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

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

Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

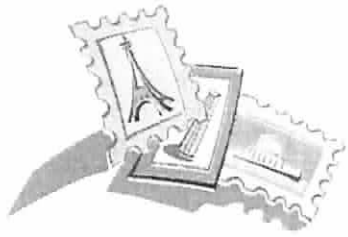
Monday 14 January 2008

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. Pat collects stamps.
She has 144 British stamps and 68 foreign stamps.



(i) How many stamps does she have in total?

Answer: ..... (2)

(ii) How many more British stamps than foreign stamps does she have?

Answer: ..... (2)

(iii) Pat arranges her 144 British stamps in an album. Each page holds 6 stamps.
How many pages does she use?

Answer: ..... (2)

(iv) Her brother, Lee, has 3 times as many foreign stamps as she does.
How many foreign stamps does he have?

Answer: ..... (2)

2. (a) Write down the number which is 10 more than 291

Answer: ..... (1)

(b) Write down the number which is 10 less than 1108

Answer: ..... (1)

(c) Write down the number which is 100 times bigger than 40

Answer: ..... (1)

(d) Write down the number which is 10 times smaller than 83

Answer: ..... (1)

(e) The temperature in a fridge is 2 °C.
The temperature in the freezer is 10 °C colder.
What is the temperature in the freezer?

Answer: ..... °C (2)

3. Here is the start of a number pattern:

2 3 5 8 13 21 34 55 89

From the numbers above, write down

(i) a multiple of 4

Answer: ..... (1)

(ii) a prime number bigger than 6

Answer: ..... (1)

(iii) two numbers with a difference of 18

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

(iv) two numbers whose product is 26

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

(v) the median of the nine numbers

Answer: ..... (2)

4. Notby School won the final of the hockey tournament.

(i) A hockey pitch is 91.4 metres long.
Write this length in centimetres.

Answer: ..... cm (1)

(ii) There were 2096 spectators at their final match.
Write this number correct to the nearest hundred.

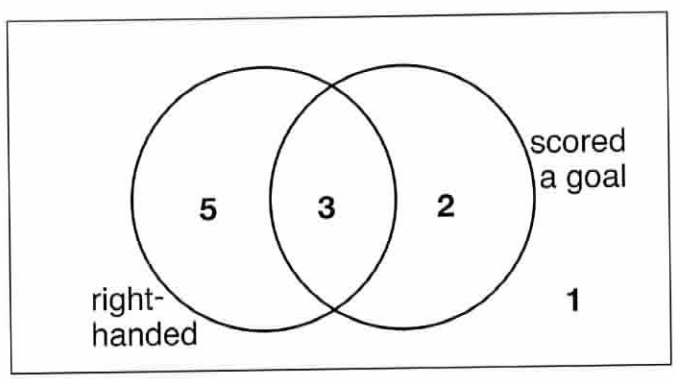
Answer: ..... (1)

(iii) The hockey trophy weighed half a kilogram.
How many grams is this?

Answer: ..... g (1)

Mr Gowl, the hockey coach, carried out a survey to see whether the children who scored goals were right-handed or left-handed.

Here are his results in a Venn diagram:



