**cea**

*Rewarding Learning*

**General Certificate of Secondary Education
January 2015**

# Mathematics

Unit T5 Paper 1

## (Non-calculator)
Foundation Tier

**[GMT51]**

*GMT51*

**WEDNESDAY 14 JANUARY 9.15am–10.15am**

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
**You must answer the questions in the spaces provided. Do not write outside the box, around each page, on blank pages or tracing paper**.
Complete in blue or black ink only. **Do not write with a gel pen.**
Answer **all fourteen** questions.
Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
You **must not** use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 50.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Functional Elements will be assessed in this paper.
Quality of written communication will be assessed in **Question 7(b)**.
You should have a ruler, compasses and a protractor.
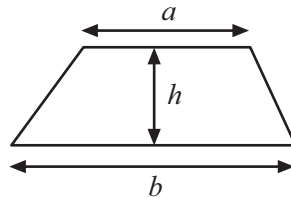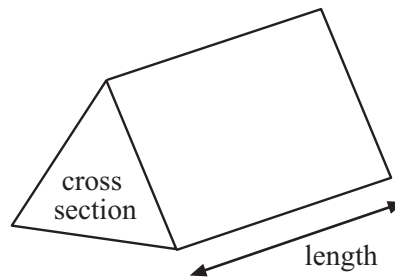The Formula Sheet is on page 2.

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# Formula Sheet

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



**Volume of prism** = area of cross section × length

**1**

**impossible    unlikely    evens    likely    certain**

**(a)** From the list of words given above write the best word to describe the chance of these events.

**(i)** Next week will have 7 days.  _____ [1]

**(ii)** You will meet the President of the United States of America.

_____ [1]

**(b)** Write down an event for which the chance is evens.

_____

_____ [1]

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**2**  A rule to convert miles to kilometres is

Number of kilometres = 8 × number of miles ÷ 5

**(a)** Liam lives 10 miles from Jack.

How far is this in kilometres?

Answer _____ km [2]

**(b)** Sandi lives 40 km from Jenny.

How far is this in miles?

Answer _____ miles [2]

**[Turn over**

**3 (a)** There are 6 eggs in each egg box.

Estimate the total number of boxes needed to pack 297 eggs.
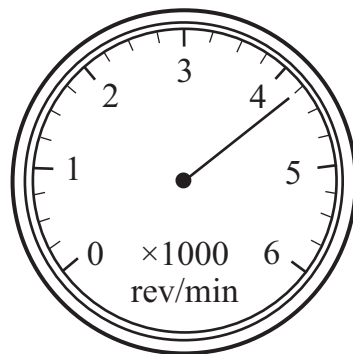
Answer _____ [2]

**(b)** Tommy earns £6.15 per hour.

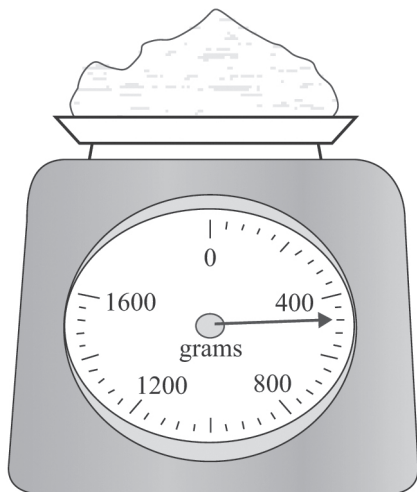Estimate his earnings for 39 hours.

Answer £ _____ [2]

**4** **(a)** The engine speed of a car is measured in revolutions per minute (rev/min).
Write down the **real** engine speed.



Answer _____ rev/min [2]

