Edexcel GCSE

Centre Number

Candidate Number

Methods in Mathematics
Unit 2: Methods 2
For Approved Pilot Centres ONLY

Foundation Tier

Tuesday 13 November 2012 – Morning
Time: 1 hour 45 minutes

Paper Reference
5MM2F/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over

PEARSON

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

Volume of prism = area of cross section × length
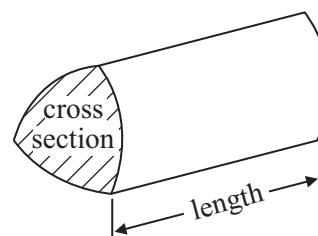
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1 Work out

(a) $6.24 + 38$

....

(1)

(b) 5.1^2

....

(1)

(c) $1.62 \times 10 + 4.92$

....

(1)

(d) -3.1×-4.2

....

(1)

(e) $78.4 \div -4$

....

(1)

(Total for Question 1 is 5 marks)

2 Here is a solid prism made from centimetre cubes.
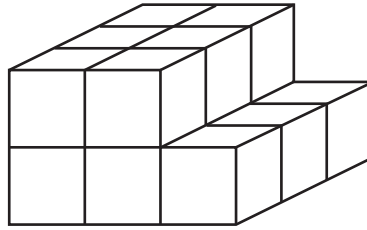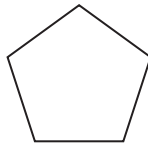
Find the volume of the solid prism.

Diagram **NOT**
accurately drawn

....

(Total for Question 2 is 3 marks)

3 Write down the special name of each of these polygons.

(i) ....
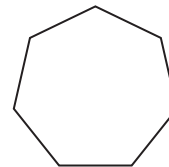
(ii) ....

(Total for Question 3 is 2 marks)

4 (a) Write 0.25 as a percentage.

....%

(1)

(b) Write $\dfrac{3}{10}$ as a decimal.

....

(1)

(c) Write 0.37 as a fraction.

....

(1)

(d) Write 70% as a fraction.
Give your answer in its simplest form.

....

(2)

(Total for Question 4 is 5 marks)

5 You can use this rule to change a distance in miles to a distance in kilometres.

| Distance in miles | → | × 1.6 | → | Distance in kilometres |
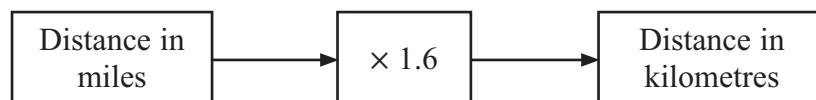
(a) Change 20 miles to kilometres.

....km

(1)

(b) Change 80 kilometres to miles.

....miles

(2)

(Total for Question 5 is 3 marks)

6 (a) Work out 40% of 600

....

(2)

(b) What percentage of this shape is shaded?

....%
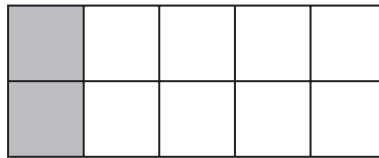
(1)

(c) Work out $\frac{2}{3}$ of 150

....

(2)

(Total for Question 6 is 5 marks)

7 Here are six temperatures.

$$-2\,°C \qquad -4\,°C \qquad -13\,°C \qquad 7\,°C \qquad 4\,°C \qquad -3\,°C$$

(a) Work out the difference between $-2\,°C$ and $-4\,°C$.

....°C

(1)

(b) Work out the difference between the lowest temperature and the highest temperature.

....°C

(2)

(c) What temperature is $10\,°C$ lower than $-3\,°C$?

....°C
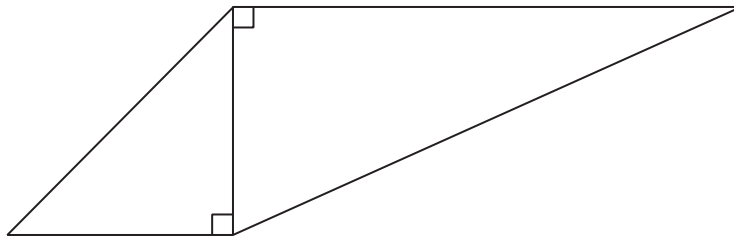
(1)

(Total for Question 7 is 4 marks)

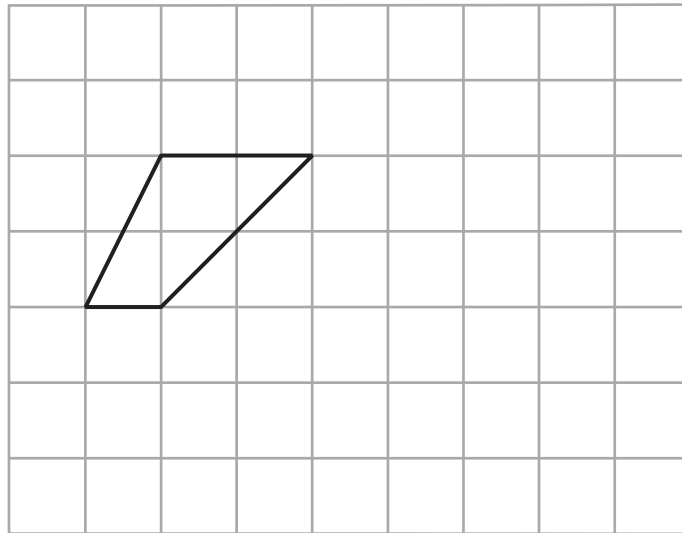**8** (a) The diagram shows two right-angled triangles.

