SURNAME ..... FIRST NAME .....
(Block capitals, please)
JUNIOR SCHOOL ..... SENIOR SCHOOL .....

Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 13+

MATHEMATICS

PAPER 1

Non-Calculator Paper

Monday 23 February 2004

Please read this information before the examination starts.

- This examination is 60 minutes long.
- **All** questions should be attempted.
- A row of dots ..... denotes a space for your answer.
- A completely correct answer may receive **no** marks unless you show all your working.
- Answers given as fractions should be reduced to their lowest terms.

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1. 4 6 8 9 10 15 17 18

From the list of numbers, select a **different** answer to each of the following:

(i) a prime number

Answer: ..... (1)

(ii) the square root of 36

Answer: ..... (1)

(iii) a factor of 12

Answer: ..... (1)

(iv) a multiple of 5

Answer: ..... (1)

(v) a square number

Answer: ..... (1)

(vi) a cube number.

Answer: ..... (1)

2. (a) Andy went to the bookshop and bought five books at £11.99 each.

How much did Andy spend on the books?



Answer: £ ..... (2)

(b) (i) Babs bought two videos, one costing £9.99 and the other costing £8.49

What was the total amount that Babs spent?



Answer: £ ..... (2)

(ii) How much change should Babs receive from a £20 note?

Answer: £ ..... (2)

(c) Mrs Redwood purchased 20 identically-priced theatre tickets for her class at a total cost of £150

What was the cost of each ticket?

Answer: £ ..... (2)

3. Calculate

(i) $3 + 4 \times 5$

Answer: ..... (1)

(ii) $1 + 2 \times (3 - 4)$

Answer: ..... (3)

4. The number 36 can be expressed as the product of prime factors, using indices as follows:

$$36 = 2^2 \times 3^2$$

(i) Express the number 48 as the product of prime factors, using indices.

Answer: ..... (2)

(ii) What is the largest number which will divide exactly into 36 and 48?

Answer: ..... (1)

5. (i) Simplify the following fractions:

(a) $\frac{3+5}{12}$

Answer: ..... (2)

(b) $\frac{4-2}{6}$

Answer: ..... (1)

(ii) Calculate the product of the two fractions in part (i).

Answer: ..... (2)

6. (a) In a sponsored family relay run, Brian runs 2.5 kilometres, Alison runs 0.75 kilometres and Tim can only manage 400 metres.

What is the total distance, in metres, covered by the family?

Answer: ..... m (2)

(b) Paul has two bottles full of water.

He pours all the water into a large empty jar.

(i) What is the volume of water in the jar?
Give your answer in millilitres.



330 ml 75 cl

Answer: ..... ml (2)

Paul now refills the two bottles from a $1\frac{1}{2}$ litre bottle of lemonade. He drinks any lemonade left over.

(ii) How many millilitres of lemonade does Paul drink?

Answer: ..... ml (2)

7. A box of sweets is shared between three children, Hugo, Trina and Jo.
Of the total number of sweets, $\frac{1}{3}$ goes to Hugo and $\frac{2}{5}$ goes to Trina.



(i) What fraction of the total number of sweets goes to Hugo and Trina?

Answer: ..... (2)

(ii) What fraction of the total number of sweets goes to Jo?

Answer: ..... (1)

(iii) A label is printed on the box.

This box contains between 28 and 36 sweets.

How many sweets go to Hugo?

Answer: ..... (2)

8. William fills his petrol tank with 41.5 litres of petrol at 74.9 pence per litre.



Estimate the cost of the petrol in pounds, showing your working clearly.

Answer: £..... (3)

9. Write down the next two terms in each of the following sequences:

(i) 0, 3, 7, 12, ...

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

(ii) $\frac{1}{2}$, $\frac{3}{5}$, $\frac{5}{8}$, $\frac{7}{11}$, ...

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

(iii) 49, 36, 25, 16, ...

