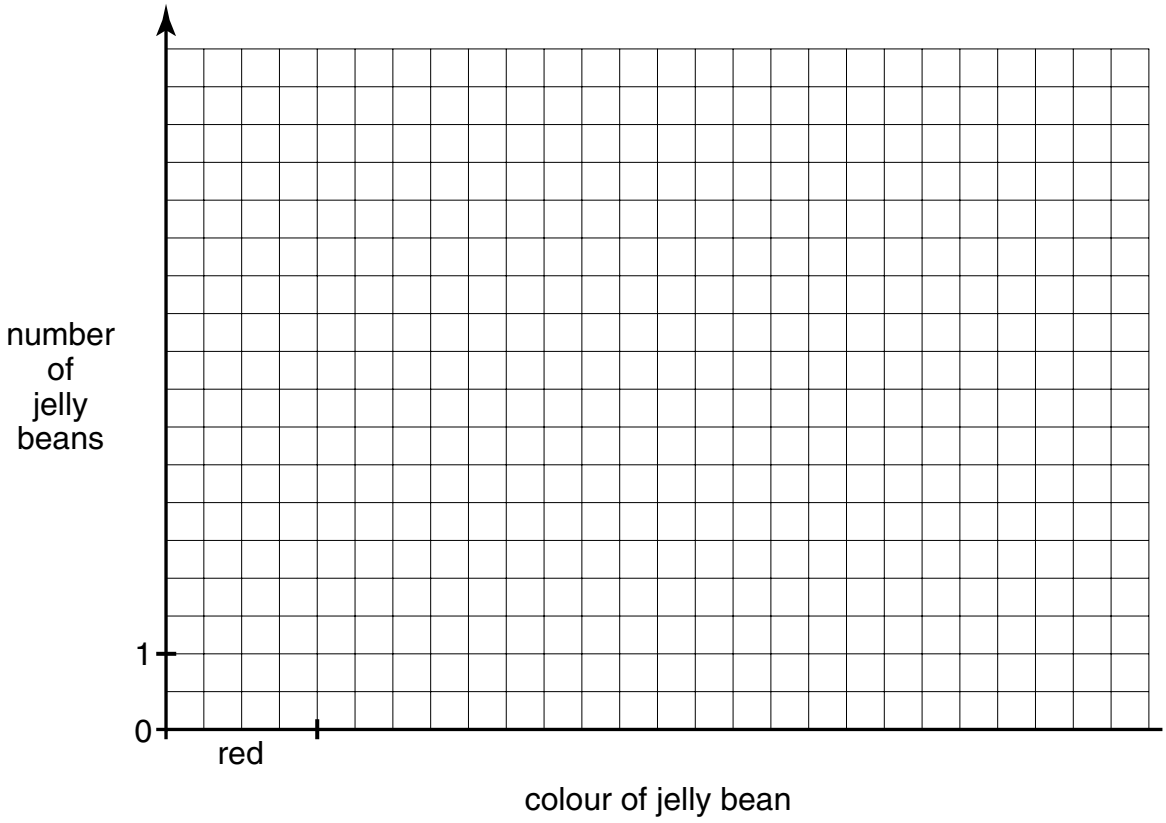


(i) Complete the frequency column in the table below.

colour	tally	frequency
red	////	
orange	//// /	
green	////	
brown	//// ////	
pink	//// //	
	total	30

(2)

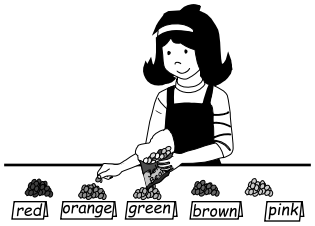
(ii) Complete the bar chart below to show this information.



(4)

(iii) Jane separates her jelly beans into piles of the same colour.

What is the mean number of jelly beans in each pile?



Answer: ..... (2)

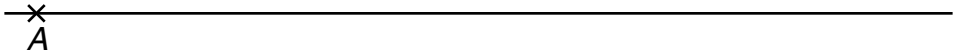
8. (i) Draw accurately a fully-labelled triangle, *ABC*, with the following measurements:

$AB = 10$ cm

angle $A = 65°$ and

angle $B = 40°$

The point *A* is already drawn to help you.

