

SURNAME FIRST NAME

JUNIOR SCHOOL SENIOR SCHOOL



Independent Schools
Examinations Board

COMMON ENTRANCE EXAMINATION AT 13+

MATHEMATICS

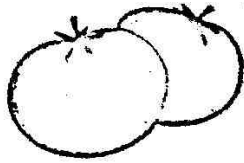
PAPER 2: NON-CALCULATOR PAPER

Practice Paper 2008–2009

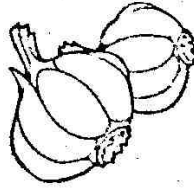
Please read this information before the examination starts.

- 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.

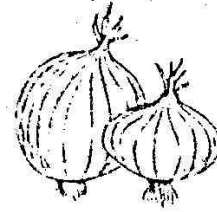
1. Alice buys some vegetables to make tomato soup.
The prices are shown below.



tomatoes
£1.50 per kg



garlic bulbs
45p each



onions
70p per kg

- (i) What is the cost of $1\frac{1}{2}$ kilograms of tomatoes?

Answer: £ (2)

To make her recipe for tomato soup, Alice needs $1\frac{1}{2}$ kg of tomatoes, 1 garlic bulb and $1\frac{1}{2}$ kg of onions.

- (ii) How much does she spend in total on these vegetables?

Answer: £ (2)

Her recipe serves 6 people.

- (iii) What is the cost of the vegetables needed to make tomato soup for 8 people?

Answer: £ (2)

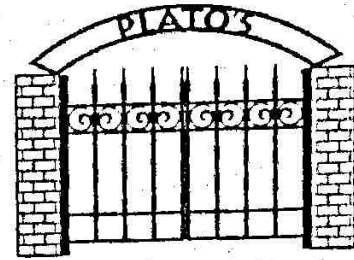
2. (a) (i) Write 55% as a fraction in its lowest terms.

Answer: (2)

(ii) There are 240 children at Plato's Prep School.

55% of the children are boys.

How many of the children are girls?



Answer: girls (2)

(b) Write $\frac{9}{40}$ as a decimal.

Answer: (2)

(c) Calculate $\frac{3}{4}$ of £22

Answer: £ (2)

(d) Write the following numbers in order of size, starting with the smallest:

4.505

$4\frac{1}{2}$

4.5

$4\frac{11}{20}$

Answer: (2)

3. (a) Calculate the value of $12 - 6 \div 2 + 1$

Answer: (2)

(b) You are given that
State the value of

$$360 \times 12 = 4320$$

(i) 36×1200

Answer: (1)

(ii) 3.6×0.12

Answer: (1)

(iii) $4320 \div 24$

Answer: (2)

4. Convert each of the following measurements into the units shown:

(i) 15.7 metres into centimetres

Answer: cm (1)

(ii) 157 grams into kilograms

Answer: kg (1)

(iii) 15 millilitres into litres

Answer: l (1)

5. If $a = 10$ $b = -5$ $c = -2$ find the value of

(i) $a + 3b$

Answer: (1)

(ii) $ac - b$

Answer: (2)

(iii) $\sqrt{6a + c^2}$

Answer: (2)

(iv) $\frac{a - c}{1 - b}$

Answer: (2)

6. (a) Solve the following equations:

(i) $a - 9\frac{1}{2} = 15$

Answer: $a = \dots\dots\dots$ (1)

(ii) $\frac{2b}{5} = 10$

Answer: $b = \dots\dots\dots$ (1)

(iii) $2c - 4 = 1 - 2c$

Answer: $c = \dots\dots\dots$ (2)

(iv) $\frac{3}{5}(3 - 4d) = 9$

Answer: $d = \dots\dots\dots$ (3)

(b) Solve this inequality

$$3(4 - a) > 21$$

Answer: (2)

7. (a) Calculate

(i) $1\frac{2}{3} - \frac{1}{15}$

Answer: (2)

(ii) $1\frac{2}{3} \div \frac{1}{15}$

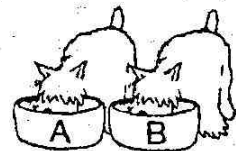
Answer: (2)

(b) Angie and Bertie are given a large tin of dog food.

