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

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

Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Practice Paper 2008–2009

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.

1. (a) Write in figures the number

(i) eleven thousand and nine

Answer: ..... (1)

(ii) which is 10 less than 903

Answer: ..... (1)

(iii) which is half of 260

Answer: ..... (1)

(b) Kelly arranges some number cards to make the number 2651 as shown.

2	6	5	1

(i) What is the value of the 2 in this number?

Answer: ..... (1)

(ii) Rearrange the 4 cards to make the smallest number possible.

Answer: | ..... | ..... | ..... | ..... | (1)

2. Here is the start of a number pattern:

1 4 7 10 13 16 ...

(i) From the numbers in the list above, write down

(a) a factor of 8

Answer: ..... (1)

(b) the product of 2 and 5

Answer: ..... (1)

(c) a prime number

Answer: ..... (1)

(ii) Write down the next 2 numbers in the pattern.

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

(iii) What is the largest number in the pattern which is less than 40?

Answer: ..... (2)

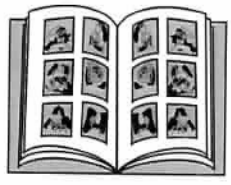
3. Alex enjoys taking photographs.

He takes 86 photographs on Monday and 58 photographs on Tuesday.

(i) How many photographs does he take altogether?

Answer: ..... (2)

Alex puts his photographs in an album.
6 photographs fit on each page.



(ii) How many pages does he use?

Answer: ..... (2)

An enlargement costs £2.65
Alex buys 7 enlargements.

(iii) (a) How much do his enlargements cost in total?

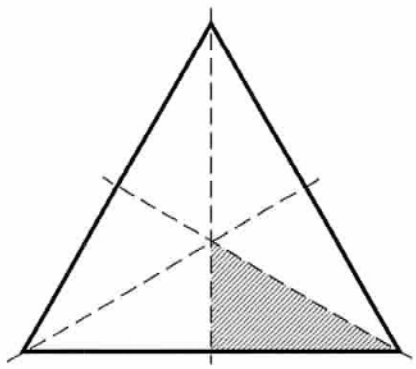
Answer: £ ..... (2)

Alex pays with a £20 note.

(b) How much change does he get?

Answer: £ ..... (2)

4. 3 lines of symmetry have been drawn on this equilateral triangle, dividing it into sections. One section has been shaded.



(i) What fraction of the triangle has been shaded?

Answer: ..... (1)

(ii) Shade in a further $\frac{1}{3}$ of the triangle. (1)

(iii) What fraction of the triangle is now not shaded?
Give your answer in its simplest form.

Answer: ..... (1)

5. **18.7 18.67 20.3 20.27 18.706**

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

Answer: ..... (1)

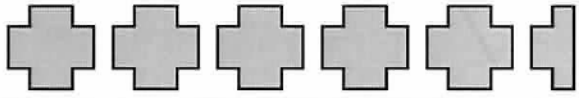
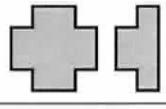
(ii) Write down the smallest number from the list above.

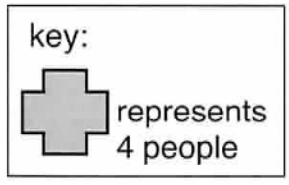
Answer: ..... (1)

(iii) Calculate the difference between the largest and the smallest numbers in the list.

Answer: ..... (2)

6. This pictogram shows how many people were treated for sports injuries at a clinic last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	



(i) How many people were treated on Monday?

Answer: ..... (1)

(ii) How many people does  represent?

Answer: ..... (1)

(iii) Draw the symbol which would be used to represent 1 person.

Answer: ..... (1)

9 people were treated on Friday.

(iv) Add this information to the pictogram. (1)

(v) Calculate the total number of people who were treated last week.

Answer: ..... (3)

(vi) Calculate the mean number of people treated each day.

Answer: ..... (2)

7. 6 dogs were weighed, and then one year later they were weighed again.
A weight gain is shown as a positive number and a loss is shown as a negative number.
For example −3 means that the dog lost 3 kilograms in weight.

dog name	weight change, in kg
Rex	+1
Sam	−2
Troy	+2
Walker	0
Yogi	−3
Zig	−1

(i) How many dogs stayed the same weight?

