| Surname |
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## GCSE

## WJEC CBAC

## 4370/04

## MATHEMATICS - LINEAR <br> PAPER 2 <br> FOUNDATION TIER

A.M. MONDAY, 17 June 2013
$1 \frac{3}{4}$ hours

## ADDITIONAL MATERIALS

A calculator will be required for this paper.
A ruler, a protractor and a pair of compasses may be required.

## INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen. Do not use gel pen or correction fluid.
Write your name, centre number and candidate number in the spaces at the top of this page.
Answer all the questions in the spaces provided.
If you run out of space, use the continuation page at the back of the booklet, taking care to number the question(s) correctly.
Take $\pi$ as 3.14 or use the $\pi$ button on your calculator.

## INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.
Unless stated, diagrams are not drawn to scale.
Scale drawing solutions will not be acceptable where you are asked to calculate.
The number of marks is given in brackets at the end of each question or part-question.
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question 12.

| For Examiner's use only |  |  |
| :---: | :---: | :---: |
| Question | Maximum <br> Mark | Mark <br> Awarded |
| 1 | 6 |  |
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| 9 | 8 |  |
| 10 | 6 |  |
| 11 | 6 |  |
| 12 | 8 |  |
| 13 | 4 |  |
| 14 | 12 |  |
| 15 | 8 |  |
| 16 | 3 |  |
| 17 | 7 |  |
| TOTAL MARK |  |  |

## Formula List

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


Volume of prism $=$ area of cross-section $\times$ length


1. (a) Kevin orders some items from a butcher.

Complete the four entries in the following table to show his bill for these items.

| Amount | Item | Cost (£) |
| :---: | :---: | :---: |
| 4.5 kg | Beef @ $£ 8.98$ per kg | 40.41 |
| 9 packs | Sausages @ £4.39 per pack |  |
| $\ldots . . . .$. packs | Stuffing @ 38p per pack | 3.04 |
| 12 | Steaks @ £6.32 each |  |
| Total |  |  |

(b) He gets a $20 \%$ discount.

How much is this discount?
2. Circle the quantity that is the appropriate estimate for each of the following.

| Length of a football pitch | 120 km | 120 m | 120 mm | 120 cm |
| :--- | :--- | :--- | :--- | :--- |
| Weight of a man | 80 kg | 80 g | 80 mg | 800 kg |
| Capacity of a cup | 2 litres | $10 \mathrm{~cm}^{3}$ | 200 ml | 1 ml |
| Area of a page in a book | $4 \mathrm{~m}^{2}$ | $400 \mathrm{~cm}^{2}$ | $40 \mathrm{~mm}^{2}$ | $400 \mathrm{~cm}^{3}$ |

3. A box is placed on a scale.

8 identical blocks are then placed in the box.


Find how much one block weighs.

$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
$\qquad$
4. (a) Write down the special name of the straight line shown in each of the following diagrams.

(b) (i) Measure, in centimetres, the length of the line $A B$ in the diagram below.

$$
\text { Length of } A B=\ldots \ldots
$$


(ii) Draw a line perpendicular to $A B$ that passes through $C$.
5. (a)


The above shape is the outline of a pond in a park.
It is drawn on a square grid where each square represents $6 \mathrm{~m}^{2}$.
Estimate the area of the surface of the pond.

Area of the surface of the pond $=$
$\mathrm{m}^{2}$
(b) Complete the following figure so that it is symmetrical about the line $P Q$.

6. The diagram shows a sketch of a triangular prism.

Draw an accurate net of the triangular prism.
The 7 cm by 3 cm face has been drawn for you.

7. (a) Draw a circle around all of the following fractions that are equal to $0 \cdot 6$.
$\frac{12}{20}$
$\frac{1}{6}$
$\frac{9}{15}$
$\frac{6}{10}$
$\frac{5}{20}$
(b) Shade $75 \%$ of the following figure.

(c) What fraction of the following shape is shaded? Give your answer in its simplest form.

|  |  |  |  |  |  |  |  |
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$\qquad$
$\qquad$
8. (a) Complete the following table, which shows the temperature at 11:00p.m., the change in temperature and the temperature at 11:00a.m. the next day, in each of three places. The first one has been done for you.

| Place | Temperature <br> at $11: 00$ p.m. | Change | Temperature <br> at 11:00a.m. next day |
| :---: | :---: | :---: | :---: |
| Swansea | $-1^{\circ} \mathrm{C}$ | $\mathrm{Up} 4^{\circ} \mathrm{C}$ | $3^{\circ} \mathrm{C}$ |
| New York | $-2^{\circ} \mathrm{C}$ |  | $0^{\circ} \mathrm{C}$ |
| Moscow |  | $\mathrm{Up} 5^{\circ} \mathrm{C}$ | $-3^{\circ} \mathrm{C}$ |

(b) Calculate $53 \%$ of 82 .
(c) Each block shown in this tower is to have a number displayed on it.

For each pair of blocks that are next to each other in the same row, the number on the block above them is the total of the numbers on the two blocks.
Some numbers are already displayed.
What number should be written on the box marked $X$ ?

