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

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

ISEB
Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Practice Paper 2009–2010

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. Here is the start of a number pattern:

3 7 11 15 19 23 27 . . .

(i) From the numbers written above, write down

(a) a multiple of five

Answer: ..... (1)

(b) the difference between 11 and 30

Answer: ..... (1)

(c) a number which is **not** a prime number

Answer: ..... (1)

(d) the square root of 9

Answer: ..... (1)

(ii) Write down the next two numbers in the pattern.

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

(iii) What is the first number in the pattern which is greater than 48?

Answer: ..... (2)

2. 1983 people buy tickets for a concert.



(a) What is the value of the 1 in 1983?
Write your answer in words.

Answer: ..... (1)

(b) Write 1983 correct to the nearest hundred.

Answer: ..... (1)

(c) Each concert ticket costs £16

(i) How much do 1000 tickets cost?



Answer: £ ..... (1)

(ii) Use your answer to part (b) to estimate the total cost of all the tickets sold.

Answer: £ ..... (2)

3. Ryan collects football cards.
Last week he bought 56 football cards.
This week he bought 72 football cards.



(i) How many football cards did he buy in total?

Answer: ..... (2)

Football cards are sold in packs.
Each pack contains 8 cards.

(ii) How many packs of football cards did Ryan buy altogether?

Answer: ..... (2)

(iii) Ryan's sister buys him another 9 packs of football cards.
Each pack costs 35 pence.

(a) What is the cost of 9 packs of football cards?

Answer: £ ..... (3)

She pays with a £5 note.

(b) How much change does she get?

Answer: £ ..... (2)

4. **50.79 49.7 50.9 50.09 49.29**

(i) Write down the largest number from the list above.

Answer: ..... (1)

(ii) Write down the smallest number from the list above.

Answer: ..... (1)

(iii) Work out the sum of the largest and smallest numbers in the list.

Answer: ..... (2)

5. Write down any number which is between

(i) 35 and 38

Answer: ..... (1)

(ii) -1 and 0

Answer: ..... (1)

(iii) 0.2 and 0.3

Answer: ..... (1)

(iv) $\frac{1}{3}$ and $\frac{1}{2}$

Answer: ..... (1)

6. Belinda has 60 coloured counters.
One third of them are red.



(i) How many red counters does she have?

Answer: ..... (1)

25% of her counters are blue.

(ii) How many blue counters does she have?

Answer: ..... (2)

The rest of the counters are green.

(iii) How many more green counters than blue counters are there?

Answer: ..... (2)

Belinda puts her 60 counters into a bag and picks one at random.

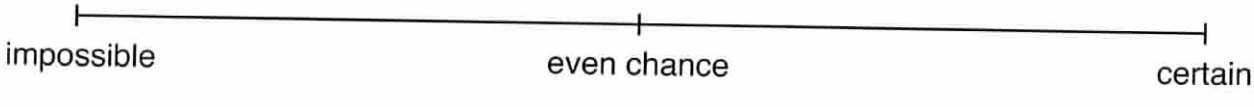
(iv) On the probability scale below, mark the following probabilities with the letters shown:



A the probability that the counter is red

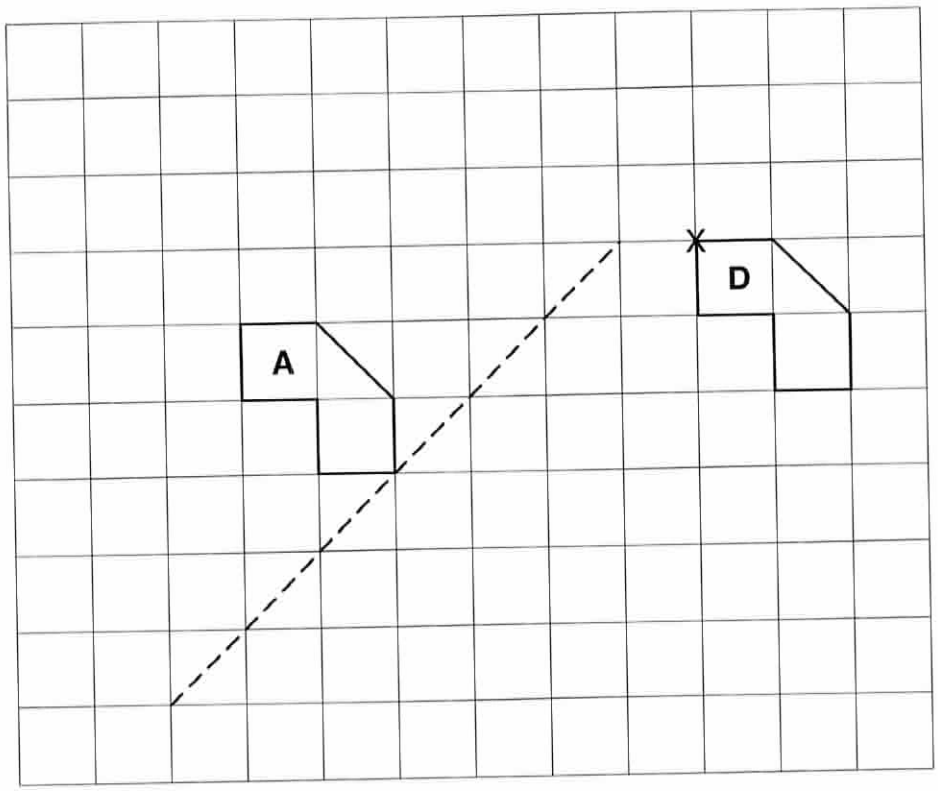
B the probability that the counter is yellow