Angie eats a quarter of the contents of the tin.

Bertie eats a quarter of the remainder.

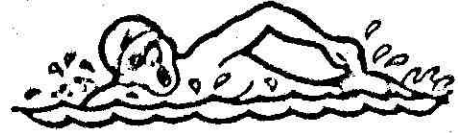
What fraction of the tin's contents does Bertie eat?



Answer: (2)

8. John swims 600 metres in a school swimming marathon.
It takes him 25 minutes.

What is his average speed
(i) in kilometres per hour?

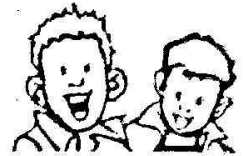


Answer: km/h (3)

(ii) in metres per second?

Answer: m/s (2)

9. Harry is 14 years old and Matthew is 10 years old.
Auntie Louisa gives them £36 to share in the ratio of their ages.



(i) How much does Harry receive?

Answer: £ (2)

Auntie Louisa then gives the boys an extra £12 each.

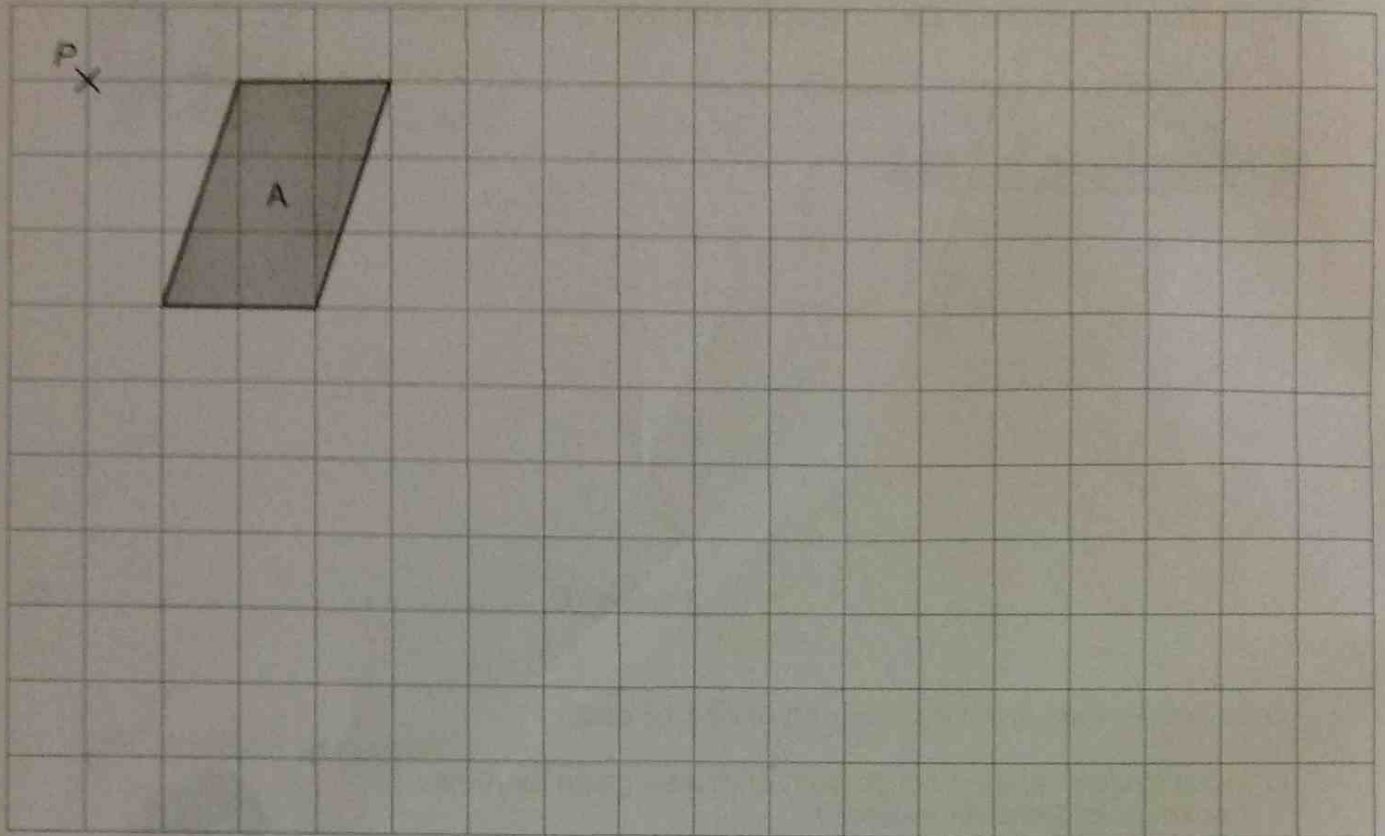
(ii) What fraction of the total amount of money given by Auntie Louisa does Matthew receive?



