BENENDEN

Lower School Entrance Paper 2016

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 this paper = 100

1. (a) Write $\frac{13}{25}$ as a decimal.

Answer: .....

(2)

(b) Write 65% as a fraction.

Answer: .....

(1)

(c) Calculate $\frac{4}{7}$ of £22.33

Answer: .....

(3)

(d) Write 250 grams as a fraction of 3.5 kilograms. Give your answer in its simplest terms.

Answer: .....

(2)

2. (a) The temperature at 9 a.m. on Monday in Northern Greenland is $-14.4℃$. At 9 p.m. the same day the temperature had dropped to $-21.9℃$. By how many degrees had the temperature fallen between 9 a.m. and 9 p.m.?

Answer: ……
(1)

(b) At 9 a.m. on Tuesday the temperature was 2.7℃ colder than at 9 a.m. on Monday. What was the temperature at 9.a.m. on Tuesday?

Answer: ……
(1)

(c) Calculate (-2) – (-3)

Answer: ……
(1)

(d) Calculate $6 - 12 \div (-4) - 2$

Answer: ……
(2)

(e) Calculate $(-3)^2 \times (-6)$

Answer: ……
(2)

3. (a) Izzy buys a can of coke for 95 pence, a sandwich for £3.49 and a packet of crisps for 65 pence. How much does she spend in total?

Answer: …….

(2)

(b) Becky buys a skirt for £24.50 and a scarf for £4.95. How much change does she get from a £50 note?

Answer: …….

(2)

(c) Coffee is priced at £1.08 per 100 grams. What is the cost of 700 grams of coffee?

Answer: …….

(2)

(d) 5 identical copies of 'Lyra – the Sequel' cost £27.25. How much does 1 copy cost?

Answer: …….

(2)

4. (a) (i) Sara writes down three positive whole numbers which add up to 16. The product of two of them is 18. The difference between two of them is 1. What are the three numbers?

Answer: ……
(2)

(ii) What is the range of the three numbers?

Answer: ……
(1)

(b) (i) Write each number in this calculation to 1 significant figure

$$\frac{487}{5.3 \times 23.8}$$

Answer: $\frac{\ldots\ldots}{\ldots\ldots \times \ldots\ldots}$

(1)

(ii) Use your answer to part (i) to estimate the answer to

$$\frac{487}{5.3 \times 23.8}$$

Answer: ……
(1)

5 (i) Solve $\frac{1}{4}a = 9$

Answer: .....

(1)

(ii) Solve $3b + 4 = 22$

Answer: .....

(2)

(iii) Solve $5c - 7 = 23$

Answer: .....

(2)

(iv) Solve $3d + 6 = 34 - 4d$

Answer: .....

(2)

(v) Solve $4(x - 5) = 2$

Answer: .....

(2)

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

Answer: ……
(3)

(ii) Given that $48 = 2^4 \times 3$, what is the largest factor of both 48 and 120?

Answer: ……
(1)

(b) Calculate $12 - 15 \div 3 + 7$

Answer: ……
(2)

(c) (i) Write a number in each box to complete the following sequence:

32, ☐ 8, 4, ☐ 1, ☐

(2)

(ii) A sequence is formed using the rule '*subtract 3 from the term before and then double'*. Write down the second and third terms in the sequence, given that the first term is 1.

Answer: 1, ……, ……
(2)

7. (i) On the grid opposite, draw and label the line x = 3

(1)

(ii) For the equation y = 3x - 2

(a) What is the value of y when x = 0?

Answer: ……

(1)

(b) What is the value of x when y = 0?

Answer: ……

(1)

(c) On the grid opposite, draw and label the graph of $y = 3x - 2$.

(2)

