GCSE MATHEMATICS (LINEAR)
Foundation Tier     Paper 1

Thursday 26 May 2016     Morning     Time allowed: 1 hour 15 minutes

Materials
For this paper you must have:
• mathematical instruments.
You must not use a calculator.

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 70.
• The quality of your written communication is specifically assessed in Questions 10 and 12. 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 60 people were asked the colour of their car. The pictogram shows the results. The information for Silver is missing.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>□□□□□</td>
</tr>
<tr>
<td>Black</td>
<td>□□□□</td>
</tr>
<tr>
<td>Silver</td>
<td>□□□□□□□□□□</td>
</tr>
<tr>
<td>Blue</td>
<td>□□□□□□□□□□</td>
</tr>
</tbody>
</table>

Key ○ Represents _______ cars

1 (a) 20 cars are Red.
Complete the key. [1 mark]

1 (b) Complete the pictogram and the frequency column. [3 marks]
2 Here is part of the menu in a café.

<table>
<thead>
<tr>
<th>Drinks</th>
<th>Snacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tea</td>
<td>Biscuit</td>
</tr>
<tr>
<td>£1.20</td>
<td>65p</td>
</tr>
<tr>
<td>Coffee</td>
<td>Scone</td>
</tr>
<tr>
<td>£1.60</td>
<td>£1.00</td>
</tr>
<tr>
<td>Cola</td>
<td>Donut</td>
</tr>
<tr>
<td>£1.50</td>
<td>95p</td>
</tr>
</tbody>
</table>

2 (a) Martyn buys one drink and one snack. He pays less than £2.

What drink and snack did he buy?

[1 mark]

______________________________________________________________________________

Answer __________________ and __________________

2 (b) Sue buys two teas, one biscuit and one scone. She pays with a £5 note. She gets 4 coins in her change.

Work out the coins that she gets.

[3 marks]

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Answer __________, __________, __________, __________
2 (c) The café has a breakfast deal.

**Breakfast deal**
Coffee and muffin
Only £2.25

The breakfast deal is 50p cheaper than the normal price.

Work out the normal price of a muffin.

[3 marks]

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Answer £ __________________________

Turn over for the next question
3 (a) Here is a square grid.

Shade 40% of the grid.

[1 mark]

3 (b) Here is another square grid.

What fraction of this grid is shaded?
Give your answer in its simplest form.

[2 marks]

Answer ___________________________________________
4 (a) Work out \(383 + 419\) [1 mark]

Answer _______________________________________

4 (b) Work out \(522 \div 6\) [1 mark]

Answer _______________________________________

4 (c) Work out \(52 \times 36\) [3 marks]

Answer _______________________________________
5 (a) Work out the value of \( 7a - 4b \) when \( a = 3 \) and \( b = -2 \) [2 marks]

Answer

5 (b) Solve \( 8x = 96 \) [1 mark]

\[ x = \]

5 (c) Solve \( y + 12 = 28 \) [1 mark]

\[ y = \]
Here is a school timetable for one morning.

8:50 am 11:50 am

Lesson 1 | Lesson 2 | Break 15 minutes | Lesson 3

Each lesson is the same length.
Between lessons 2 and 3 there is a 15 minute break.

Work out the length of one lesson.

[3 marks]

______________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Answer ____________________________ minutes

Turn over for the next question
7 Here is triangle $ABC$. It is drawn accurately.

7 (a) Measure angle $CAB$. [1 mark]

Answer ___________________________ degrees

7 (b) Work out the area of the triangle. Show clearly any measurements that you make. [3 marks]

____________________________________________________________________________
____________________________________________________________________________
____________________________________________________________________________

Answer ___________________________ cm$^2$
8 (a) Circle the expression that is the same as six less than $x$.  

\[ 6 - x \quad 6x \quad \frac{x}{6} \quad x - 6 \]

[1 mark]

8 (b) Circle the expression that is the same as one-quarter of $y$.  

\[ y + 0.4 \quad \frac{4}{y} \quad \frac{y}{4} \quad 4y \]

[1 mark]

8 (c) Write the output of this number machine as an expression.