C the probability that the counter is **not** blue



(3)

7. Shapes **A** and **D** are drawn on the centimetre-square grid below.



(i) Reflect shape **A** in the dashed line.
Label the new shape **B**. (2)

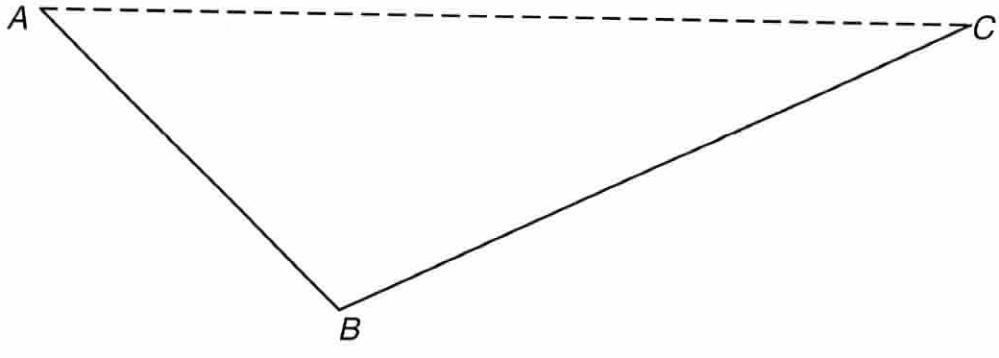
(ii) Translate shape **A** *2 units down and 5 units right.*
Label the new shape **C**. (2)

(iii) Rotate shape **D** through 180° about the point marked X.
Label the new shape **E**. (2)

(iv) Calculate the area of shape **A**.

Answer: ..... cm^2 (1)

8. (i) Construct triangle *ADC*, in which angle *DAC* = 44° and *AD* = 56 mm.
(Use the dashed line AC as the base of your triangle.)



(2)

(ii) Measure and write down the size of obtuse angle *ABC*.

Answer: ..... ° (1)

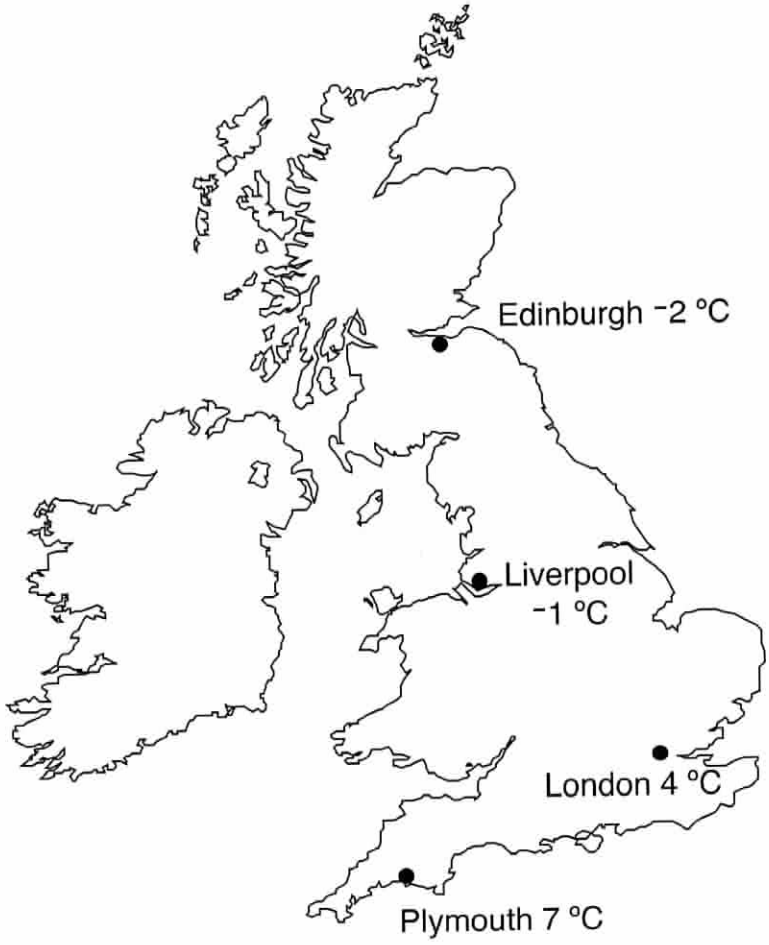
(iii) Measure and write down the length of *BD*.