Answer: (2)

Turn over

10. Shape A is drawn on the grid below.



(i) Which type of quadrilateral is shape A?

Answer: (1)

(ii) With centre P and scale factor 3, draw the enlargement of shape A.
Label this shape B. (2)

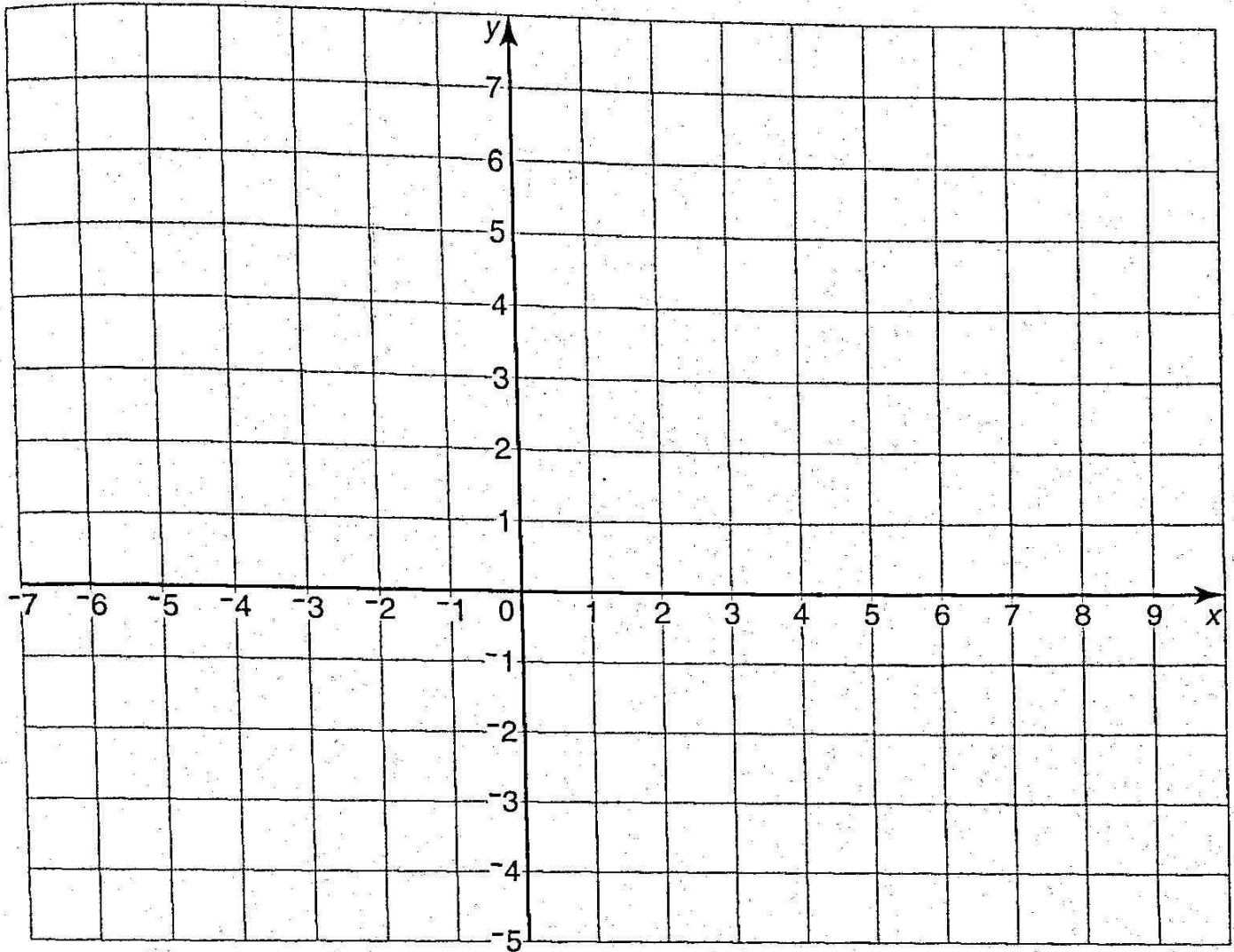
Jemima cuts shape B into pieces identical to shape A.