(iv) Use the Venn diagram to write down

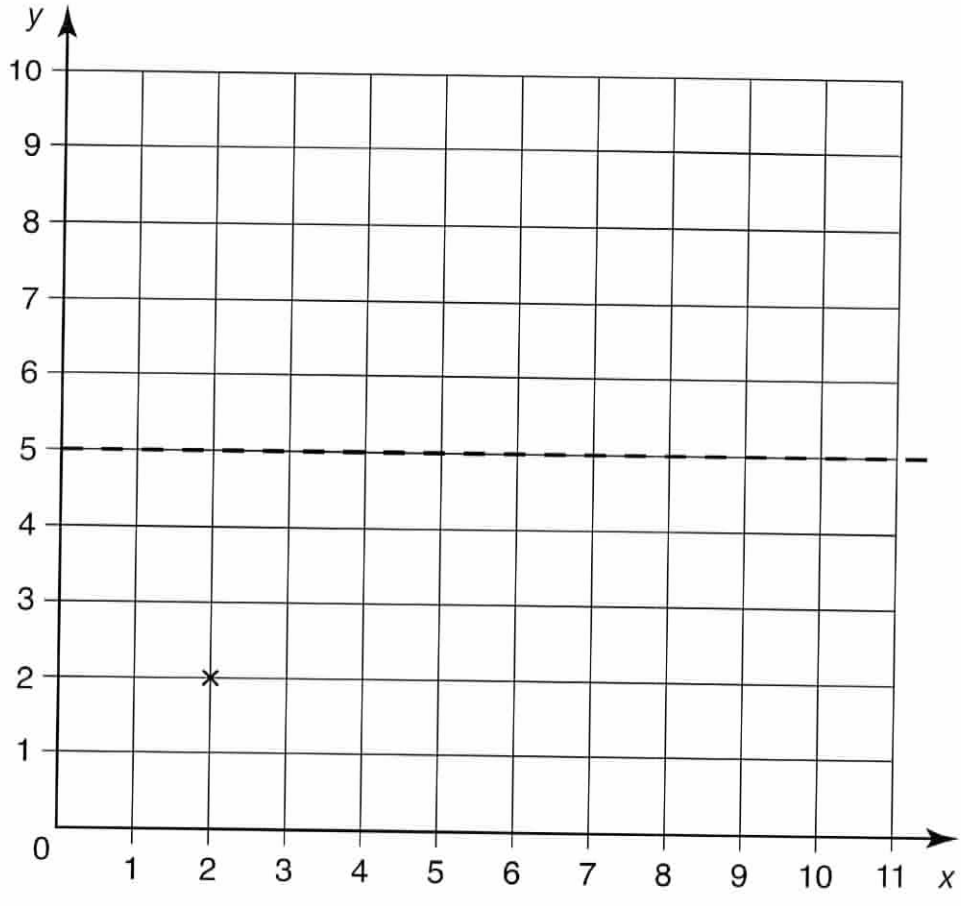
(a) the number of right-handed children in the team

Answer: ..... (1)

(b) the number of left-handed children who scored a goal

Answer: ..... (1)

5. (i) Plot the following points on the centimetre grid below:
(2, 2) (6,2) (4,4)
(The first one has already been done for you.) (2)



(ii) Join them in order to form a triangle. Label the triangle **A**. (1)

(iii) Which special type of triangle is **A**?

Answer: ..... triangle (1)

(iv) Draw any lines of symmetry on triangle **A** using a dashed line. (1)

(v) Translate triangle **A** 3 units to the right and 4 units up.
Label your triangle **B**. (2)

(vi) Reflect triangle **A** in the dashed line on the grid.
Label the image **C**. (2)

(vii) What is the order of rotational symmetry of triangle **A**?

Answer: ..... (1)

(viii) Find the area of triangle **A**.

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

6. Five teams took part in the relay race at sports day.

Here are their results:

team name	time taken to finish, in seconds	position
Active Eight	51.2	.....
Cheetahs	48.34	1st
Speedy Sports	51.08	.....
Twisters	59.9	5th
X-treme	50.8	.....

(i) Complete the table to show their positions. (2)

(ii) How much faster was the team which came first than the team which came fifth?

Answer: ..... s (2)

The team Cheetahs broke the school record by 1.9 seconds.

(iii) What was the previous school record?