Answer: ..... (1)

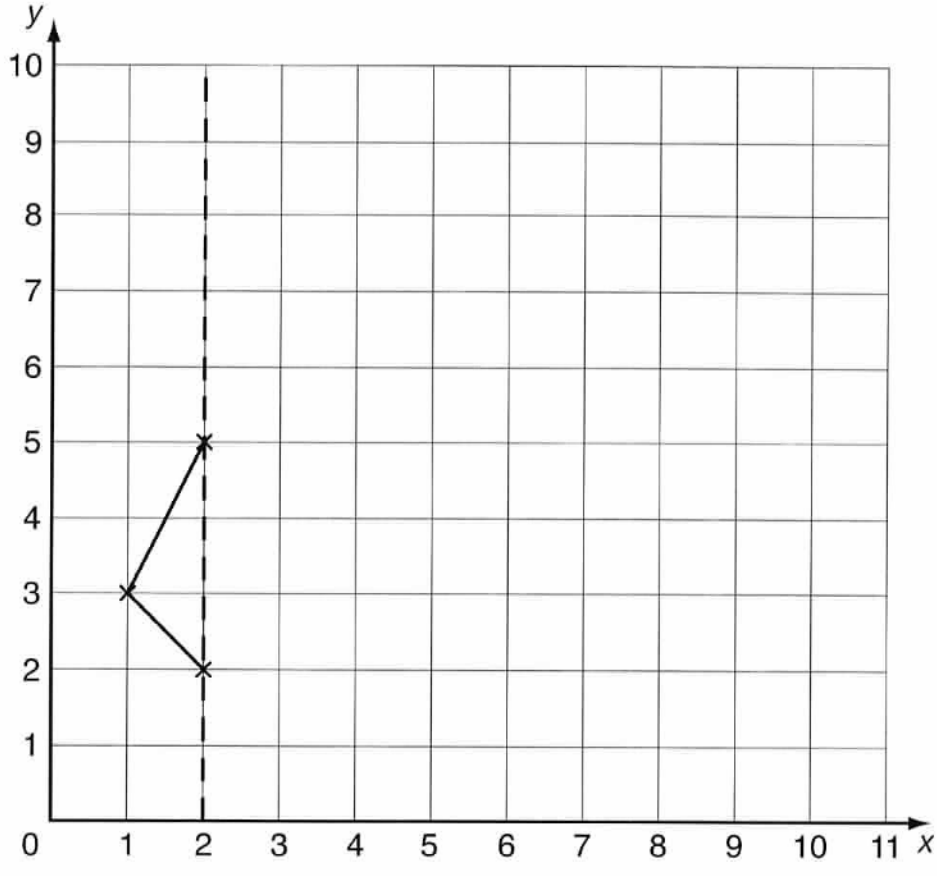
(ii) Which dog gained the most weight?

Answer: ..... (1)

(iii) Which dog lost more weight than Sam?

Answer: ..... (1)

8. 3 points have been plotted and joined on the centimetre grid below.



(i) Reflect the pattern in the dashed line to complete the shape.
Label the shape **A**. (1)

(ii) Write down the special name of shape **A**.

Answer: ..... (1)

(iii) What is the area of shape **A**?

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

(iv) Translate shape **A** *4 squares right* and *2 squares up*.
Label your shape **B**. (2)

(v) Rotate shape **A** 180° about the point (3, 3).
Label your shape **C**. (2)

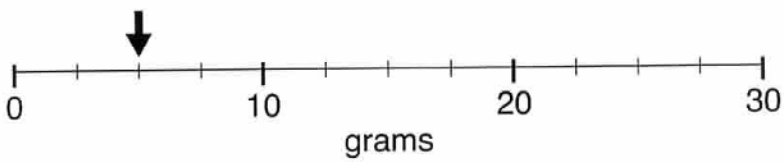
9. (a) Choose one of the following units to complete each statement below.