Answer: ..... cm (1)

(iv) What special type of quadrilateral is *ABCD*?

Answer: ..... (1)

9. This map shows the temperatures in four cities one morning in January.



(i) Which city had the lowest temperature?

Answer: ..... (1)

(ii) How many degrees warmer was it in Plymouth than in London?

Answer: ..... °C (1)

(iii) Which two cities had a temperature difference of 6 °C?

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

In the evening, the temperature in Liverpool was 2 °C colder than in the morning.

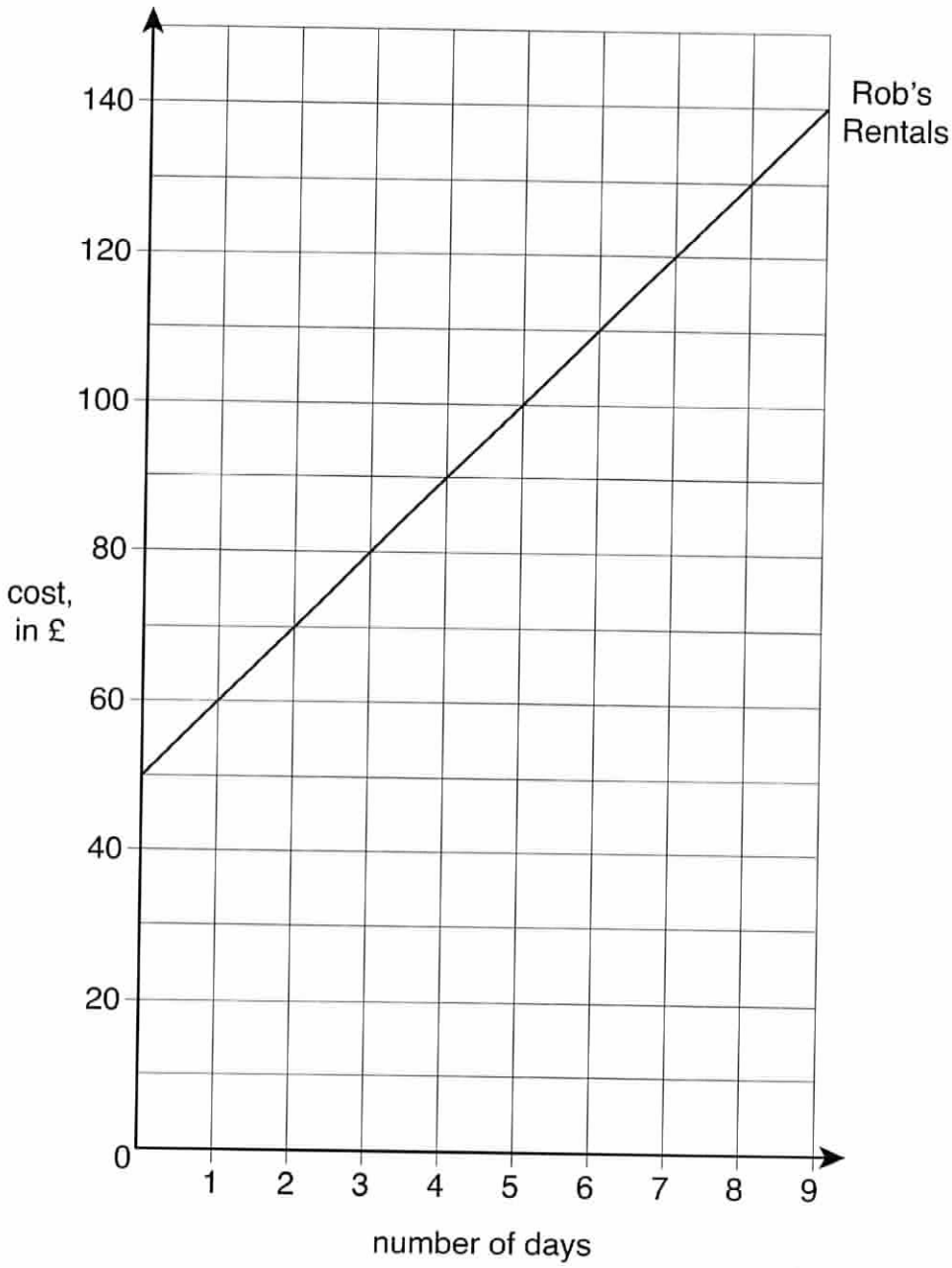
(iv) Write down the temperature in Liverpool in the evening.

