BENENDEN

Lower School Entrance Exam 2015

MATHEMATICS

13+

1 Hour

Name:	……
School:	……
Date:	……

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)

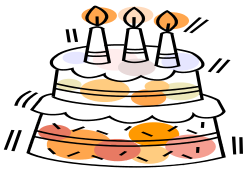
(b) Convert $\frac{13}{25}$ to a decimal

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
Reyjkavik	-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 1st 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) (i) Write 120 as a product of its prime factors, using indices.

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

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?

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

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

Answer: .....miles (2)

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

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) (a) Find the area of the ceiling

Answer: ……m^2 (1)

(b) Find the total area of the four walls

Answer: …….. m^2 (2)

(ii) The area of the windows, doors and other parts of the room which do not need to be painted is 8 m^2 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)

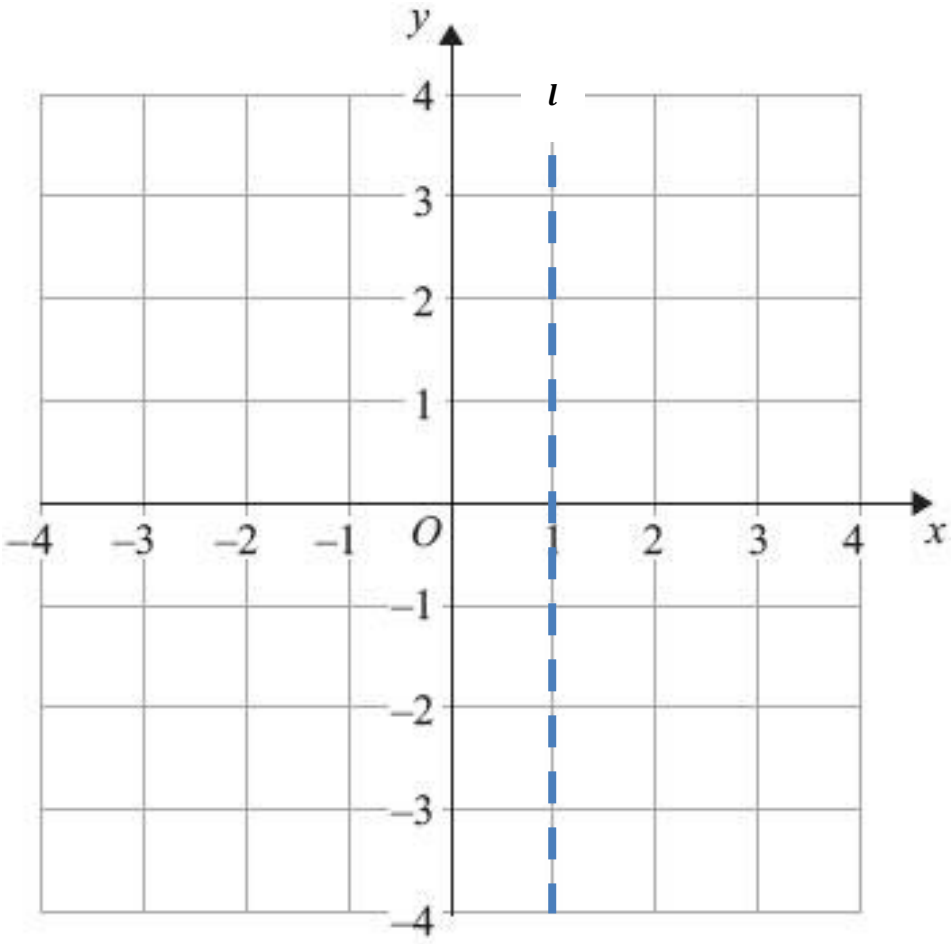
(iv) $3d - 5 = 22 - 6d$

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 $90°$ 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