**(b)** A recipe uses 10 ounces of flour to make 12 buns.
Joanne is baking 24 buns.
Joanne has some flour on the scales.
How much **more** flour does she need?
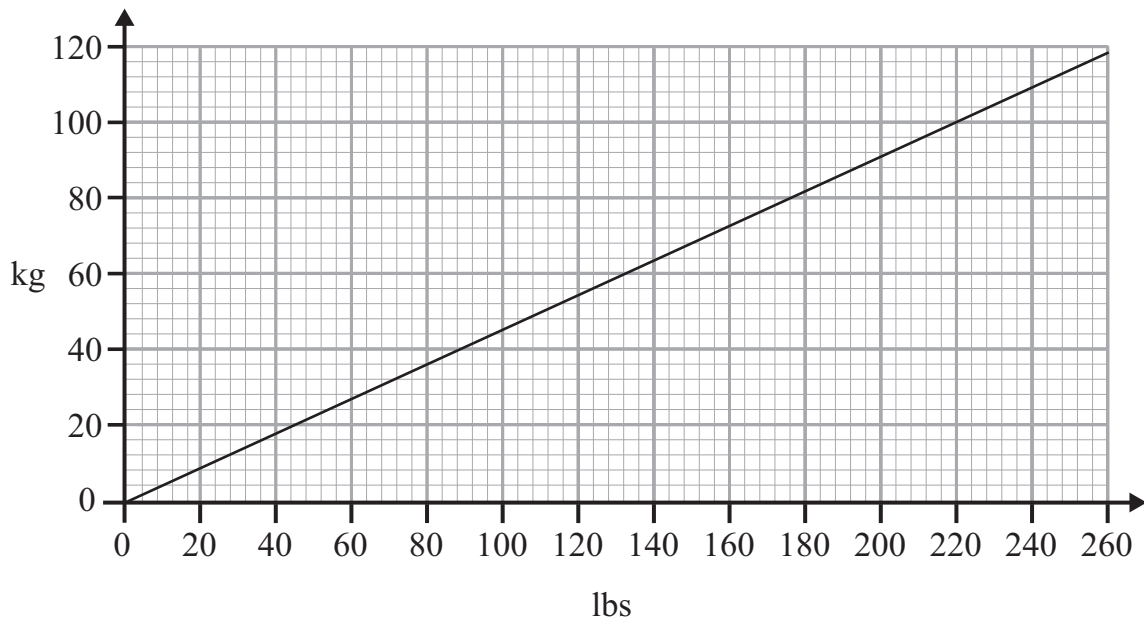(1 ounce = 25 grams)
**Show all your work clearly.**



Answer _____ g [4]

**[Turn over**

**5** This graph can be used to convert pounds (lbs) to kilograms (kg).



**(a)** The average weight of an American Football player is 248 lbs.
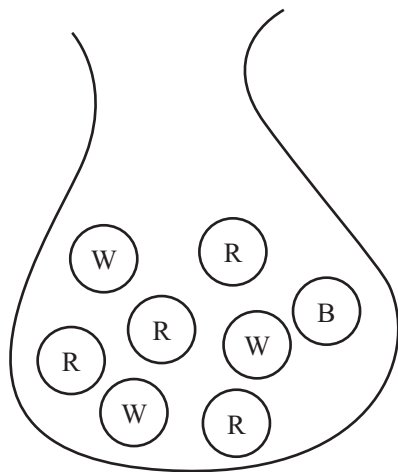
How many kilograms is this?

Answer _____ [1]

**(b)** Justin weighs 72 kg. His American cousin Leroy weighs 165 lbs.
Justin says he weighs more than Leroy.
Is he correct? Explain your answer.

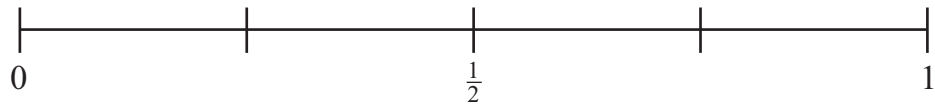Answer _____ because _____

_____ [2]

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**6** A bag contains 1 black, 4 red and 3 white counters.

B = black
R = red
W = white

**(a)** Emma takes a counter at random from the bag.
On the scale below:

**(i)** mark with an arrow and the letter G, the probability that the counter taken is green, [1]

**(ii)** mark with an arrow and the letter T, the probability that the counter taken is red or white. [2]

$$0 \qquad\qquad \frac{1}{2} \qquad\qquad 1$$

**(b)** Emma replaces the counter in the bag. A number of pink counters are added to the bag. A counter is now taken at random from the bag. The probability that it is red is now $\frac{1}{5}$.
How many pink counters were added to the bag?

Answer _____ [2]

**[Turn over**

**7** Kelly has the following coins in her purse:

one £1 coin
three 50 pence coins
three 20 pence coins
four 10 pence coins

**(a)** She buys sweets costing £2.24

How much has she left in her purse after paying for the sweets, using the coins?

Answer £ _____ [2]

**Quality of written communication will be assessed in this part of the question.**

**(b)** Kelly wants to have the **least** number of coins in her purse after receiving her change. How should she pay for her sweets and how many coins will she have left?

**Show clearly all your working**.

[3]

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**8** **(a)** Estimate $\sqrt{34}$

Answer _____ [1]

**(b)** Mel says that every number has a reciprocal.

Give the counter example to show that Mel is wrong.