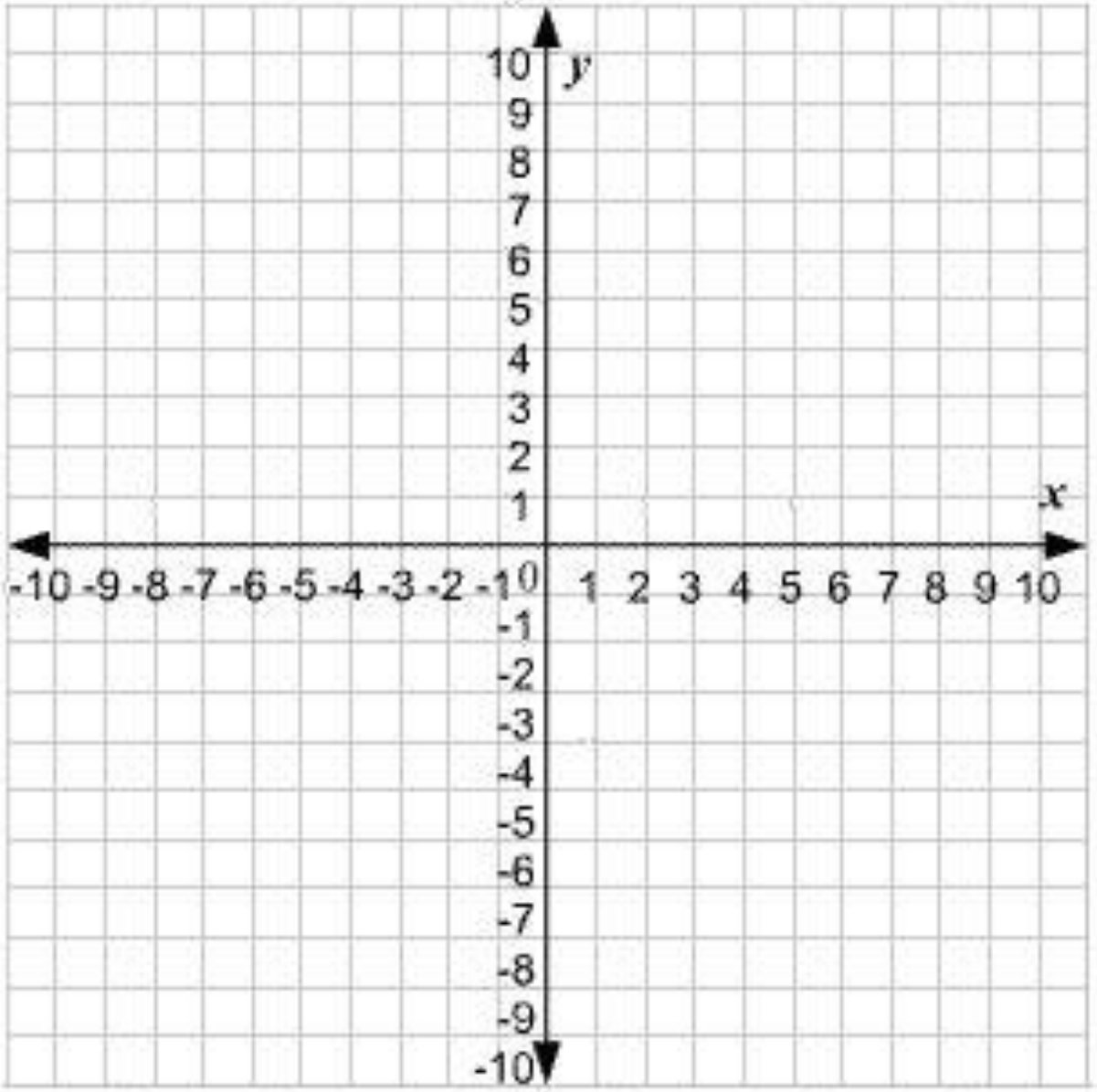
(iii) (a) For the equation $y = 3 - 2x$ complete the table below.

x	0	3	6
y			

(2)

(b) On the grid opposite, draw and label the graph of $y = 3 - 2x$

(2)


y
x
10
9
8
7
6
5
4
3
2
1
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10

8. (a) (i) On Monday, Milly and Billy find a box of Smarties. Milly eats $\frac{3}{8}$ of the Smarties and Billy eats $\frac{1}{3}$ of the Smarties. What fraction of the total do the two children eat altogether?

Answer: .....

(2)

(ii) What fraction is left?

Answer: .....

(1)

(iii) On Tuesday, Tilly eats $\frac{3}{4}$ of what is left. If there were 96 Smarties in the box before *any* were eaten, how many did Tilly eat?

Answer: .....

(2)

(b) Jack eats $\frac{2}{7}$ of a packet of Maltesers every day. How many packets would he eat in 14 days?

Answer: .....

(2)

9. Simplify

(i) 3x - 2y – 2x + 6y

Answer: ……

(2)

(ii) $2x^2y \times 5x^3y^4$

Answer: ……

(2)

(iii) $\frac{12a^5}{2a^2}$

Answer: ……

(2)

10. (a) Multiply out the bracket and simplify

6y – 3(x – 2y)

Answer: ……

(2)

(b) Factorise completely

$12x^2 - 4x$

Answer: ……

(2)

10. Given that a = 3, b = - 4 and c = - 2, find the value of

(i) 4a – 5b

Answer: ……

(2)

(ii) 2bc

Answer: ……

(2)

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

Answer: ……

(2)

(iv) $2c^2 + 3b$

Answer: ……

(3)