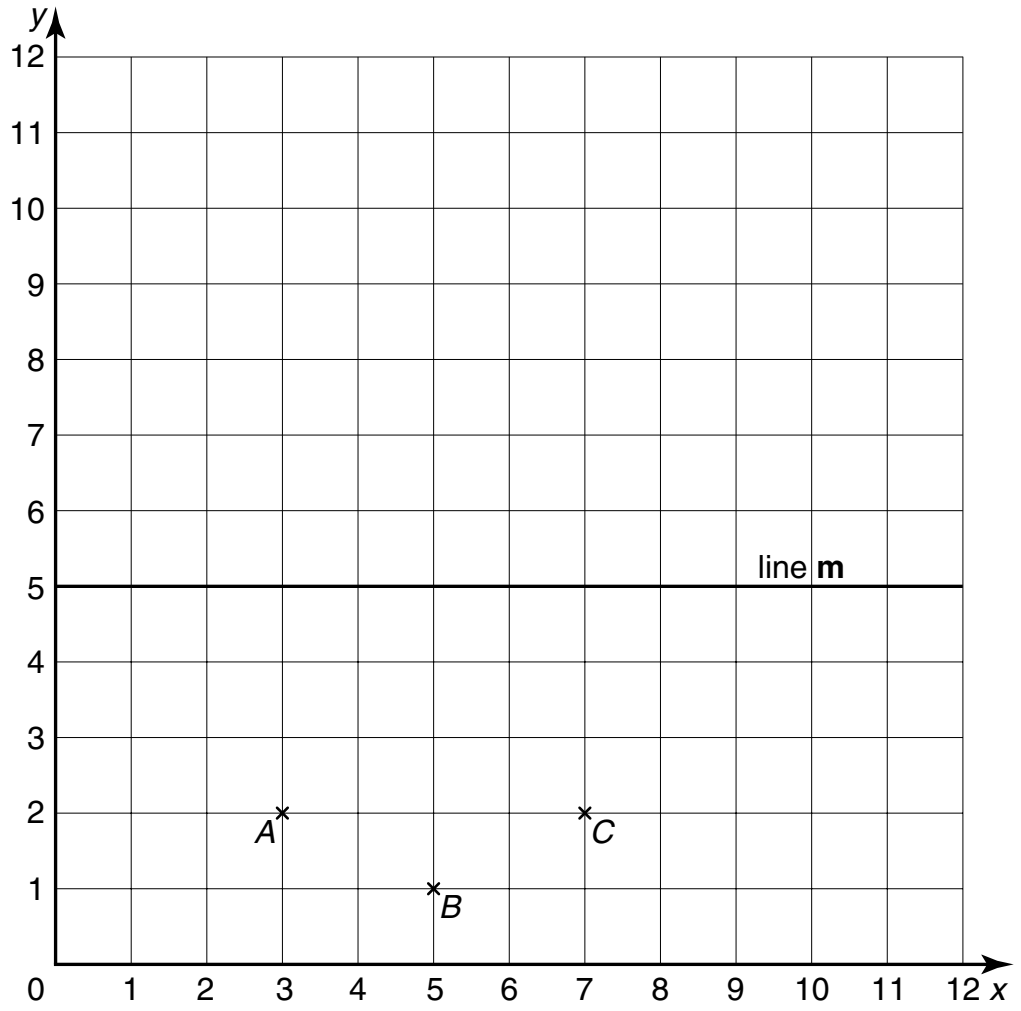


(4)

(ii) Measure and write down the length of *AC*.

Answer: ..... cm (2)

9.



(i) On the grid above, plot the point *D* (5,3). (1)

(ii) Join *ABCD* in order.
Which type of quadrilateral have you drawn?

Answer: ..... (2)

(iii) Draw the reflection of *ABCD* in the line **m**. (2)

(iv) In a space on the grid, draw a kite. (2)

10. The following temperatures were recorded for five cities:

city	temperature in °C
Athens	9
Johannesburg	13
Vancouver	⁻9
Sydney	17
Madrid	⁻1



(i) Which city was the warmest?

Answer: ..... (1)

(ii) By how many degrees was Vancouver colder than Johannesburg?