(iii) How many pieces will there be?

Answer: (1)

11. (i) On the centimetre-square grid below, plot the points (1, 3), (1, 6) and (3, 6)
Join the points and label the triangle A.

(2)



- (ii) Draw and label the line $y = x$

(1)

- (iii) Reflect triangle A in the line $y = x$

Label the image B.

(1)

- (iv) Rotate triangle A through 90° anticlockwise about the origin.

Label the image C.

(2)

- (v) Translate triangle A by 3 units to the left and 1 unit down.

Label the image D.

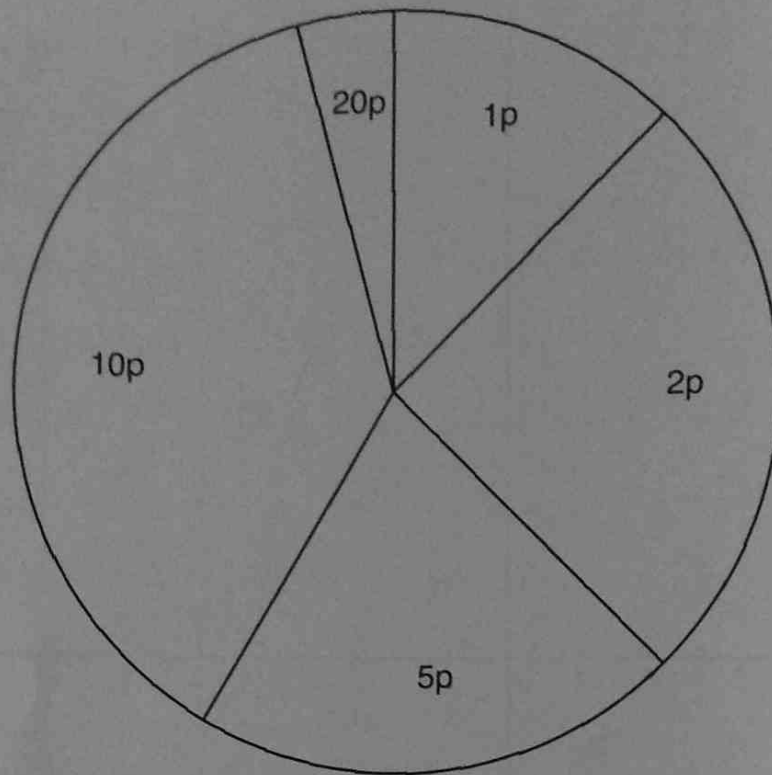
(2)

- (vi) Describe fully the single transformation which maps triangle C on to triangle D.

Answer:

(2)

12. Lucy finds 24 coins in her money box and draws this pie chart to show how many coins she has of each value.



(i) State the angle which represents 1 coin.

Answer: (1)

(ii) Take suitable angle measurements and then complete this frequency table:

coin	angle	frequency
1p	°	
2p	90°	
5p	°	
10p	°	
20p	°	1
total	360°	24

(4)

(iii) What is the modal value of a coin in Lucy's money box?

Answer: p (1)

(iv) What is the mean value of a coin in her money box?