Answer: ..... °C (1)

10. Alice goes on holiday with her family.
Her parents want to rent a car.



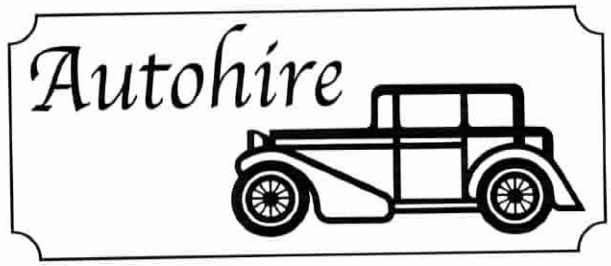
The cost to rent a car from *Rob's Rentals* is shown on the graph below.



(i) Use the graph to find the cost of renting a car from *Rob's Rentals* for 6 days.

Answer: £ ..... (1)

Another company, *Autohire*, charges £20 for each day.



(ii) (a) How much would it cost to rent a car for 6 days from *Autohire*?

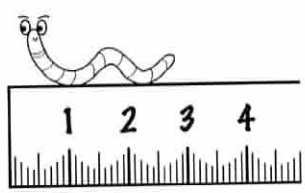
Answer: £ ..... (1)

(b) Use your answer to draw a line on the grid on the previous page, showing the cost of renting a car from *Autohire*. (2)

(iii) Use the graph to complete this sentence:

Both companies charge the same amount to rent a car for ..... days. (1)

11. You are told that **1 inch = 2.5 centimetres**



Use this information to write

(i) 7 inches in centimetres

Answer: ..... cm (2)

(ii) 70 inches in metres

Answer: ..... m (2)

12. Five pupils enter a maths competition.
Their scores in the Mental Challenge are:

18 20 15 12 20



For these 5 scores, work out

(i) the mode

Answer: ..... (1)