Answer _____ [1]
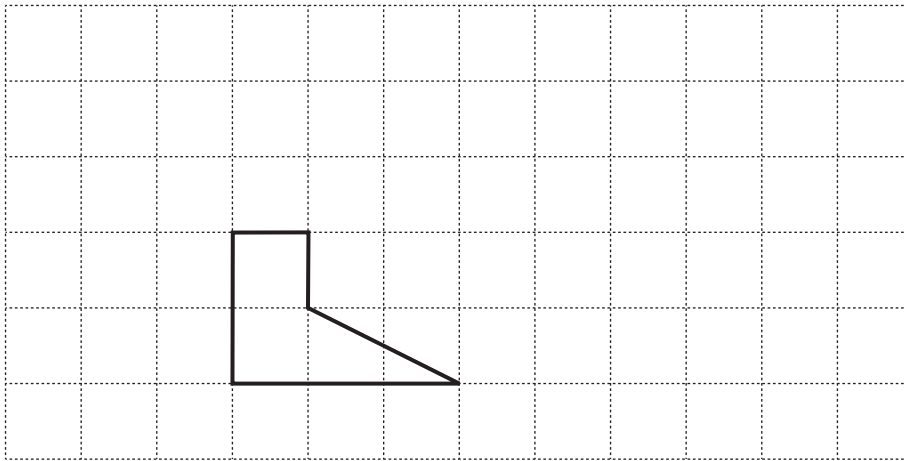
**(c)** Round 53.0387 to 2 decimal places.
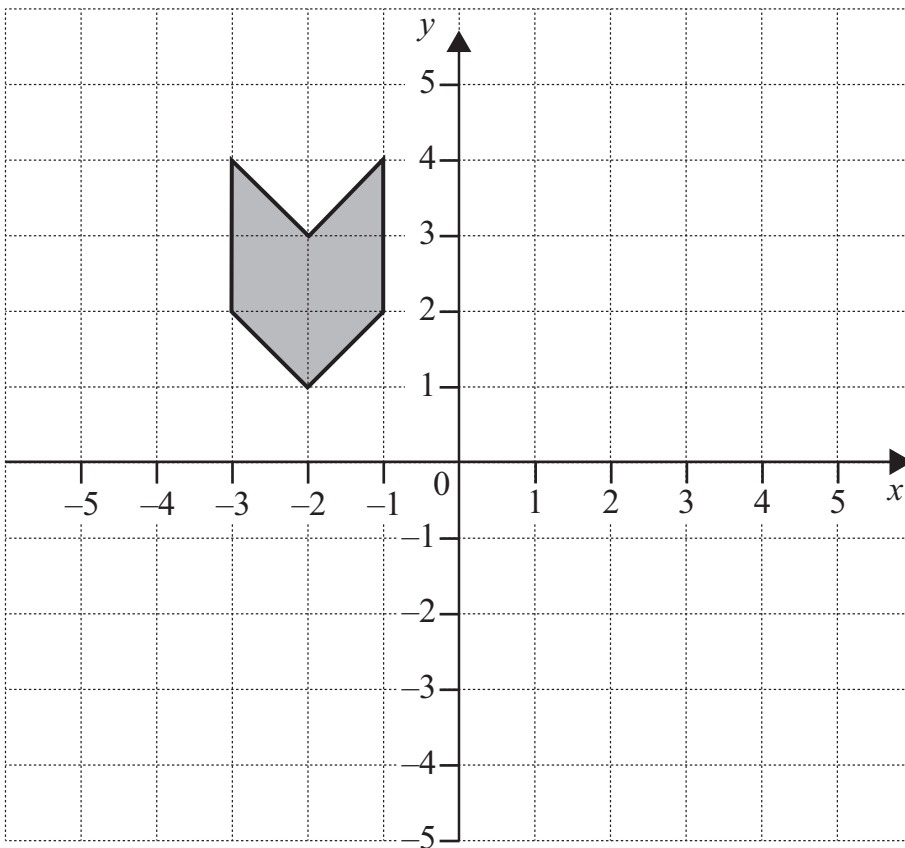
Answer _____ [1]

**[Turn over**

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**9** **(a)** Enlarge the shape by scale factor 2 [2]

**(b)** Reflect the shaded shape in the *y* axis. [1]

**10** Draw an arrow linking each term on the left with a correct example on the right.

$$3x + 2y$$

EQUATION

$$T = 2P + Q$$

EXPRESSION

$$2(x + 3) \leqslant 6$$

FORMULA

$$x + 3 = 12$$

[3]

**11** A lorry travels 240 km in 150 minutes.

Calculate the average speed of the lorry in km/hr.

Answer _____ km/hr [3]

**[Turn over**

**12** A ball is dropped from a height $h$ metres.

Its speed V, in metres per second, can be calculated using the formula:

$$V = \sqrt{2gh}$$

Find the value of V when $g = 10$ and $h = 20$

Answer V = _____ m/s [3]

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**13** Marcus wants to investigate the likelihood of a drawing pin landing point up or point down when dropped.

He drops a drawing pin a number of times. His results are shown in the table.

| |
|---|
| up |
| up |
| down |
| up |
| up |
| down |
| up |
| down |

**(a)** What is the relative frequency of the drawing pin landing point up?

Answer _____ [1]

**(b)** Marcus concludes that a drawing pin is more likely to land point up.
Comment on his conclusion.

_____

_____ [1]

**14** List the values of the integer $n$ which satisfy the inequality

$-7 < 3n \leqslant 6$

Answer _____ [3]

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