km **m** **cm** **mm** **ℓ** **mℓ**

- Mandy's thumb is approximately 50 ..... long.
- A glass could contain 250 ..... of orange juice.
- A house could be 7.5 ..... tall. (3)

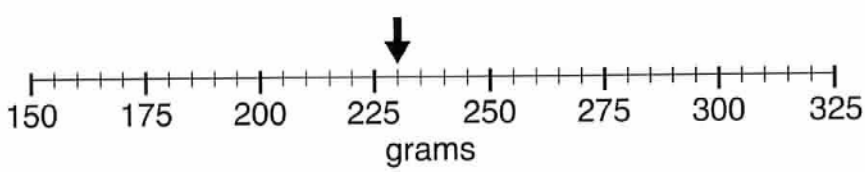
(b) Write down, in grams, the masses represented by the arrows on these scales.

(i)



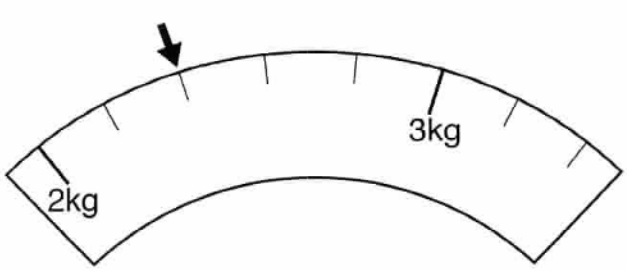
Answer: ..... g (1)

(ii)



Answer: ..... g (1)

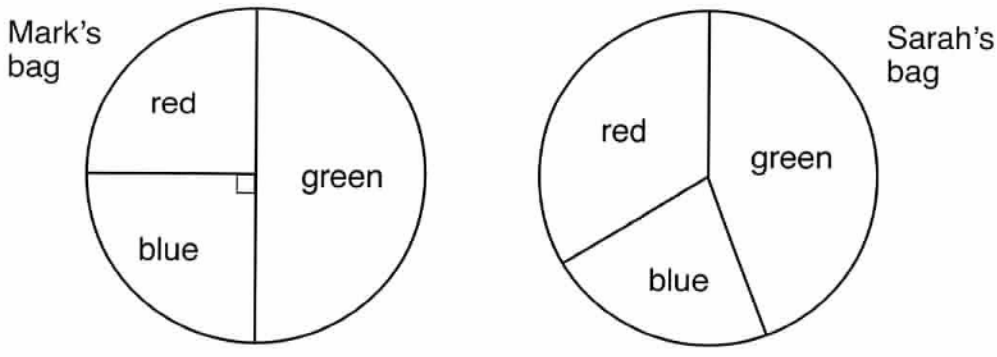
(iii)



Answer: ..... g (2)

10. Mark and Sarah each has a bag of coloured counters.

These pie charts show the proportion of each colour in their bags.



(i) What percentage of Mark's counters are blue?

Answer: ..... % (1)

Mark has 40 counters in his bag.

(ii) How many of his counters are not blue?

Answer: ..... (2)

$\frac{1}{3}$ of Sarah's counters are red, and the rest are green or blue.

(iii) Given that Sarah has 12 red counters, how many counters are there altogether in her bag?

Answer: ..... (1)

(iv) Sarah has twice as many green counters as blue ones.

How many blue counters does she have?

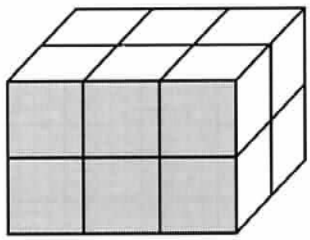
Answer: ..... (2)

They each pick one counter at random from their own bag.

(v) Who is more likely to pick a green counter?