Answer: ..... degrees (1)

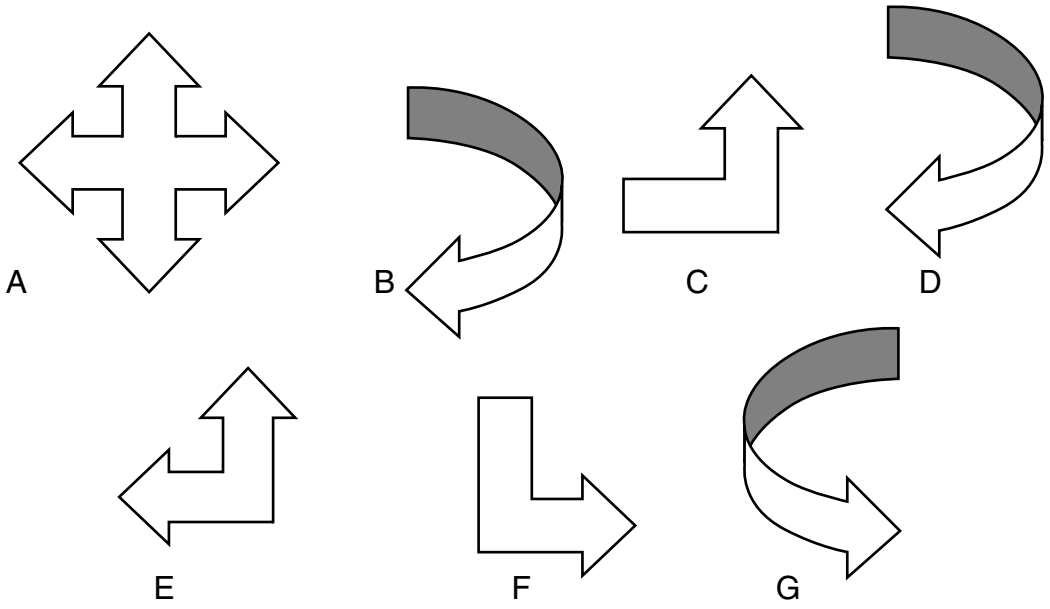
The temperature for New York was not included in the table.

The temperature in Athens was 17 degrees warmer than the temperature in New York.

(iii) Which temperature would have been recorded for New York?

Answer: ..... °C (2)

11. Look carefully at the shapes drawn below.



(i) Which two shapes are rotations of each other?

Answer: ..... and ..... (1)

(ii) Which two shapes are translations of each other?

Answer: ..... and ..... (1)

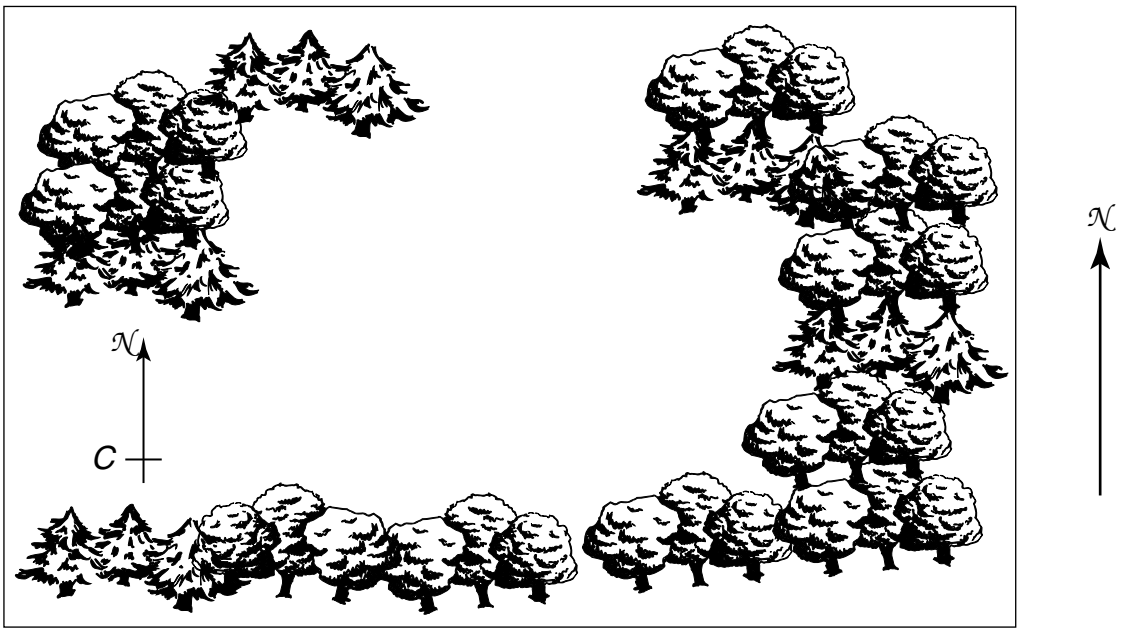
(iii) Draw all lines of symmetry on the shapes above. (3)

12. Cain and Abel are playing a game in the wood.

Abel is giving Cain instructions.