(ii) the median

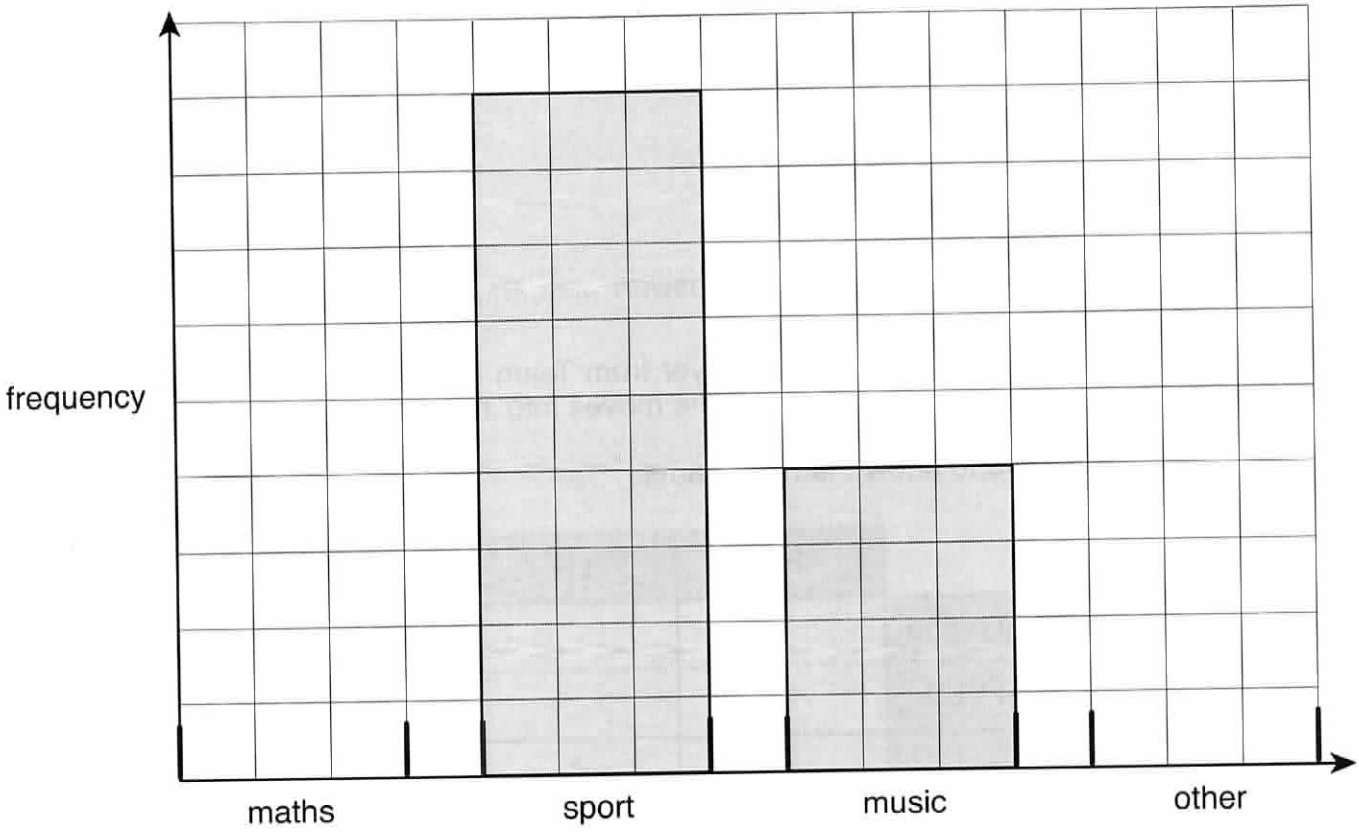
Answer: ..... (2)

(iii) the mean

Answer: ..... (3)

13. Matthew asked everyone in Year 6 to tell him their favourite subject.
He put the results in a table and then started to draw a bar chart.
Some of the information is covered by ink.

subject	frequency
maths	20
sport	36
music	
other	
total	80



36 children chose sport.

(i) Use this information to write a scale on the vertical axis. (2)

(ii) Use your scale to calculate the number of children who chose music.

Answer: ..... (1)

(iii) Complete the bar chart. (3)

14. The two school hockey teams are called Team Alpha and Team Beta.

Some information about the number of right-handed (RH) and left-handed (LH) players in each team is shown in the table below.



	RH	LH	total
Team Alpha	7		
Team Beta		2	11
total		6	

(i) Complete the table above. (3)

(ii) What fraction of the left-handed players are in Team Alpha?

Answer: ..... (1)

At the end of the term, a left-handed player from Team Beta moves into Team Alpha and a right-handed player from Team Alpha moves into Team Beta.

(iii) Redraw the table to show the new teams.

	RH	LH	total
Team Alpha			
Team Beta			11
total		6	

(2)

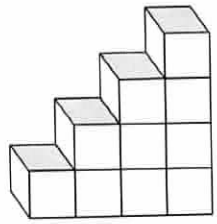
The hockey pitch is 55 metres wide.

During a practice, Anna runs a distance equivalent to 18 widths of the pitch.

(iv) Calculate this distance.

Answer: ..... m (3)

15. (a) This solid shape is made from identical cubes with 1-cm edges.
There are no hidden cubes.

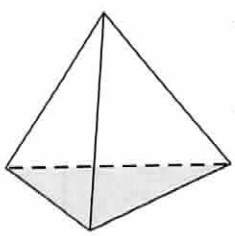


(i) What is the volume of the shape?