Answer: ..... (1)

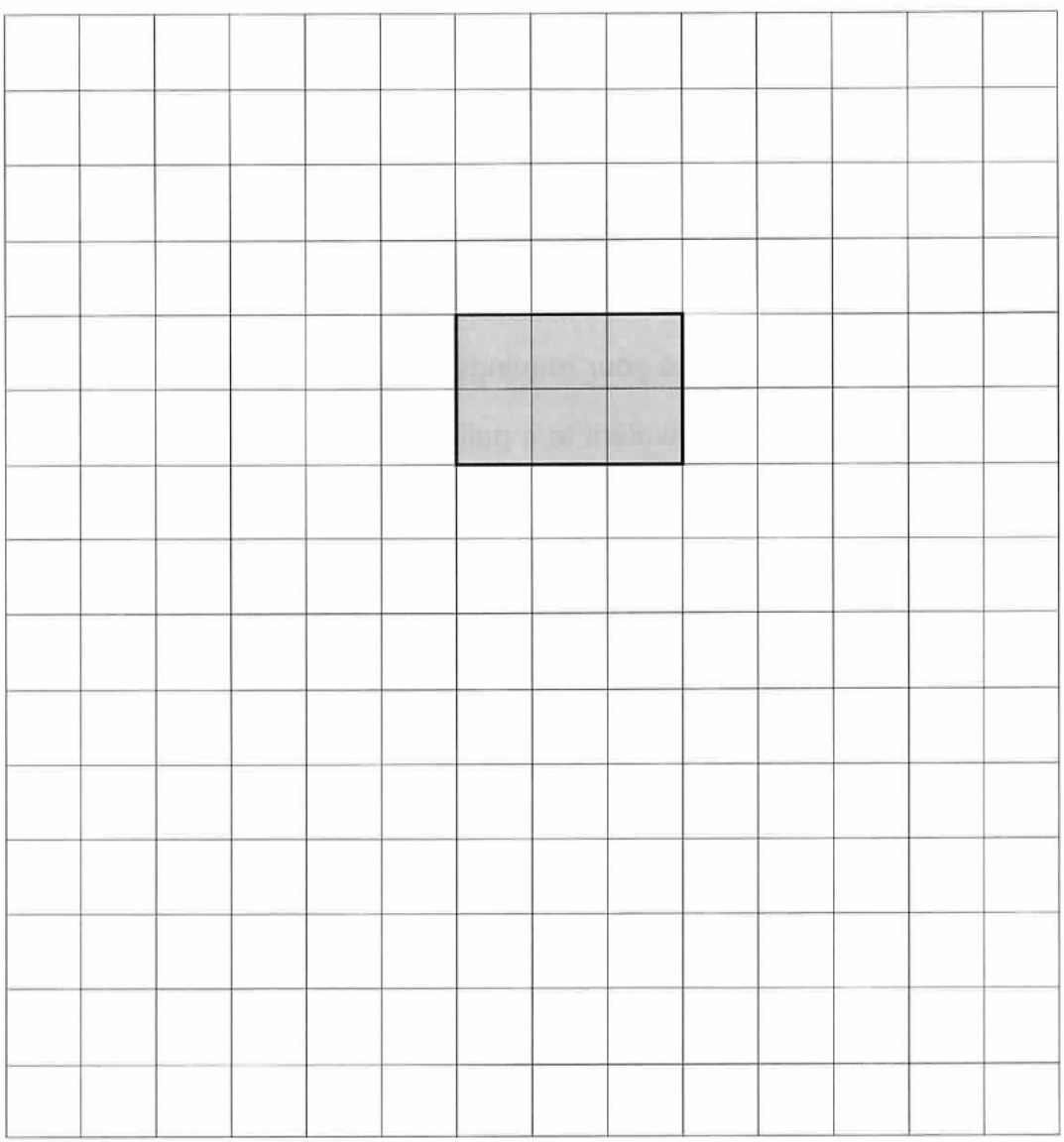
11. This small box measures 2 cm by 2 cm by 3 cm.



(i) Calculate the volume of the box.