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

10. Simplify the following expressions:

(i) $6a + 2a$

Answer: ..... (1)

(ii) $6a \times 2a$

Answer: ..... (2)

(iii) $\frac{a+a}{2}$

Answer: ..... (2)

(iv) $a - 2a - 3a$

Answer: ..... (2)

11. Solve the following equations:

(i) $p + 5 = 11$

Answer: $p =$ ..... (1)

(ii) $5 - q = 7$

Answer: $q =$ ..... (2)

(iii) $3r = r + 8$

Answer: $r =$ ..... (2)

(iv) $\frac{s}{3} = 12$

Answer: $s =$ ..... (2)

12. If $x = 3$ $y = -1$ $z = 2$

find the value of each of the following expressions:

(i) $x + y$

Answer: ..... (1)

(ii) yz

Answer: ..... (1)

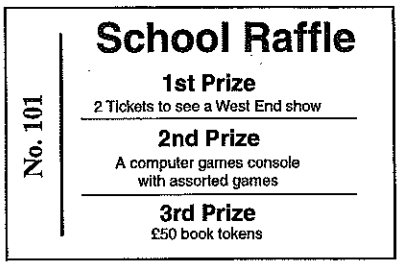
(iii) $x(z - y)$

Answer: ..... (2)

(iv) xy^2

Answer: ..... (2)

13. In a school raffle 240 tickets have been sold.



Faye has bought 1 ticket.

(i) What is the probability that Faye will win first prize in the raffle?

Answer: ..... (1)

Pete has bought 24 tickets.

(ii) What is the probability that Pete does **not** win first prize in the raffle?

Answer: ..... (2)

The first ticket is drawn and Faye wins first prize.
Her ticket is removed and a new ticket is drawn for the second prize.

(iii) What is the probability that

(a) Faye will win second prize in the raffle

Answer: ..... (1)

(b) Pete will win second prize in the raffle?

Answer: ..... (1)

14. (a) The distance from *A* to *B* is 9 metres.

Use a scale of 1: 100 to make a scale drawing of the line *AB*.

(2)

(b) A square has **diagonals** of length 8 centimetres.

(i) Make an accurate drawing of the square.

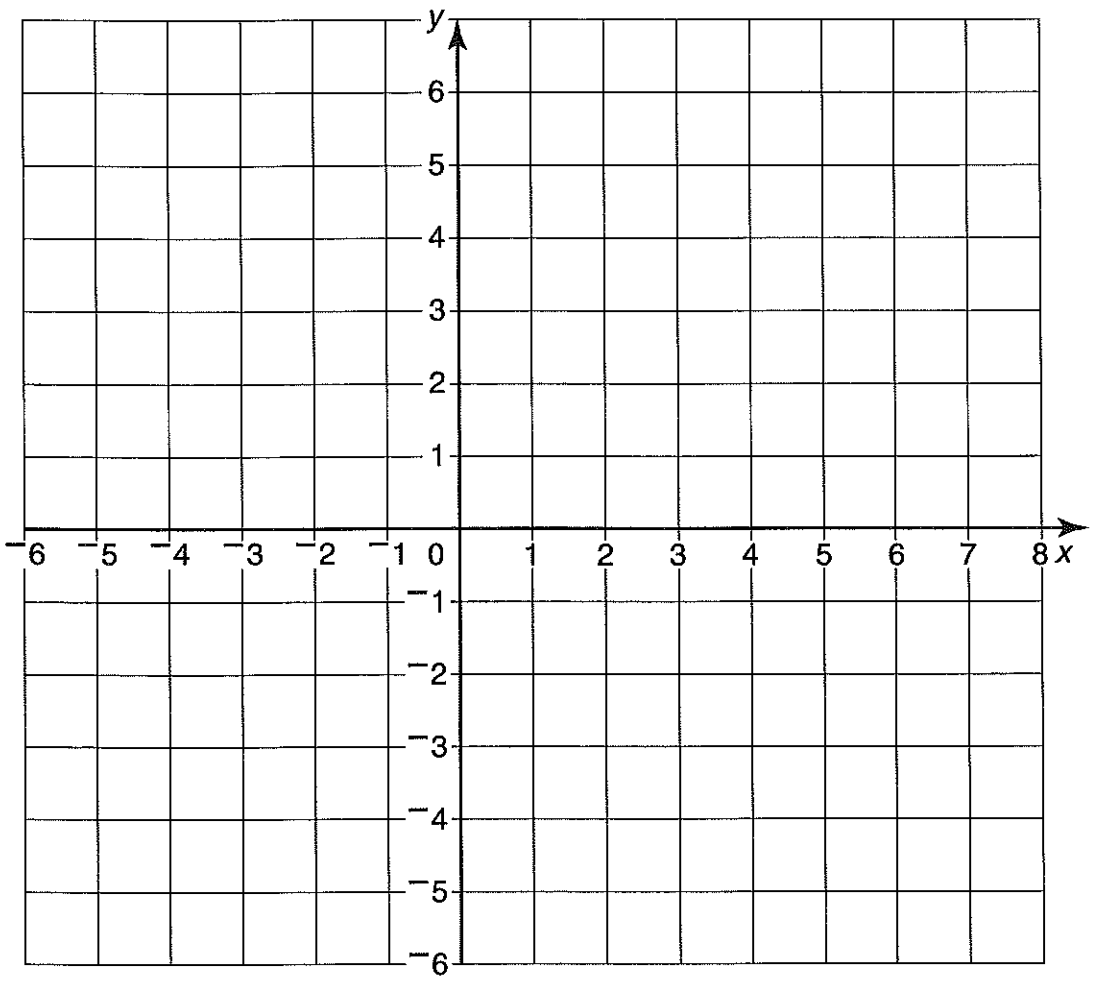
(3)