The diagram below shows the start of the game.

Cain is standing at point *C* and facing North.



Here are the instructions which Abel gives to Cain:

- turn 90° clockwise
- walk 6 paces forward
- turn 45° anticlockwise
- walk 2 paces forward
- turn 90° anticlockwise
- walk 4 paces forward

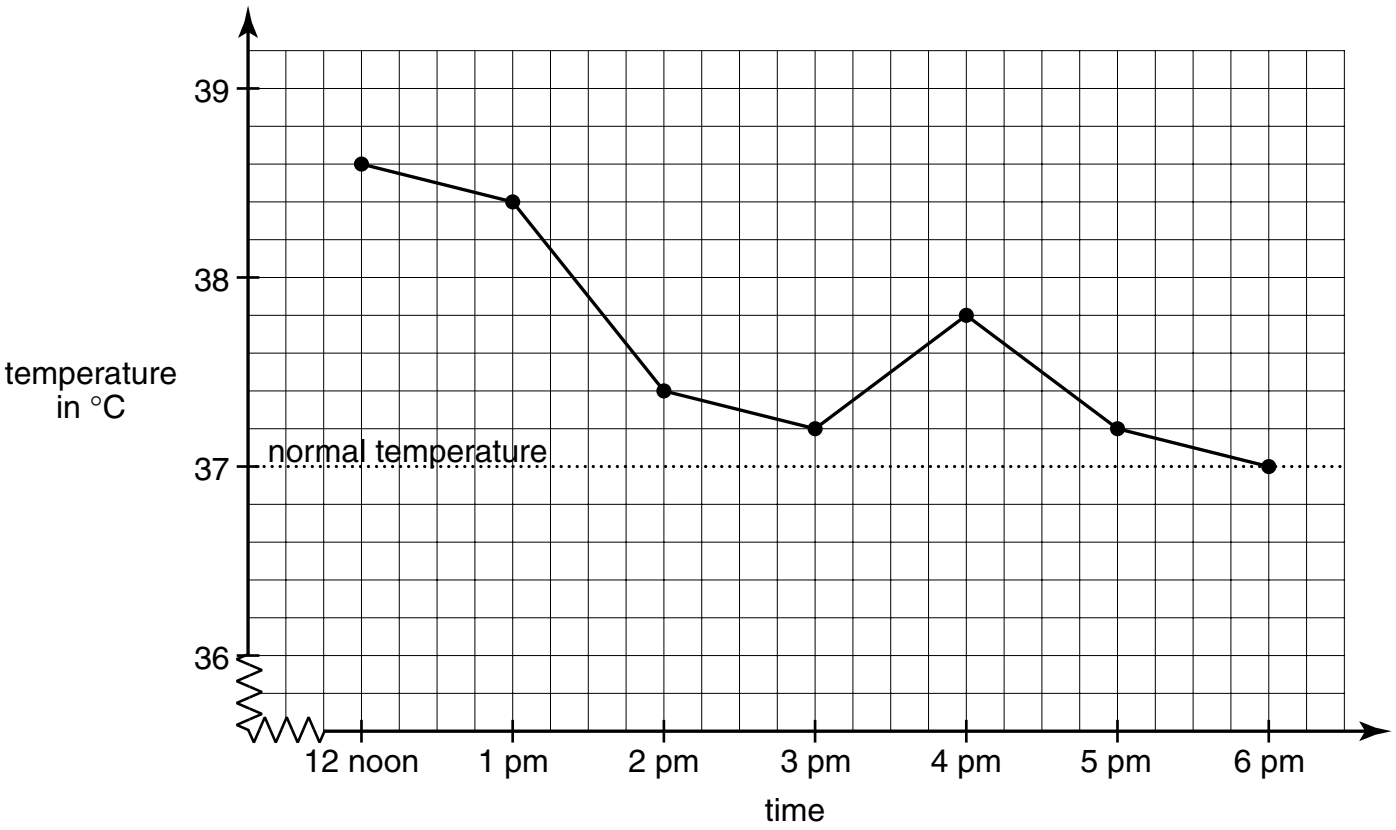
(i) Using a scale of 1 cm to represent 1 pace, draw Cain's movements on the diagram and show his finishing point. (5)

(ii) Abel now tells Cain to turn a half-turn on the spot.

