

# BENENDEN

Lower School Entrance Exam 2015

**MATHEMATICS**

**13+**

**1 Hour**

<b>Name:</b> .....
<b>School:</b> .....
<b>Date:</b> .....

***Instructions to Candidates:***

- Calculators may **not** be used
- Attempt all questions
- Show ALL working
- Check your answers for accuracy
- Total marks for exam = 100

- 1 (a) Mary goes out for the day with £20 to spend. She buys a pizza for £9.95 and a large coca cola for £2.45. She pays with a £20 note. How much change should she get?



Answer: £ ..... (2)

- (b) Later, she buys a magazine for £3.55 and a chocolate bar for 95p with her change. How much of the £20 does she have left now?

Answer: £ ..... (2)

- (c) Mary would also like to buy some gel pens, which cost 47p each. How many can she buy with the amount of money she has left?

Answer: ..... (2)

2 (a) Write 36% as a fraction

Answer: ..... (2)

(b) Convert  $\frac{13}{25}$  to a decimal

Answer: ..... (2)

(c) Calculate  $\frac{7}{12}$  of £84.72

Answer: £ ..... (2)

3 (a) Lottie is making a cake. She needs to measure out 150 grams of flour from a 2 kilogram bag of flour. Write 150 grams as a fraction of 2 kilograms.



Answer: ..... (2)

(b) She also needs to measure out 120 grams of sugar from a 2 kilogram bag of sugar. What is 120 grams as a percentage of 2 kilograms?

Answer: ..... (2)

(c) Write the ratio of flour to sugar used in its simplest form

Answer: ..... (2)

- 4 The table shows the temperatures recorded at 3 cities on 1 December 2013.

Place	Lowest temperature in °C	Highest temperature in °C
Reykjavik	-15.4	-5.8
Newcastle	-1.5	4.9
Hong Kong	15.3	25.1



- (a) What is the difference between the lowest and highest temperature in Reykjavik?

Answer: .....°C (2)

- (b) What is the difference between the lowest and highest temperature in Newcastle?

Answer: .....°C (2)

- (c) Which city has the greatest difference between the highest and lowest temperatures on 1<sup>st</sup> December 2013?

Answer: ..... (2)

- 5 (a) Polly buys a dress for £36. Prices were later reduced by 15% in a sale. How much would the same dress cost in the sale?



Answer: £..... (2)

- (b) A pair of leggings costs £17.50 before the sale. They are reduced by £3.50 in the sale. What is this reduction as a percentage of the original cost?

Answer: ..... (2)

6 Showing all your working, calculate the following:

(a)  $\frac{3}{5} + \frac{1}{4}$

Answer: ..... (2)

(b)  $\frac{4}{5} \times \frac{15}{8}$

Answer: ..... (2)

(c)  $\frac{15}{8} \div \frac{3}{5}$

Answer: ..... (2)

(d)  $\frac{15}{16} - \frac{2}{3}$

Answer: ..... (2)

- 7 (a) Round each number in the calculation below to one significant figure.

$$\frac{52.7 \times 4.3}{8.4 - 2.9}$$

Answer: ..... (2)

- (b) Using your answer to part (a), estimate the answer to the above calculation. Show ALL your working.

Answer: ..... (2)

- 8 (a) A shopkeeper buys 15 iPads at £467 each. How much does he spend in total?

Answer: £..... (2)

- (b) Teen Shop spends £1 million buying new dresses for the summer.  
**Approximately** how many dresses costing £49 each can they buy?



Answer: ..... (2)

9 (a) Write 120 as a product of its prime factors, using indices.  
(i)

Answer: ..... (2)

(ii) Write 84 as a product of its prime factors, using indices.

Answer: ..... (2)

(b) What is the largest factor of both 84 and 120?

Answer: ..... (1)

10 Calculate  $16 - 15 \div 3 + 4$   
(a)

Answer: ..... (2)

(b) Calculate  $2(12 \div 4) - 2 \times 3^2$

Answer: ..... (2)

- 11 (i) Robbie is taking part in a 120 kilometre sponsored bike ride.



He cycles the first 75 kilometres in 3 hours. What is his average speed in kilometres per hour during this time?

- (ii) There are 8 kilometres to every 5 miles. Convert 120 kilometres to miles.

Answer: .....km/h (2)

- (iii) Robbie finishes the ride in 7 hours 30 minutes. Calculate his average speed in kilometres per hour.