(ii) By taking suitable measurements, find the perimeter of the square.

Answer: ..... cm (2)

15. (i) On the grid below, plot the points (−3, 2), (0, 5) and (−1, 1).

Join the points to form a triangle and label the triangle A. (2)



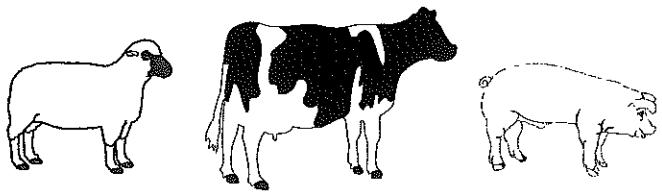
(ii) (a) Draw and label the line $x = 1$ (1)

(b) Reflect triangle A in the line $x = 1$. Label the image triangle B. (2)

(iii) Rotate triangle A through 90 degrees anticlockwise about the origin.
Label the image triangle C. (3)

(iv) Draw in a fourth triangle so that the pattern, made by the four triangles, has one line of symmetry.
Label the fourth triangle D. (1)

16. On a farm, 60% of the animals are sheep, 25% are cows and the rest are pigs.



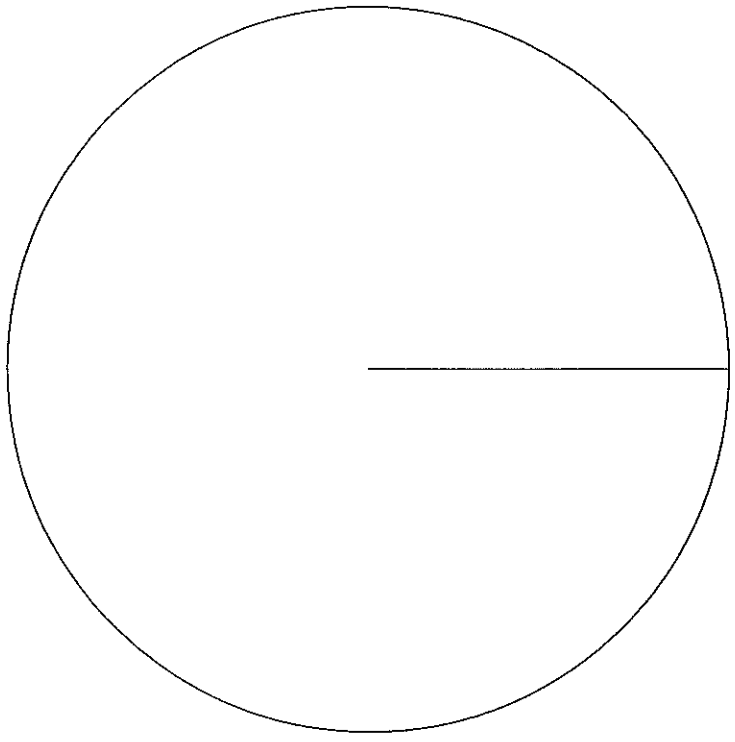
(i) What percentage of the animals on the farm are pigs?