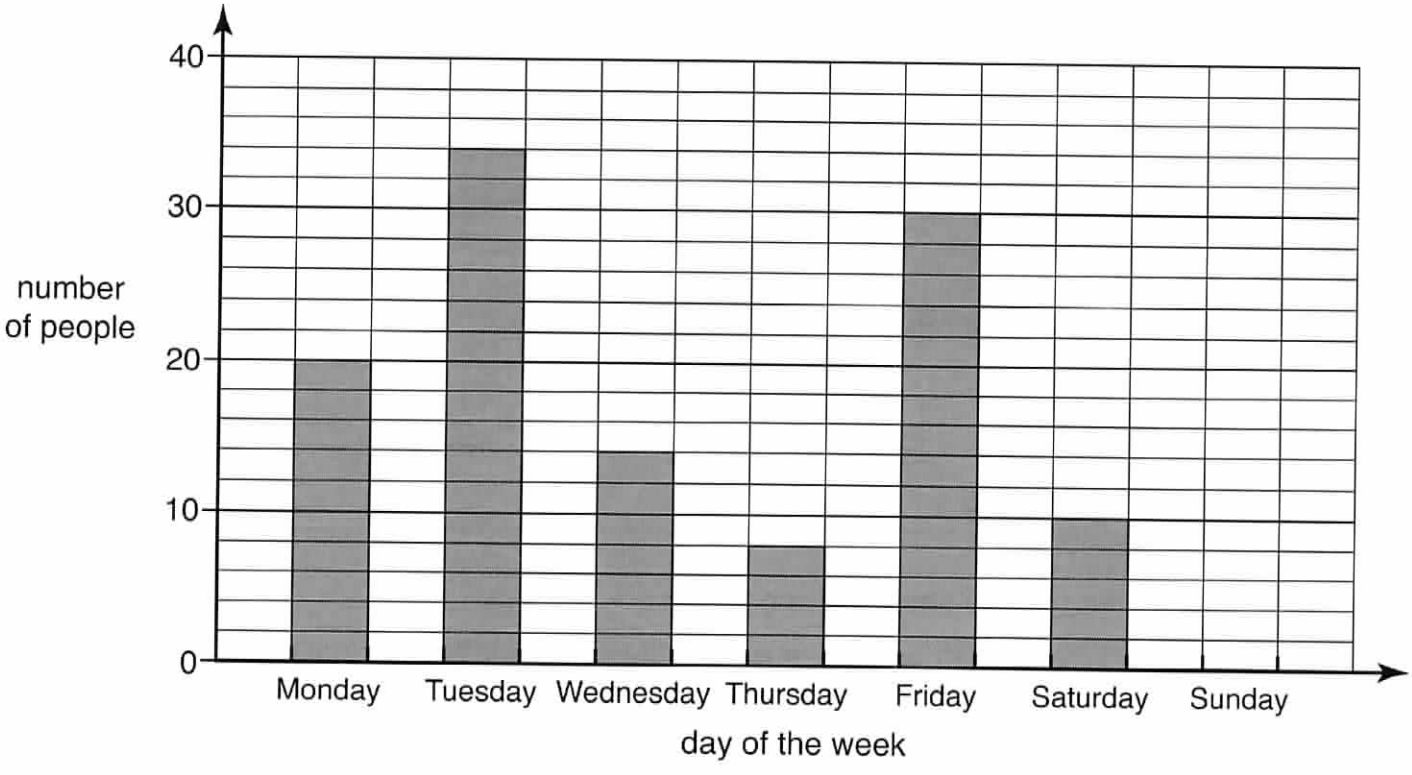
Answer: ..... s (2)

Active Eight had 4 runners in their team.

(iv) Find the mean time for each runner in this team by dividing their total time by 4

Answer: ..... s (2)

7. Robert asked all the children in his school on which day of the week they were born.
Here is a bar chart showing his results:



(i) How many people does each small rectangle represent?

Answer: ..... (1)

There were 22 people born on Sunday.

(ii) Draw a bar on the chart to represent this. (1)

(iii) Use the bar chart to complete the frequency table below.

day of the week	number of people
Monday	
Tuesday	
Wednesday	14
Thursday	
Friday	
Saturday	10
Sunday	22

(2)

(iv) Which day is the mode?

Answer: ..... (1)

8. Katherine has ten coins in a bag.

She has one 50-pence coin, two 20-pence coins, one 5-pence coin and the rest are 2-pence coins.



(i) What is the total value of all the coins in her bag?

Answer: £ ..... (3)

(ii) What percentage of the coins are 20-pence coins?

Answer: ..... % (1)

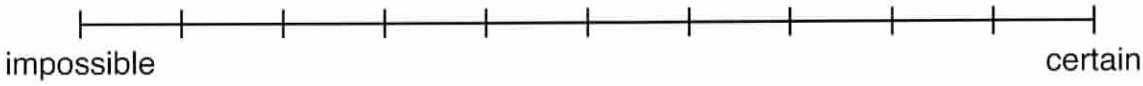
(iii) One coin is picked at random from the purse.