Answer: .....miles (2)

Answer: .....km/h (2)

12 Simplify  
(i)  $6x - 5y + 5x + 7y$

Answer: ..... (2)

(ii)  $6x^2 \times 5x^3$

Answer: ..... (2)

(iii)  $\frac{12a^3}{4}$

Answer: ..... (1)

13 Multiply out and simplify  
(a)  $5x - 2(3x - 4)$

Answer: ..... (2)

(b) Factorise completely

$$15x - 20y$$

Answer: ..... (2)

14 Given that  $a = -3$ ,  $b = 5$ ,  $c = -2$ . Find the value of

(i)  $5a + 3c$

Answer: ..... (2)

(ii)  $(a + b)^2$

Answer: ..... (2)

(iii)  $2b^2 - 3c^2$

Answer: ..... (3)

15 A room is 6 metres long, 4 metres wide and 2.5 metres high.



(i) Find the area of the ceiling  
(a)

Answer: .....m<sup>2</sup> (1)

(b) Find the total area of the four walls

Answer: ..... m<sup>2</sup> (2)

(ii) The area of the windows, doors and other parts of the room which do not need to be painted is 8 m<sup>2</sup> in total. Calculate the total area of the walls which does need to be painted and write the ratio of this area to the area of the ceiling as a ratio in its lowest terms.

Answer: ..... (2)

(iii) It costs £44 to paint the ceiling. Find the cost of painting the walls.

Answer: £..... (2)

16 Solve

(i)  $5a = -15$

Answer: ..... (1)

(ii)  $\frac{1}{4}b = -1$

Answer: ..... (1)

(iii)  $4c + 9 = 5$

Answer: ..... (2)

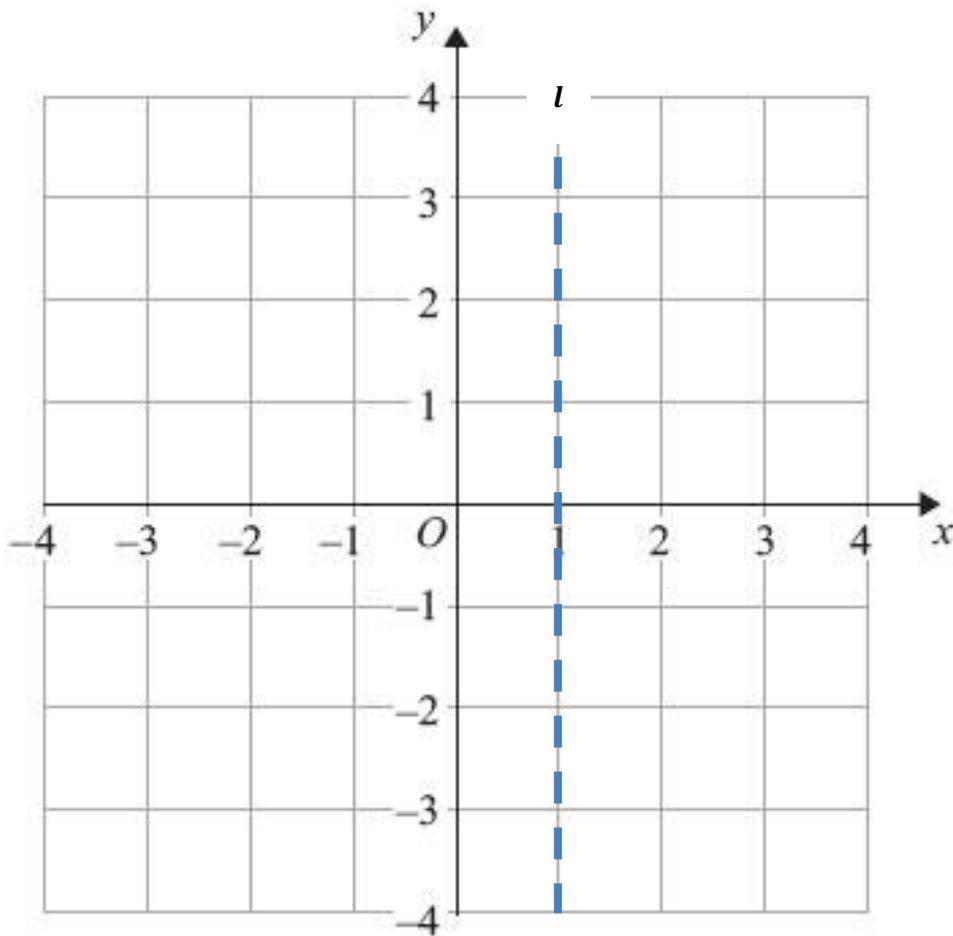
(iv)  $3d - 5 = 22 - 6d$

Answer: ..... (3)

(v)  $4(e - 6) = 1$

Answer: ..... (3)

17.



On the grid above

(i) (a) plot the points  $(-1, -3)$ ,  $(-1, -1)$ ,  $(-2, -1)$ . (1)

(b) Join these points and label the triangle A. (1)

(ii) Write the equation of the line labelled  $l$

Answer: .....(1)

(iii) Reflect triangle A in the line  $l$  and label the image B. (1)

(iv) Rotate triangle A **anti-clockwise** through  $90^\circ$  about the point  $(0,0)$  and label the image C. (2)

(v) Translate triangle A by 2 units left and 3 units up. Label the image D. (2)

**END OF EXAM**

**TOTAL MARKS 100**