In which direction is Cain now facing?

Answer: ..... (1)

13. The graph below shows the temperature of a patient measured every hour between 12 noon and 6 pm on one day.



(i) What was the patient's temperature at 12 noon?

Answer: ..... °C (1)

(ii) (a) During which hour was the greatest change in the patient's temperature?

Answer: between ..... and ..... (1)

(b) What was this change?

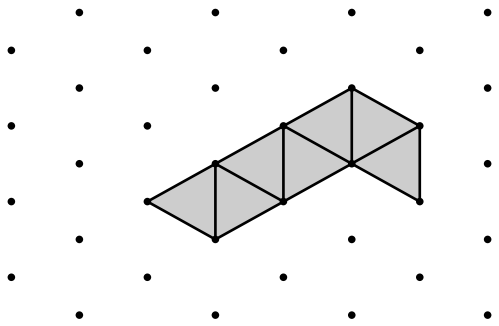
Answer: ..... degrees (2)

(iii) The patient was given some medication at 12 noon.

Suggest what might have happened between 3 pm and 5 pm.

Answer: ..... (1)

14. (a) The shape below is made up of equilateral triangles of side-length 1 cm.

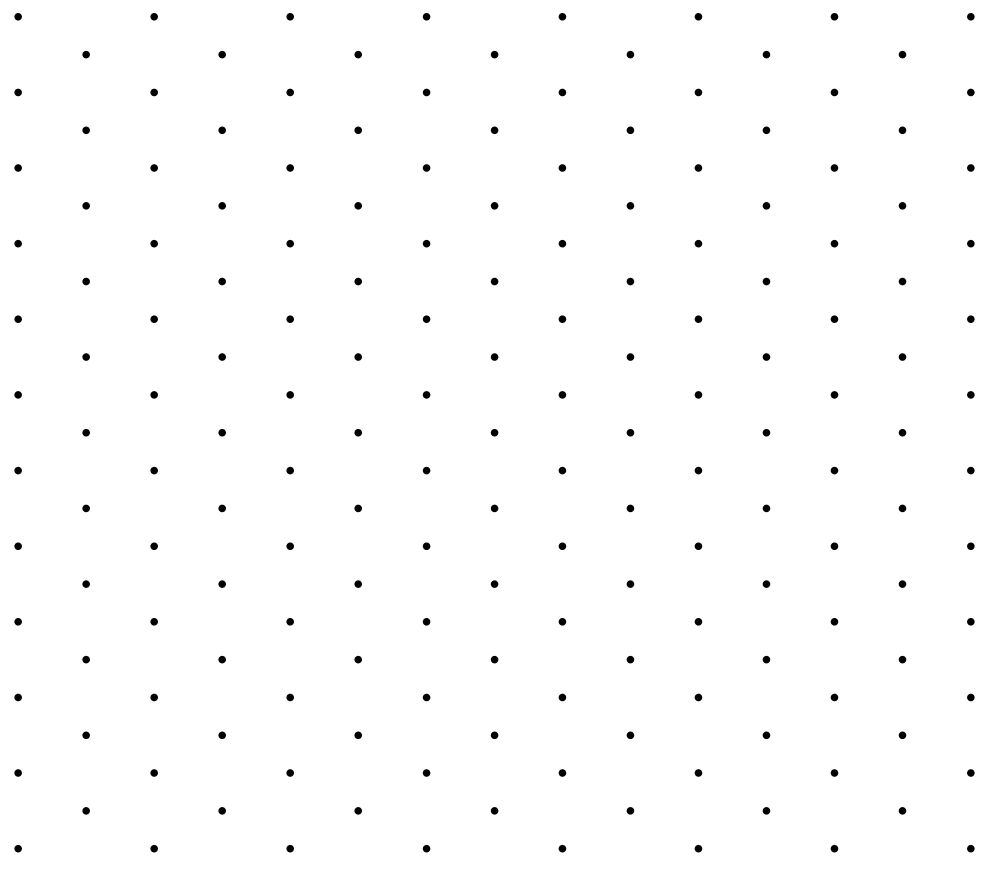


(i) How many equilateral triangles are there in the shape?