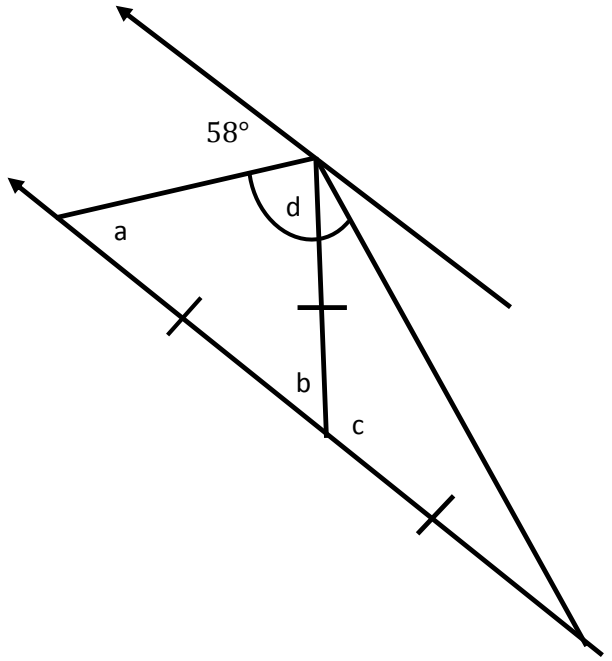
(v) $\frac{b-5c}{a}$

Answer: ……

(2)

11 Calculate the size of each of the angles marked a, b, c and d in the diagram below

Not drawn to scale



Answers:

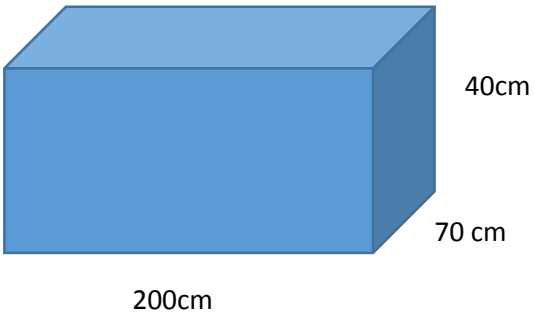
a = …… (1)

b = …… (2)

c = …… (1)

d = …… (2)

12.



(i) A toy box is in the shape of a cuboid, with a length of 200cm, height of 40cm and width of 70 cm. Harriet wants to paint the outside of her toy box, including the top, bottom and all of the sides. What is the total area she needs to paint in square centimetres?

Answer: ……cm^2

(3)

(ii) Calculate the volume of the toy box, in cubic centimetres.

Answer: …… cm^3

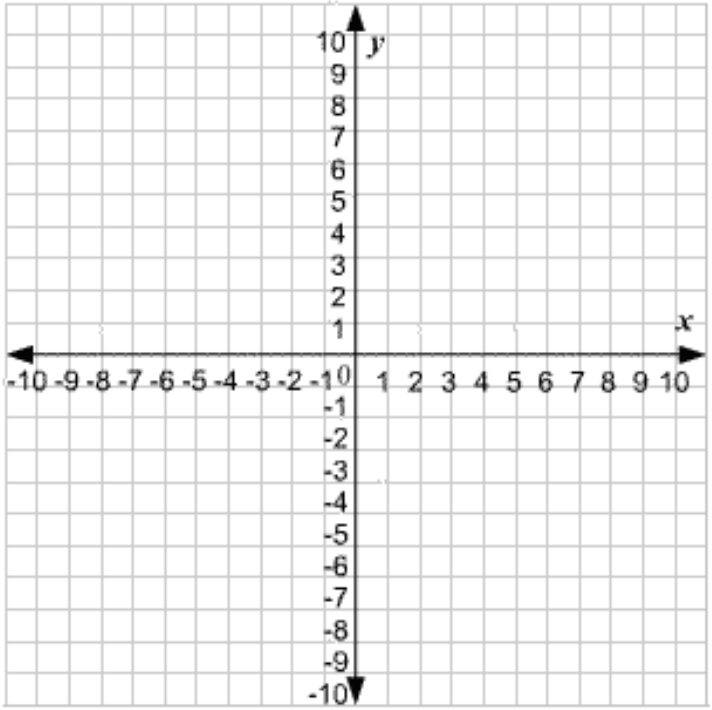
(2)

(iii) Harriet decides to fill her toy box with water. How much water will she need to fill it to the top, ***in litres?***

Answer: …… *litres*

(1)

13.



(i) (a) On the grid above, plot the points (-6,5), (-3,5) and (-6, 2) (1)

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

(ii)(a) Reflect triangle A in the y axis and label it B (1)

(b) Rotate triangle A $90°$ anti-clockwise about the origin and label it C (1)

END OF TEST

TOTAL 100 MARKS