On the scale below, mark

(a) with **A** the probability that the coin is a 20-pence coin (1)

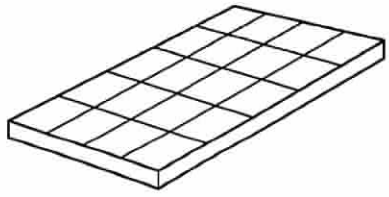
(b) with **B** the probability that the coin is not a 20-pence coin (1)

(c) with **C** the probability that the coin is worth less than £1 (1)



9. Here are the ingredients needed to make a tray of 20 flapjacks:

200 grams of margarine
250 grams of oats
200 grams of sugar
100 grams of flour
3 tablespoons of syrup



(i) Write out the ingredients you would need to make 10 flapjacks.

..... grams of margarine

..... grams of oats

..... grams of sugar

..... grams of flour

..... tablespoons of syrup (3)

Kelly needs to make 50 flapjacks for a party.

(ii) How much flour does she need?

Answer: ..... grams (2)

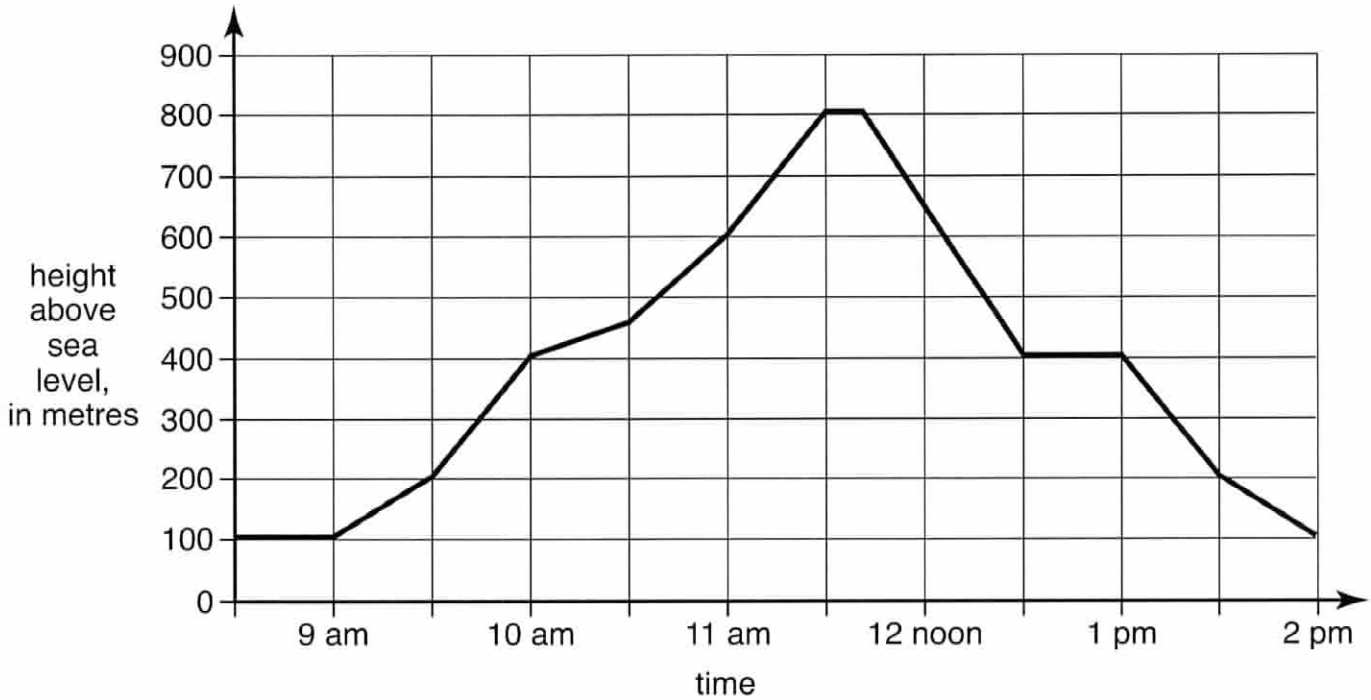
To make healthier flapjacks, you can use $\frac{3}{4}$ of the recommended amount of sugar.