Answer: ..... (1)

(ii) Add one more equilateral triangle to the shape above to create a shape with rotational symmetry of order 2 (1)

(b) On the grid below, draw two different shapes, both using equilateral triangles which will each have 3 lines of symmetry and rotational symmetry order 3



(4)

15. A bag of 100 mixed flower bulbs contains daffodil, tulip and crocus bulbs.



(i) From the information on the label above, put a tick in the box by each statement which you think is true for this bag of mixed bulbs.

(a) There is about the same number of each type of flower bulb in the bag. ☐

(b) More than half the bulbs in the bag are likely to be daffodils. ☐

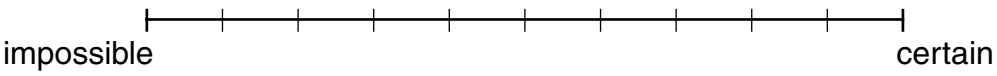
(c) There is the same number of tulip bulbs as daffodil bulbs. ☐

(d) There are about half as many tulip bulbs as daffodil bulbs. ☐

(4)

(ii) I pick one bulb at random from my mixed bag of 100 bulbs.

On the scale below, mark with a cross the probability that I pick a crocus bulb.



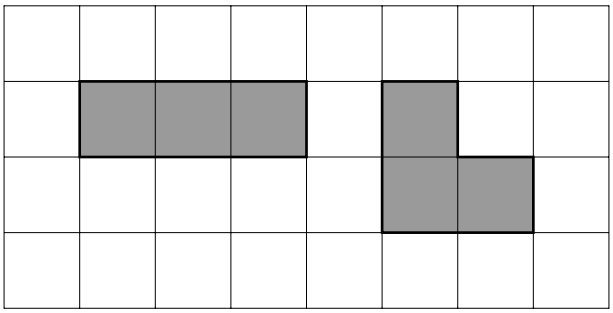
(2)

You are advised not to spend too long on this question.

16. Using only three squares, there are only two ways of joining them edge to edge to make a different shape.

    These are shown below.

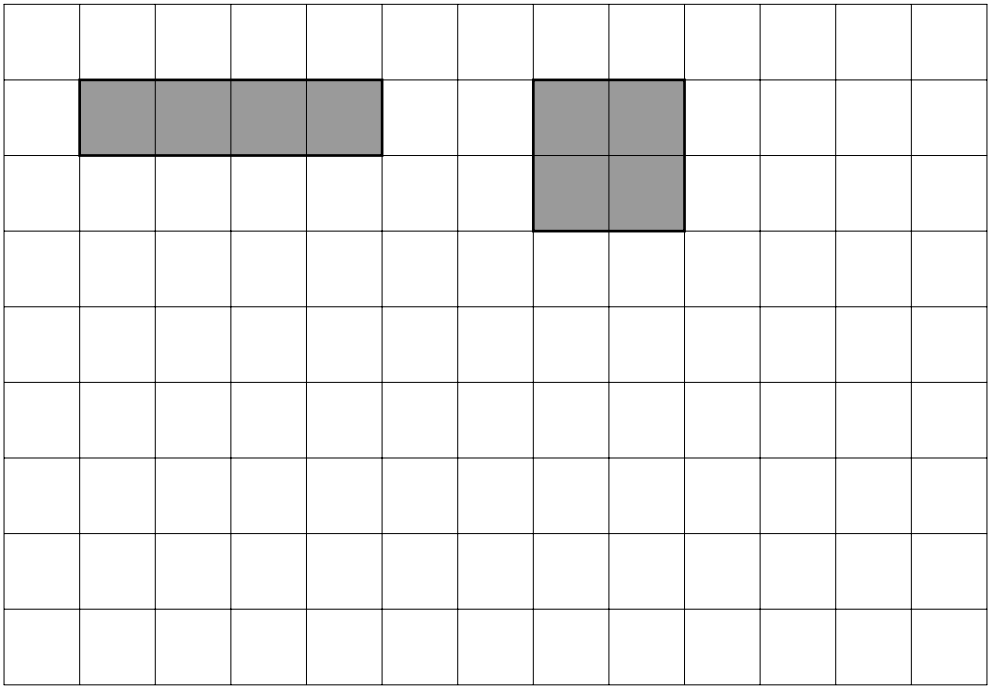
    Note: Congruent shapes are not counted as different shapes.