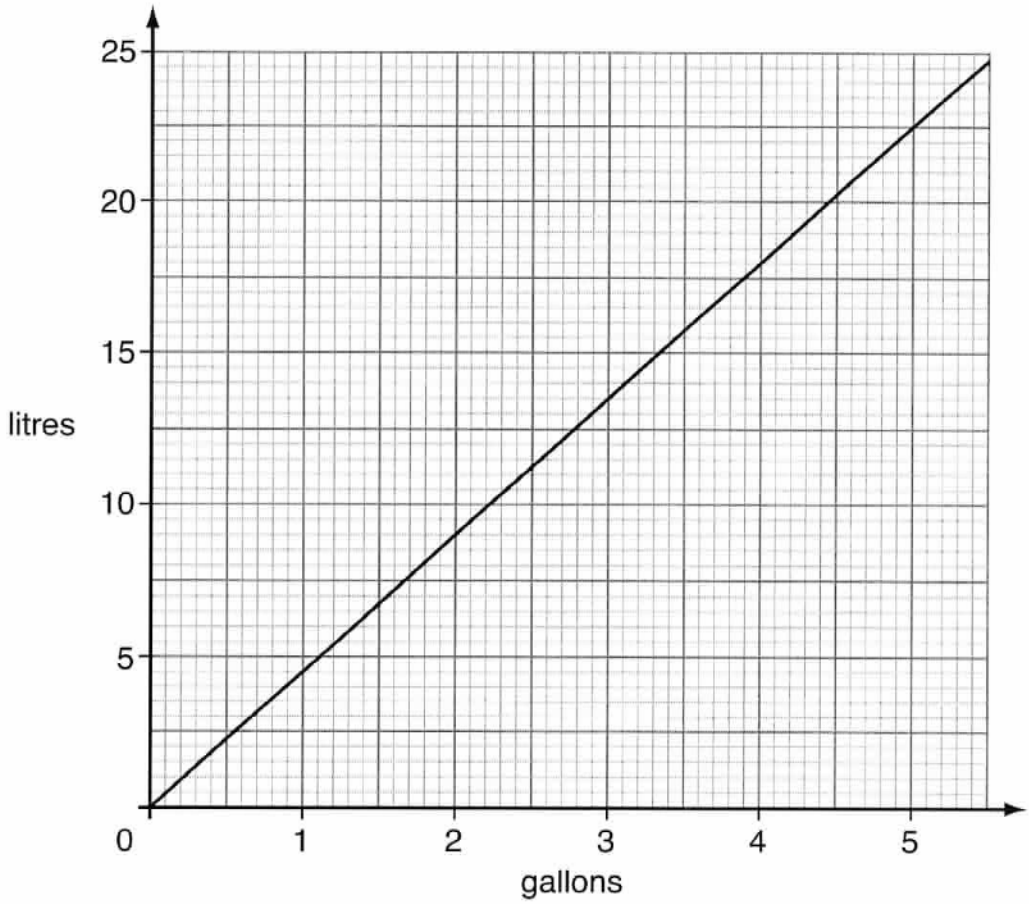
Answer: ..... cm^3 (2)

(ii) On the centimetre squared grid below, draw a net for the box.
(The shaded face has already been drawn for you.)



(3)

12. Here is a graph to convert between gallons and litres:



(i) Showing clearly how you take your readings, use your graph to find

(a) how many litres are equivalent to 4 gallons

Answer: ..... litres (1)

(b) how many litres are equivalent to 1.8 gallons

Answer: ..... litres (1)

(c) how many gallons are equivalent to 10 litres

Answer: ..... gallons (1)

(ii) One day, Julie's Juice Bar sells 1000 litres of orange juice.

(a) Use your answer to part (i) (c) to write 1000 litres as gallons.

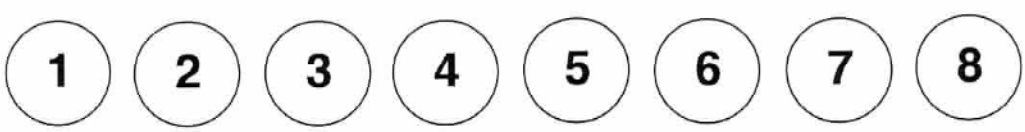
Answer: ..... gallons (2)

It takes 13 oranges to make 1 litre of juice.

(b) How many oranges are needed to make 25 litres of juice?