(iii) How much sugar would you use to make 20 of these healthier flapjacks?

Answer: ..... grams (2)

10. Alan climbs to the top of a mountain one day during his holiday.

Below is a graph showing his height above sea level at different times during the day.



(i) How many metres above sea level is he at 11 am?

Answer: ..... m (1)

(ii) At what time does he first reach 200 metres above sea level?

Answer: ..... (1)

(iii) How many metres above sea level is the top of the mountain?

Answer: ..... m (1)

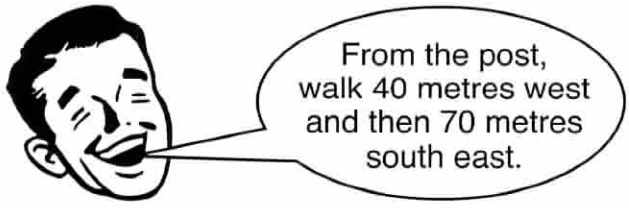
(iv) (a) Between which times does he stop on the way down?

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

(b) Give a sensible suggestion for why he might have stopped at this time.

Answer: ..... (1)

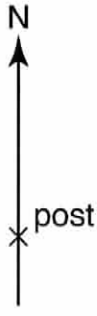
11. Adam's father has hidden Adam's birthday present in a field near their house.
He has given him these instructions to help him find it.



Adam has decided to draw an accurate map to help.

(i) Using a scale of 1 millimetre to represent 1 metre, draw accurately the route which Adam's father has described.

You will need to use a protractor.



(3)

(ii) Adam realises that it will be shorter to walk in a straight line to find his present.

(a) Draw this route on your diagram. (1)

(b) Write down the length of this route in centimetres.

Answer: ..... cm (1)

(c) How far does this represent in the field?

Answer: ..... m (1)

12. Bert and Chrissy are very good at maths and enjoy 'think of a number problems'.

Bert asks Chrissy to think of a number, double it and add 5

She says that the result is 33

(i) What was the number she thought of?

Answer: ..... (2)

Chrissy wants Bert to guess her favourite number.

She asks him to write down 5 numbers.

He chooses **4** **7** **2** **19** and **8**

Chrissy looks at the numbers and tells him that her favourite number is equal to the mean of the numbers, minus 7

(ii) Find the mean of Bert's numbers.

Answer: ..... (3)

(iii) What is Chrissy's favourite number?

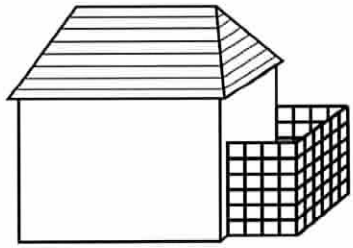
Answer: ..... (1)

(iv) Circle any of the words below which describe Chrissy's favourite number.

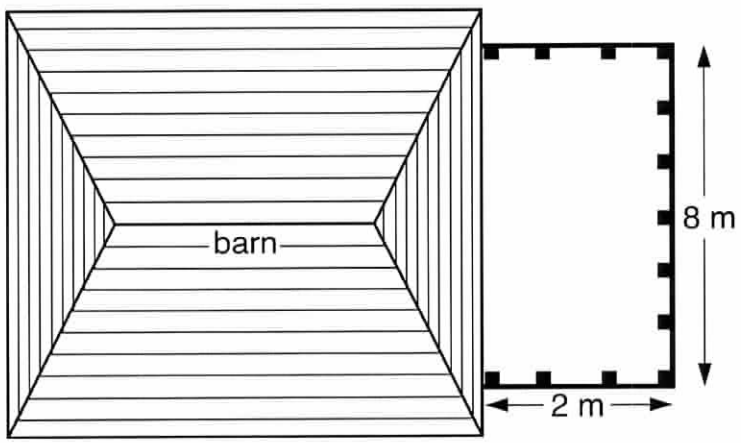
prime number **square number** **cube number** (2)

13. Farmer Fred needs to build a rectangular sheep pen.

To save money, he decides to build it against his barn, so that he only needs to have fencing on three sides.



Here is the first plan:



not to scale

(i) (a) What length of fence does he need to make this pen?

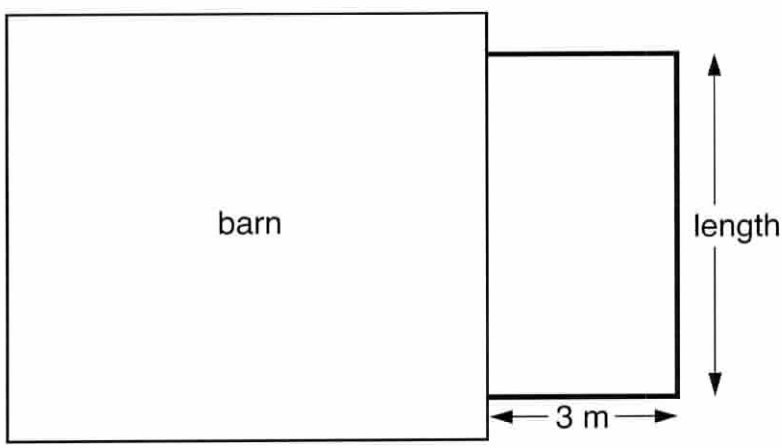
Answer: ..... m (1)

(b) What is the area of this pen?

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

He decides to buy 15 metres of fence.

Here is his new plan:

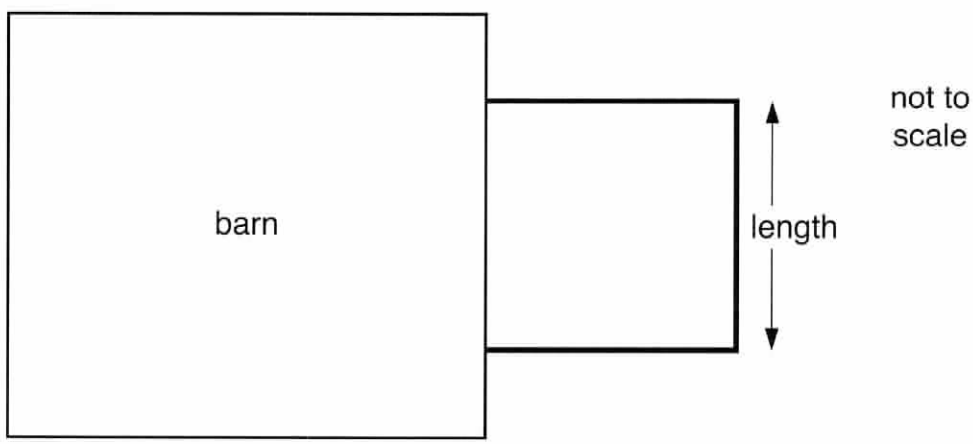


not to scale

(ii) Find the length of his new pen.

Answer: ..... m (1)

Farmer Fred decides that he would like to build a square pen with his 15 metres of fence as shown below:



(iii) How long should each side be?

Answer: ..... m (2)

(iv) Given that 1 metre of fence costs £12, find how much it will cost Farmer Fred to buy 15 metres of fence.

Answer: £ ..... (3)

14. Look carefully at these number patterns:

	pattern A			pattern B
row 1	$1^2 - 0^2$	→ $1 - 0$	→ 1	$1 + 0 = 1$
row 2	$2^2 - 1^2$	→ $4 - 1$	→ 3	$2 + 1 = 3$
row 3	$3^2 - 2^2$	→ $9 - 4$	→ 5	$3 + 2 = 5$
row 4	$4^2 - 3^2$	→ $16 - 9$	→ 7	$4 + 3 = 7$

(i) Complete rows 5 and 6 of this pattern:

row 5	$5^2 - 4^2$	→ 25 −	→ 9	5 + ... = ...
row 6	6^2 −	→ ..... −	→	..... + ... = ...

(3)

(ii) Complete row 10 of this pattern:

row 10	..... −	→ ..... −	→	..... + ... = ...

(2)

(iii) Complete the non-shaded parts of these rows:

row 20	..... −	→ ..... − 361	→	..... + ... = ...
row	..... − 99^2	→ ..... −	→	..... + ... = ...

(3)

(iv) What is the value of $1000^2 - 999^2$?

Answer: ..... (1)