Answer: .....% (1)

(ii) The farmer draws a pie chart of his animals. What sized angle would represent 10% of the animals?

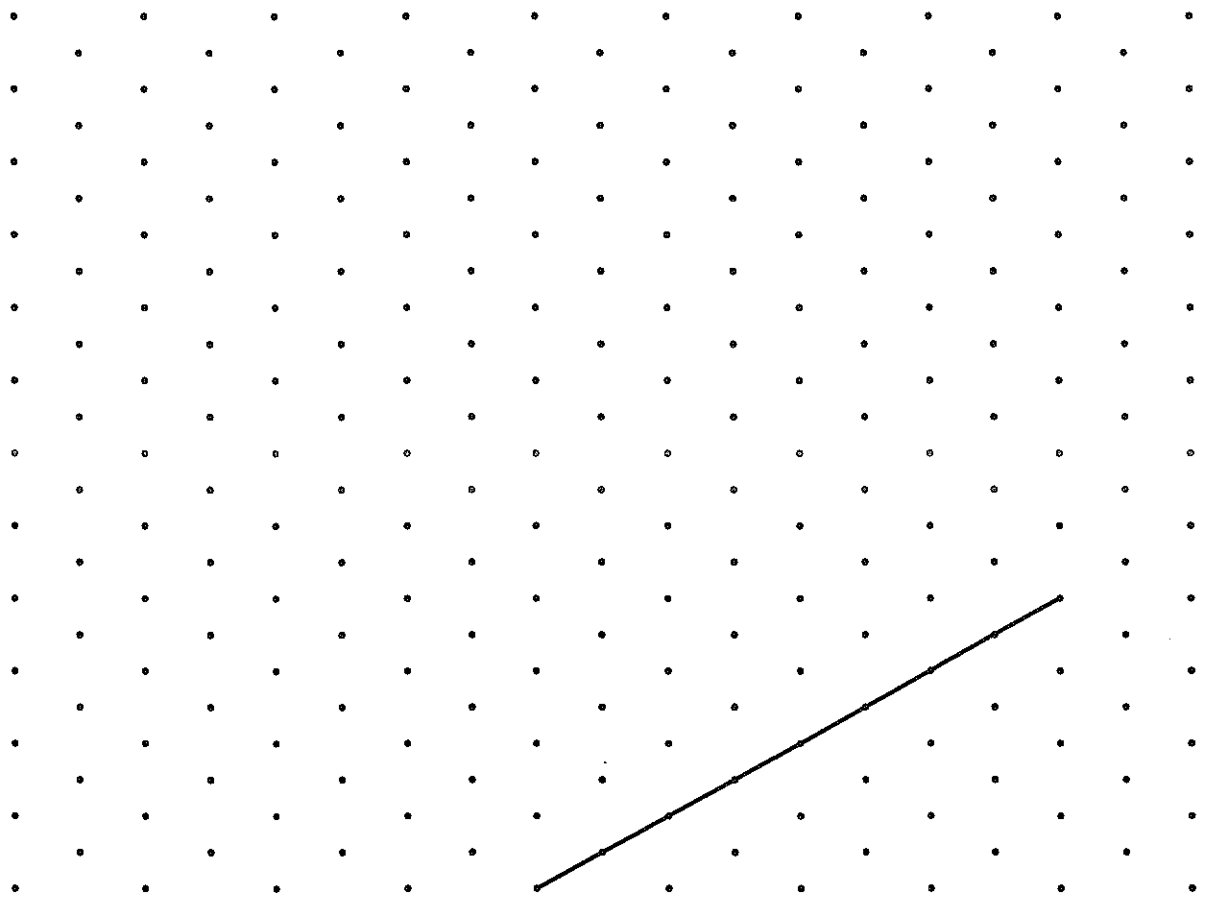
Answer: .....° (1)

(iii) Complete the pie chart, clearly marking the angles and the sectors for each type of farm animal.



(3)

17. (i) On the dotted paper below, draw a representation of a cuboid measuring 8 cm by 6 cm by 3 cm. One edge of the cuboid has been drawn for you.



(2)

(ii) Calculate the volume of the cuboid.

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

(iii) Calculate the total surface area of the cuboid.

Answer: ..... cm^2 (4)

(Total marks: 100)