Answer: ..... (2)

13. Mr Prime has these numbered discs face down on a table:

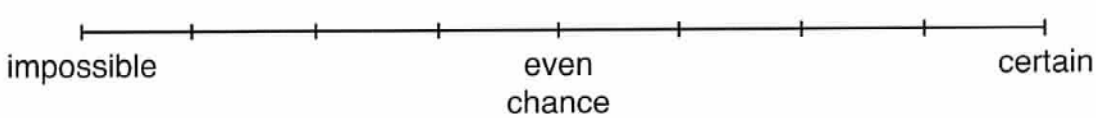


He turns one over at random.
On the line below, mark the following probabilities with the letters shown:

A the number on his disc is a square number

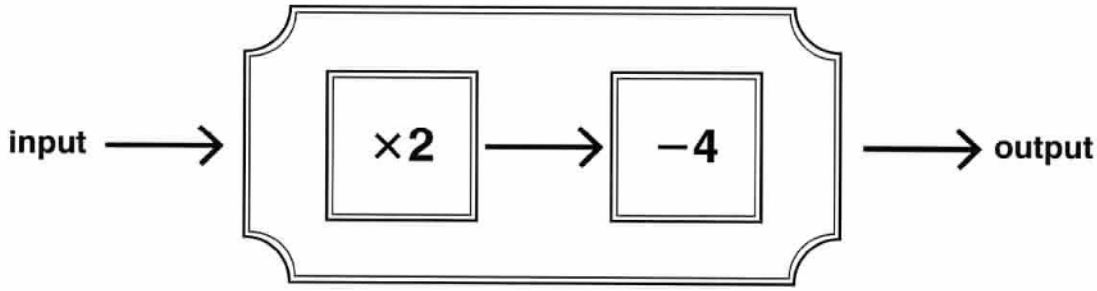
B the number on his disc is a prime number

C the number on his disc is a multiple of 12



(3)

14. (a) The number machine below changes numbers according to the rule **multiply by 2 and then subtract 4**



(i) Write the missing input and output numbers for this machine.

	input	×2 then −4	output
Example	**6**	→	**8**
	8	→	.....
	11	→	.....
	.....	→	22
	.....	→	0

(4)

(ii) There is one number which does not change when you put it in the number machine.

What is the number?

Answer: ..... (2)

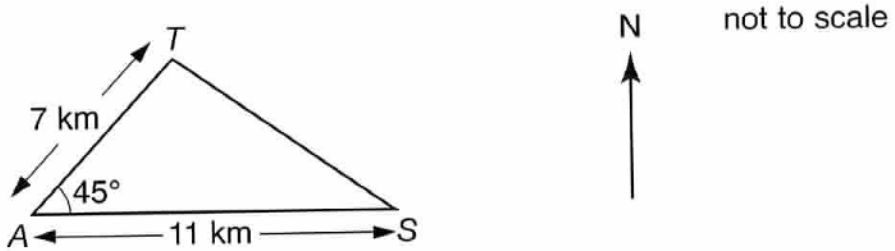
(b) I think of a number, add 1 and then divide by 2

The result is 7

What is the number which I am thinking of?

Answer: ..... (2)

15. This is a sketch showing the position of three towns, Addbridge (A), Sumville (S) and Totalton (T).



(i) Using a scale of 1 centimetre to represent 1 kilometre, how many centimetres would represent 11 kilometres?

Answer: ..... cm (1)

(ii) Draw accurately the triangle AST, using a scale of 1 centimetre to represent 1 kilometre.

(The point A is already drawn for you.)

(3)

(iii) Measure and write down the obtuse angle at T.

Answer: ..... ° (1)

(iv) Use a compass direction to complete the sentence.

Addbridge is ..... of Totalton. (1)

16. (a) Find the median and mode of these numbers:

6 2 5 13 5 10 9

Answer: median is .....

mode is ..... (2)

(b) Three children have a median age of 10 and the range of their ages is 5

(i) What is their median age exactly 1 year later?

Answer: ..... (1)

(ii) What is the range of their ages exactly 1 year later?

Answer: ..... (1)

(c) Two numbers have a mean of 12 and a range of 6
What are the two numbers?

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

(d) A set of five numbers has a mean of 7, a median of 6 and a mode of 5

(i) Write down a possible set of five numbers.

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

(ii) Write down another possible set of five numbers.

Answer: ....., ..., ..., ..., ... (1)

(Total marks: 100)