9. (a) Describe in words the rule for continuing the following sequences.
$\begin{array}{llllll}\text { (i) } & 5 & 9 & 13 & 17 & 21\end{array}$
Rule: $\qquad$
-

Rus
$\qquad$
(ii) $\begin{array}{llllll}243 & 81 & 27 & 9 & 3\end{array}$

Rule: $\qquad$
(b) (i) A toy costs $t$ pence. Write down, in terms of $t$, the cost of the toy in $£$.
 June 9th 2002.
(c) Solve $3 x-7=11$.
(d) There is a connection between the $x$ and $y$ coordinates in the following sequence of points.

$$
(1,4), \quad(2,5), \quad(3,6), \quad(4,7), \ldots
$$

(i) Using the same connection, complete the following: (5, .....................)
(ii) Using the same connection, complete the following: ( $x$, ......................) , giving your answer in terms of $x$.
10. The amount of money (in $£$ ) saved by Alan for each of 8 months was as follows:

$$
\begin{array}{llllllll}
43 & 30 & 75 & 54 & 62 & 46 & 24 & 82
\end{array}
$$

(a) Find the range of the amounts saved.
$\qquad$
$\qquad$
$\qquad$
$\qquad$
(b) Find the mean of the amounts saved.
(c) If Alan had saved $£ 15$ less every month, what would be
(i) the mean of the amounts saved,
(ii) the range of the amounts saved.
$\qquad$
11. (a) $P$ and $Q$ are two ports shown on a map with scale $1 \mathrm{~cm}=8 \mathrm{~km}$. Find the straight-line distance, in km , from $P$ to $Q$.

12. You will be assessed on the quality of your written communication in this question.

In an examination, candidates sit 2 written papers called Paper A and Paper B. In a forthcoming examination there are 1200 candidates, each sitting Paper A and Paper B. In 1 day, markers can either mark 60 Paper As or mark only half as many Paper Bs. The marking must be completed in 10 days.
How many markers are needed to complete the marking in this time?
13. (a) Using a ruler and a pair of compasses, construct an angle of $120^{\circ}$ at the point $A$ on the line below.

(b) Using a ruler and a pair of compasses, bisect the line $P Q$.

\[
4-2-20-2

\] |  |  |
| :--- | :--- |
|  |  |
| $P$ | $Q$ |

14. Miriam is planning a holiday in Pakistan.
(a) Miriam went to an exchange bureau to get some Pakistan rupees for her holiday.


She exchanged $£ 540$ for 85000 Pakistan rupees.
Complete the statement below, giving your answer correct to two decimal places.

## 'Exchange rate: £1 buys

 Pakistan rupees'(b) Miriam knows that when it is 1p.m. in London it is 6 p.m. local time in Karachi, Pakistan. Miriam is booked onto a flight leaving London on Tuesday at 13:50. The flight time is 7 hours 51 minutes.
(i) On which day and at what local time should Miriam land in Karachi?
$\qquad$
$\qquad$
$\qquad$
$\qquad$
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$\qquad$
(ii) Miriam's flight actually arrived 7 hours 45 minutes after departure. The aeroplane flying speed between London and Karachi was 434 knots.
Given that 1 knot is $1.85 \mathrm{~km} / \mathrm{h}$, calculate the flying distance between London and Karachi.
Give your answer in kilometres.
15. Across the world, temperatures are measured using different units. All the unit scales are uniform.

Approximate conversions are often used to give a reading in more than one unit in scientific reports.

Use the information given below to complete the tables.
(a)

| degrees Celsius | degrees Fahrenheit |
| :---: | :---: |
| 20 | 68 |
| 30 | 86 |
| 40 | 104 |
| 50 | $\ldots$ |
| 60 | 140 |
| 70 | 158 |

(b)

| kelvin | degrees Celsius |
| :---: | :---: |
| 0 | $\ldots$ |
| 100 | $\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots$ |
| 200 | $-73 \cdot 15$ |
| 300 | $26 \cdot 85$ |
| 400 | $126 \cdot 85$ |
| 500 | $226 \cdot 85$ |


| (c) |  |  |  |
| :---: | :---: | :---: | :---: |
|  | kelvin | degrees Celsius | degrees Fahrenheit |
|  | 340 |  |  |

16. The diagram shows a rectangle $A B C D$.


Diagram not drawn to scale

Select 3 different pairs of congruent triangles shown in the diagram above and then complete the sentences below for your 3 selections.

Triangle $\qquad$ is congruent to triangle

Triangle $\qquad$ is congruent to triangle $\qquad$
Triangle $\qquad$ is congruent to triangle $\qquad$
17. A factory production line packs buttons into bags. There are exactly 80 buttons packed into each bag. There is a mixture of different coloured buttons in each bag. A total of 600 bags of buttons were packed in a day.

The first 100 bags were checked and it was found that a total of 1200 red buttons had been used.
In the 600 bags of buttons it was found that the relative frequency of red buttons packed was $40 \%$.

Calculate the relative frequency of red buttons packed in the final 500 bags.
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| Question number | Additional page, if required. <br> Write the question numbers in the left-hand margin. |  |
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