[1 mark]

Input: $w$  
\[ w \rightarrow +4 \rightarrow \times 2 \rightarrow \text{Output} \]

Answer: ____________________________
9 (a) Work out \( \frac{7}{10} - \frac{2}{5} \)  

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

9 (b) Work out \( \frac{2}{3} \) of 36  

Answer: ............................................................
*10 \( AB \) is a straight line.

Work out the size of angle \( a \).

Give a reason for your answer.

[2 marks]

Answer \_______________________________\ degrees

Reason \_______________________________________________________________________

______________________________________________________________________________

Turn over for the next question
11 (a) How many pounds are in 1 kilogram?
Circle the closest estimate.

1.6  2.2  2.5  4.5

[1 mark]

11 (b) How many kilometres are in 1 mile?
Circle the closest estimate.

0.625  1.6  2.5  5

[1 mark]

11 (c) Here is a conversion graph.

Convert 30 gallons to litres.

[2 marks]

Answer ___________________________________ litres
*12 Increase £190 by 35%

[3 marks]

Answer £ __________________________

Turn over for the next question
Six balls just fit inside a box as shown.
The balls each have a diameter of 5 cm
The box is a cuboid.

Work out the volume of the box.

[3 marks]

Answer ___________________________ cm³
Two 10 cm by 6 cm rectangles are cut in half as shown.

The four pieces are joined together, without overlap, as shown.

Work out the perimeter of the shaded rectangle.

[3 marks]

Answer __________________________ cm
A bag has only red, white, blue and yellow counters. A counter is taken from the bag at random. Here are some of the probabilities.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Red</th>
<th>White</th>
<th>Blue</th>
<th>Yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probability</td>
<td>0.1</td>
<td></td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

15 (a) The probability of taking a white counter is twice the probability of taking a yellow counter.

Complete the table.

15 (b) There are 500 counters in the bag altogether.

Complete the table.

15 (c) All of the yellow counters are taken out of the bag.

Work out the probability of taking a red counter at random from the bag now.

Answer

<table>
<thead>
<tr>
<th>Colour</th>
<th>Red</th>
<th>White</th>
<th>Blue</th>
<th>Yellow</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of counters in the bag</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td>500</td>
</tr>
</tbody>
</table>
Work out length $BC$. 

Not drawn accurately 

Answer __________________ cm 

Turn over for the next question
17 A café owner records the average monthly temperature and the monthly sales of soup over a year.

17 (a) The scatter graph shows negative correlation.

Write down the relationship between average monthly temperature and monthly sales of soup.

[1 mark]

______________________________________________________________________________

______________________________________________________________________________

17 (b) The average monthly temperature for the next month is predicted to be 7°C

Use the graph to estimate the sales of soup that month. You must show your working.

[2 marks]

______________________________________________________________________________

______________________________________________________________________________

Answer ____________________________________________

Answer ____________________________________________
Dwayne Pipes uses this formula to work out the cost of a plumbing job in pounds.

\[ \text{Cost of job} = 35 \times \text{number of hours} + 40 \]

Ivor Wrench uses this formula to work out the cost of a plumbing job in pounds.

\[ \text{Cost of job} = 40 \times \text{number of hours} + 17.5 \]

A job of \( x \) hours costs the same with Dwayne and Ivor.

Set up and solve an equation to work out \( x \).

[4 marks]
19 (a) The scores on four ordinary, six-sided dice are put in order.

The median of the four scores is \(0.5\) less than the mean of the four scores.

Circle the value of the fourth score.

\[1\] mark

\[2\] \[3\] \[4\] \[5\] \[6\]

19 (b) The dice are rolled again.
The median of the scores is \(0.5\) less than the range.

Work out a possible set of scores.

\[2\] marks

________________________
________________________
________________________

Answer \(\_\_\_\_\_\_\), \(\_\_\_\_\_\_\), \(\_\_\_\_\_\_\), \(\_\_\_\_\_\_\)

END OF QUESTIONS
There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED