GCSE MATHEMATICS (LINEAR)
Foundation Tier  Paper 2

Friday 6 November 2015  Morning  Time allowed: 1 hour 45 minutes

Materials
For this paper you must have:
• a calculator
• mathematical instruments.

Instructions
• Use black ink or black ball-point pen. Draw diagrams in pencil.
• Answer all questions.
• You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
• Do all rough work in this book.

Information
• The marks for questions are shown in brackets.
• The maximum mark for this paper is 105.
• The quality of your written communication is specifically assessed in Questions 8, 11 and 18. These questions are indicated with an asterisk (*).
• You may ask for more answer paper, tracing paper and graph paper. These must be tagged securely to this answer book.

Advice
• In all calculations, show clearly how you work out your answer.
Formulae Sheet: Foundation Tier

**Area of trapezium** = \( \frac{1}{2} (a + b)h \)

**Volume of prism** = area of cross section \( \times \) length
1 (a) A woman is facing North. 
She turns clockwise to face West. 

What angle does she turn through? 
Circle your answer. 

[1 mark] 

45º                    90º                    180º                    270º 

1 (b) A man is facing North-East. 
He turns 180º 

In which direction is he facing now? 
Circle your answer. 

[1 mark] 

North                    South-West                    West                    North-West 

Turn over for the next question
2 (a) Which two units are sensible to measure the distance between two towns? Circle your answers. [2 marks]

- centimetres
- metres
- kilometres
- inches
- miles

2 (b) Which two units are sensible to measure the mass of a mobile phone? Circle your answers. [2 marks]

- grams
- ounces
- pounds
- kilograms
- tonnes

2 (c) Which two of these are sensible for the amount of juice in a full bottle? Circle your answers. [2 marks]

- 2000 ml
- 5000 litres
- 4 ml
- 1.5 litres
- 300 litres
3 (a) This formula is used to work out the cost, in £, of delivering packs of dog food.

\[
\text{Cost} = \text{number of packs} \times 4 + 8
\]

Work out the cost of delivering 12 packs of dog food. [2 marks]

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Answer £ ...................................................................

3 (b) This formula is used to work out the cost, in £, of packs of cat food.

\[
\text{Cost} = \text{number of packs} \times 3.5
\]

Tom has £20 to buy cat food.

Work out the maximum number of these packs he can buy. [2 marks]

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Answer ......................................................................

Turn over for the next question
4 The bar chart shows the number of sandwiches sold on Monday, Tuesday and Wednesday.

4 (a) A profit of £2 is made from each sandwich sold.

Work out the total profit made from sandwiches sold on the three days. [4 marks]

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Answer £ ...................................................................
4 (b) Altogether 65 sandwiches were sold on Thursday and Friday.

A profit of £2 is made from each sandwich sold.
The total profit from sandwiches sold on Thursday is £80

Draw a pictogram for the number of sandwiches sold on Thursday and Friday.
Use the key given.

4 marks]

Key: □ represents 10 sandwiches sold

<table>
<thead>
<tr>
<th>Thursday</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td></td>
</tr>
</tbody>
</table>

Turn over for the next question
Here are four number cards.  

7 1 3 5

5 (a) Use all four cards to make the smallest possible number.  

[1 mark]

5 (b) Choose three of the cards to make this calculation correct.  

\[ \square \square \div \square = 14.6 \]  

[1 mark]

5 (c) Choose three of the cards to make the largest possible answer.  
Work out the answer.  

\[ \square \square \times \square = \ldots \ldots \]  

[2 marks]
6 (a) Shade **one** more square so that this grid has one line of symmetry. [1 mark]

6 (b) Shade **three** more squares so that this grid has two lines of symmetry. [2 marks]

6 (c) Shade **four** more squares so that this grid has rotational symmetry of order 4 [2 marks]
7 Here is a conversion graph.

7 (a) Use the graph to convert 30 km/h to m/s

[1 mark]

Answer ............................................................... m/s

7 (b) Use the graph to convert 60 m/s to km/h

[3 marks]

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Answer ........................................................... km/h
Andy has a job for 5 days. The table shows his pay for the first 4 days.

<table>
<thead>
<tr>
<th>Day</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay</td>
<td>£31.50</td>
<td>£40.50</td>
<td>£27</td>
<td>£18</td>
<td></td>
</tr>
</tbody>
</table>

*8 (a) Work out the range of his pay for the first 4 days. [2 marks]

Answer £ .................................................................

8 (b) His mean pay for the 5 days is £28 per day.

How much was his pay on Friday? [3 marks]

Answer £ .................................................................
The arrows on these two fair spinners are spun.

The numbers shown by the arrows are added to get the score.

9 (a) Complete this table to show all the possible scores.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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<td>3</td>
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<td>4</td>
<td></td>
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</tbody>
</table>

9 (b) Work out the probability of scoring less than 4
Give your answer as a fraction in its simplest form.

Answer .................................................................

9 (c) Work out the probability of scoring a prime number.

Answer .................................................................
The diagram shows a rectangle.

**The perimeter of the rectangle is 28 cm**

Work out the area of the rectangle. **[3 marks]**

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Answer ............................................... cm²
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**Turn over for the next question**
11. Show that 68 grams is approximately 10% more than 62 grams. 

[2 marks]

\[ \frac{68 - 62}{62} \times 100 \approx 10\% \]

12. Gill has £3

She wants to buy five bars.
She wants as many Choco bars as possible.

How many Choco bars can she buy?

[3 marks]

\[ \text{Number of Choco bars} = \left\lfloor \frac{3}{0.72} \right\rfloor \]

Answer: \( \left\lfloor \frac{3}{0.72} \right\rfloor \) Choco bars
13 (a) Complete the table of values for \( y = 3 - 2x \) 

<table>
<thead>
<tr>
<th>( x )</th>
<th>( -2 )</th>
<th>0</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( y  )</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[2 marks]

13 (b) On the grid, draw the graph of \( y = 3 - 2x \) for values of \( x \) from \(-2\) to \(2\) 

[2 marks]
Toni makes 40 dolls.

She sells \( \frac{4}{5} \) of them at one price for a total of £96

She then reduces the price and sells the rest for a total of £20

By how much did she reduce the price? [5 marks]

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Answer .................................................................................................................................
Here is a sequence of patterns made with squares.

Pattern 1

Pattern 2

Pattern 3

The rule for working out the number of squares in each pattern is

Square the pattern number and then add 2

15 (a) How many squares are in pattern 7?

[1 mark]

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Answer ......................................................................

15 (b) Which pattern has 123 squares?

[2 marks]

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Answer ......................................................................
16 (a) Enlarge the triangle by scale factor 2, using point $P$ as the centre of enlargement.

[3 marks]
16 (b) Describe fully the **single** transformation that maps shape A onto shape B.

[3 marks]
A family uses 300 units of gas.

Each unit of gas costs 19p without VAT.
VAT of 5% is added to the bill.

Work out the total gas bill.

Answer £ .................................................................
Show that $AB$ is not parallel to $CD$.

[4 marks]
The pie chart shows information about how people voted in an election.

1800 people voted for D.

How many more people voted for C than B?

Answer .................................................................
20 (a) Solve \(6x + 4 = 2(2x - 5)\)  

\[ x = \ldots \]

20 (b) Multiply out \(y(2 - y^3)\)  

Answer \(\ldots\)

21 Work out the length of the hypotenuse.

\[ \text{Not drawn accurately} \]

\[ \text{6.25 cm} \]

\[ \text{15 cm} \]

Answer \(\ldots\) cm
22 Abby and Judy share some money.
Abby gets 25%

22 (a) Write Abby’s share : Judy’s share as a ratio.
Give your answer in its simplest form.

Answer ........................................ : ........................................

22 (b) Judy gets £19.50
How much does Abby get?

Answer £ .........................................................
23 Here is information about the scores, $t$, of class A in a test.

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &lt; $t$ ≤ 10</td>
<td>4</td>
</tr>
<tr>
<td>10 &lt; $t$ ≤ 20</td>
<td>8</td>
</tr>
<tr>
<td>20 &lt; $t$ ≤ 30</td>
<td>9</td>
</tr>
<tr>
<td>30 &lt; $t$ ≤ 40</td>
<td>3</td>
</tr>
<tr>
<td>40 &lt; $t$ ≤ 50</td>
<td>1</td>
</tr>
</tbody>
</table>

The mean score for class B in the same test is 22

Dan says, “On average, class A did better than class B.”

Is he correct?

You **must** show your working.

[4 marks]

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Answer ..................................................................................................................
24  

$a$ and $b$ are different prime numbers with $a > b$

24 (a) Give an example to show that $a^2 + b^2$ could be even.  

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24 (b) Give an example to show that $a^2 + b^2$ could be odd.  

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An empty tank is in the shape of a cuboid as shown.

The tank is to be filled with water at 1.25 litres per second.

1 m³ = 1000 litres

Work out the time taken to fill the tank.
Give your answer in hours and minutes.

[5 marks]

Answer ................... hours ...................... minutes