Answer: p (3)

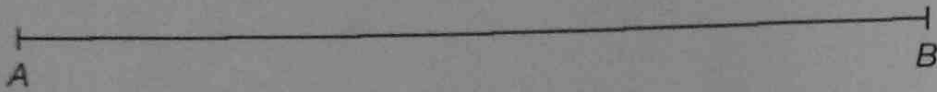
13. (i) Write 324 as a product of prime factors.

Answer: (2)

(ii) Hence, or otherwise, calculate the square root of 324

Answer: (2)

14. (i) Construct the triangle ABC with $AB = 12$ cm, $BC = 6$ cm and angle $ABC = 55^\circ$
(The line AB is already drawn.)



(2)

- (ii) Measure and write down the size of the angle ACB .

Answer:^o (1)

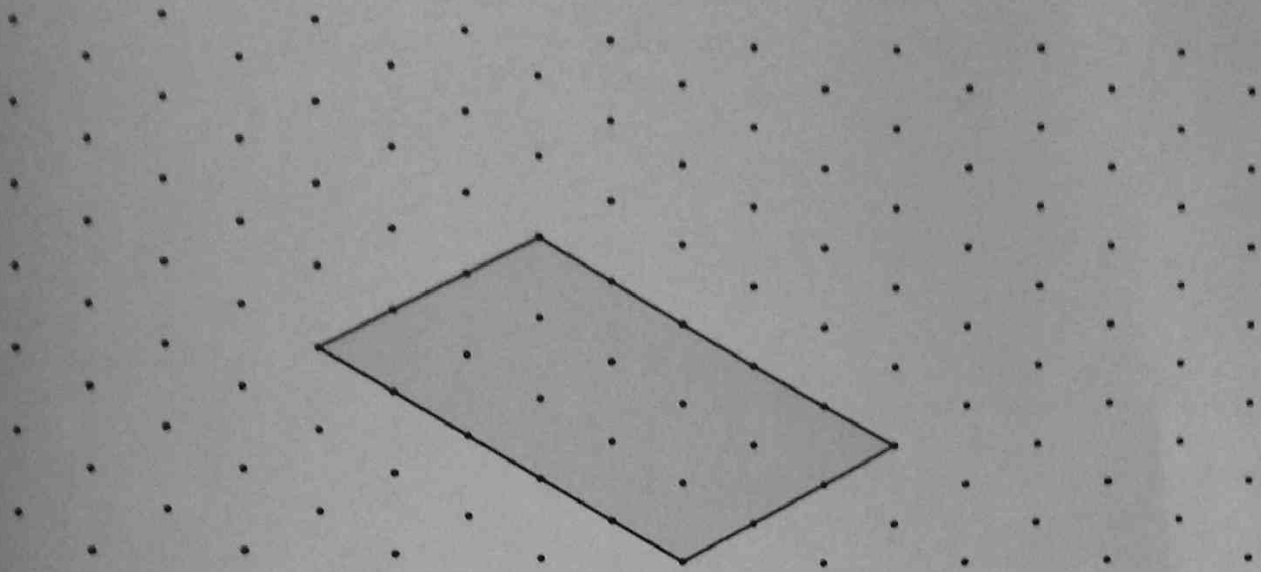
- (iii) Measure and write down the perpendicular distance from C to AB .

Answer: cm (1)

- (iv) Use your measurement from part (iii) to calculate the area of triangle ABC .

Answer: cm^2 (2)

15. (i) On the isometric paper below, complete the 3-dimensional drawing of a cuboid measuring 5 cm by 3 cm by 2 cm.



(1)

- (ii) Work out the volume of the cuboid.

Answer: cm^3 (1)

- (iii) Work out the surface area of the cuboid.

Answer: cm^2 (3)

16. Packs of counters contain green and red counters only.

A standard pack of 120 counters contains x green and y red counters.

(i) Write down an equation to show this information.

Answer: (1)

A maxi-pack of 240 counters contains 3 times as many green and half as many red counters as a standard pack.

(ii) Write down an equation to show this information.

Answer: (1)

(iii) By doubling the second equation, or otherwise, solve these equations simultaneously to find the values of x and y .

Answer: $x =$

$y =$ (3)

A counter is chosen randomly from a maxi-pack.

(iv) What is the probability that it is red?

Answer: (1)

(Total marks: 100)