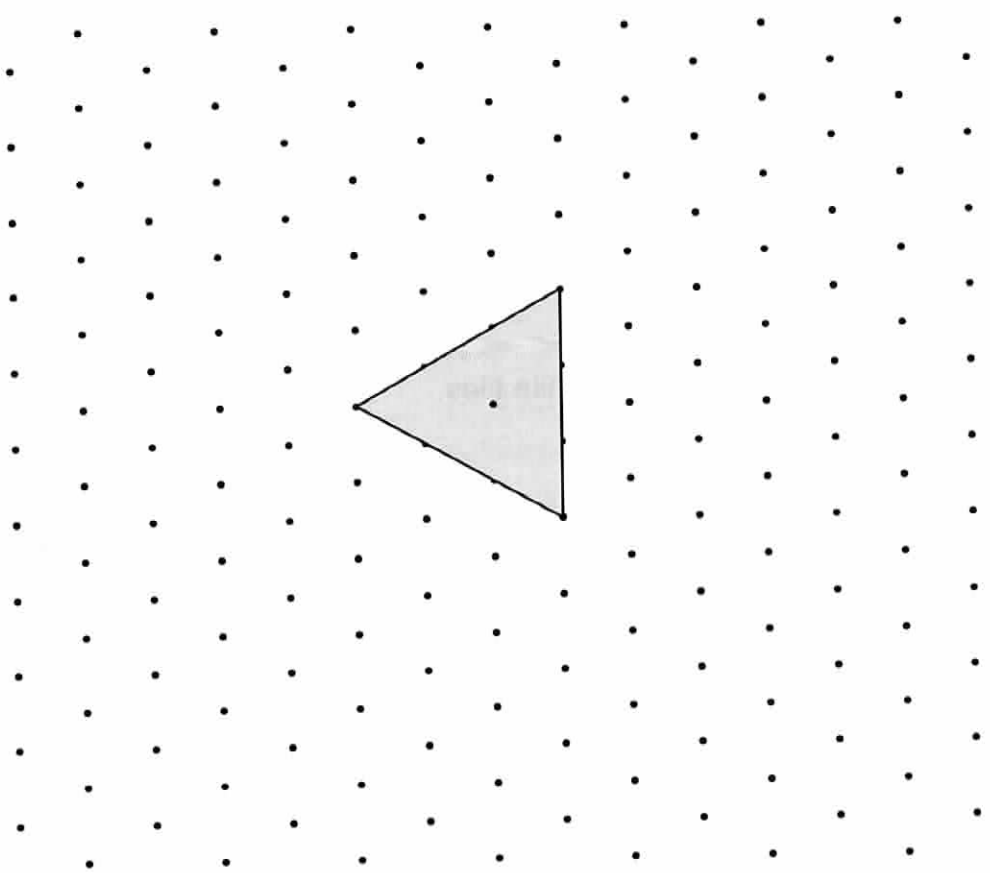
Answer: ..... cm^3 (1)

(ii) How many small cubes must be added to make a large cube with each side 4 cm?

Answer: ..... (2)

(b) 

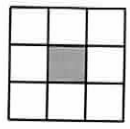
A tetrahedron is made from four congruent equilateral triangles.
In the space below, draw an accurate net for this tetrahedron.
The shaded face has already been drawn for you.

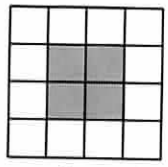


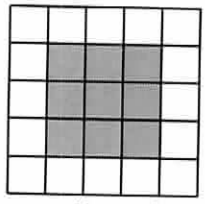
(3)

TURN OVER FOR QUESTION 16

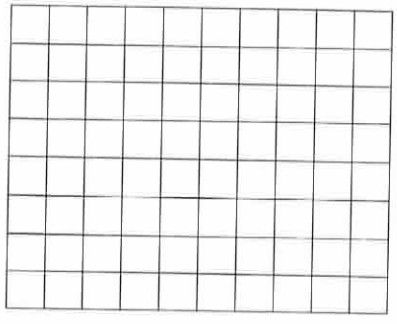
16. Here are some patterns made from tiles:


pattern 1


pattern 2


pattern 3

(i) Draw pattern 4 on the grid below.



(2)

(ii) Complete the table.

pattern number	1	2	3	4
number of grey tiles	1	4		
number of white tiles	8	12		

(2)

(iii) (a) How many grey tiles are there in the 8th pattern?

Answer: ..... (2)

(b) There is a pattern with 40 white tiles.
Which pattern number is it?

Answer: pattern number: ..... (2)

(iv) A pattern has 100 grey tiles.
How many white tiles are in this pattern?

Answer: ..... (2)

(Total marks: 100)