(i) Using four squares only, there are five different shapes which can be made by joining the shapes edge to edge.

Two are shown below.

Draw the other three shapes.



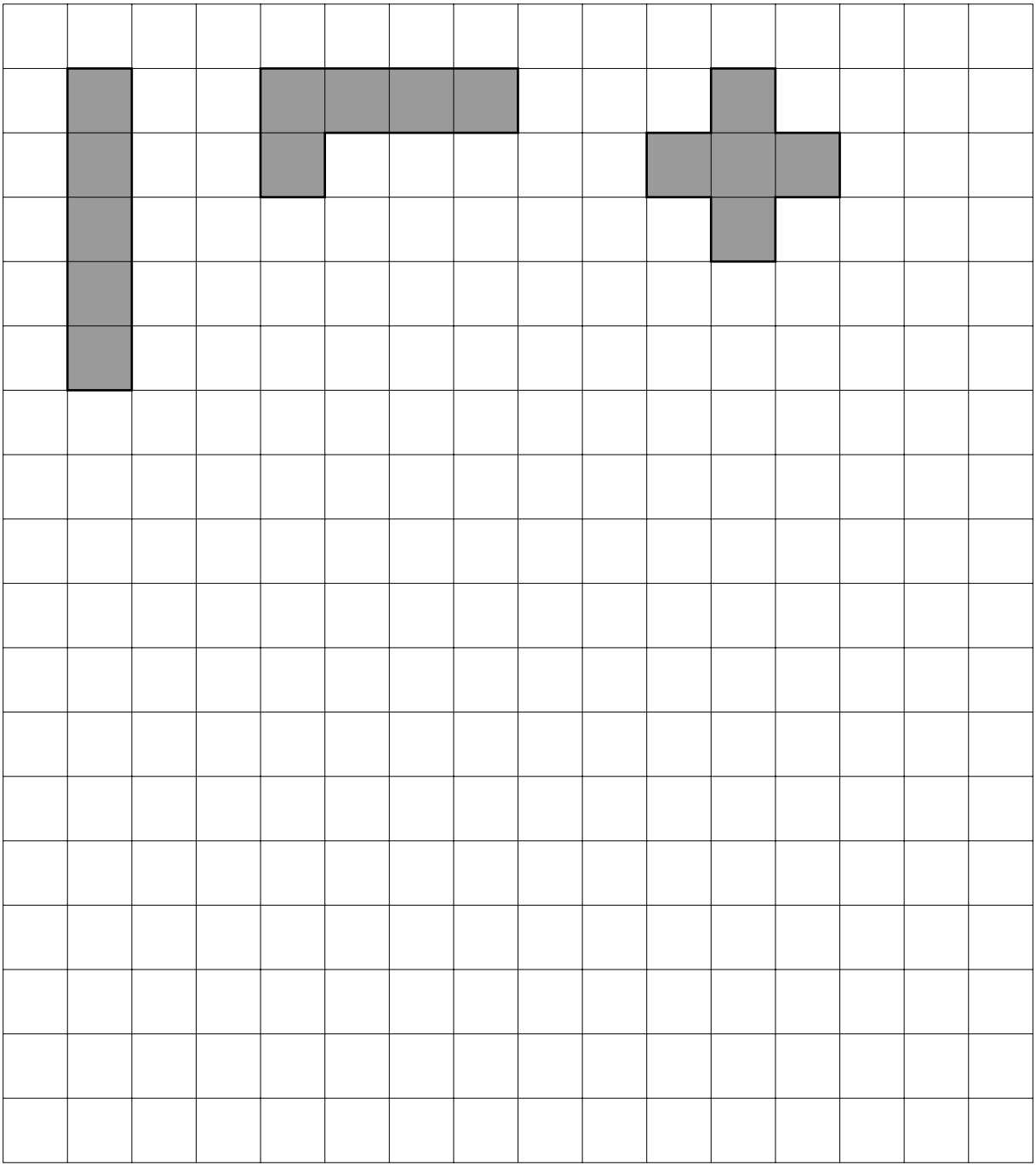
(3)

Turn over for part (ii) of this question.

(ii) Using five squares, it is possible to draw twelve different shapes.

On the squared grid below, three of these five-square shapes have been drawn.

Draw as many other five-square shapes as you can.



(7)

(Total marks: 100)