On the diagram, mark with arrows (>>) a pair of parallel lines.

(1)

(b) On the grid below, show how the shape tessellates.
You should draw at least 6 shapes.

(2)

A regular 5-sided polygon does **not** tessellate.

*(c) Explain why.

(3)

(Total for Question 8 is 6 marks)

9 (a) Use your calculator to work out $\sqrt{12.25} - 1.97$

....
(2)

(b) Write a number in each box to make each calculation correct.

(i) $627 \div \boxed{} = 6.27$

(ii) $0.54 \times \boxed{} = 540$

(2)

$48.7 + 16.95$ is bigger than $48.3 + 16.81$

(c) How much bigger?

....
(2)

(Total for Question 9 is 6 marks)

10 Debbie thinks of a number.
She divides the number by 5

Her answer is 14

(a) What number did Debbie think of?

....

Lewis thinks of a number.

He multiplies the number by 3
He then subtracts 18

His answer is 63

(b) What number did Lewis think of?

....

(Total for Question 10 is 3 marks)

11 Write these numbers in order of size.
Start with the smallest number.

$$70\% \qquad \frac{2}{3} \qquad 0.62 \qquad \frac{13}{20} \qquad 0.6$$

....

(Total for Question 11 is 2 marks)

*12

Diagram **NOT** accurately drawn
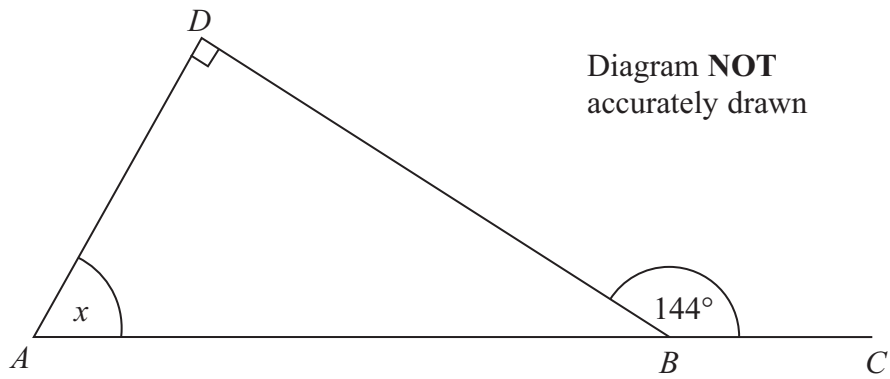
ABC is a straight line.

Angle *ADB* = 90°
Angle *DBC* = 144°

Work out the size of the angle marked *x*.
Give a reason for your answer.

(Total for Question 12 is 3 marks)

13 There are 30 buttons in a box.
12 of the buttons are black.
The rest of the buttons are white.

(a) What fraction of the buttons in the box are black?

....

(1)

(b) Write down the ratio of the number of black buttons to the number of white buttons.
Give your ratio in its simplest form.

....

(2)

James takes some black buttons from the box.
The ratio of the number of black buttons in the box to the number of white buttons in the
box is now 1 : 2

(c) How many black buttons did James take from the box?

....

(3)

(Total for Question 13 is 6 marks)

14
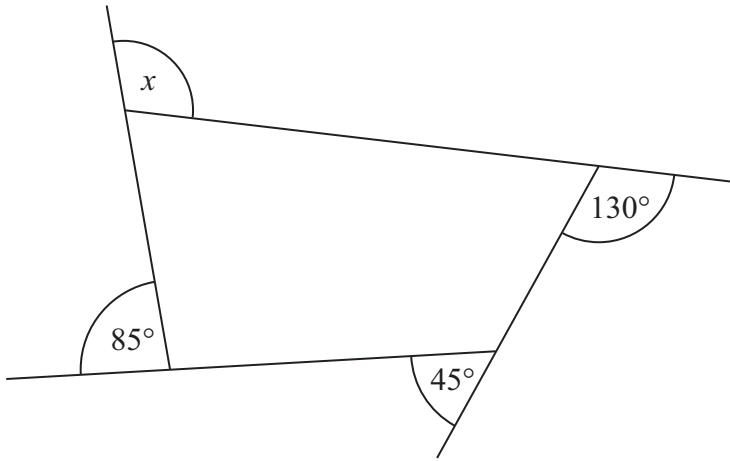
Diagram **NOT** accurately drawn

Work out the size of the angle marked *x*.

.... °

(Total for Question 14 is 2 marks)

15 Here are five fractions.

$$\frac{1}{2} \qquad \frac{1}{4} \qquad \frac{1}{6} \qquad \frac{1}{8} \qquad \frac{1}{10}$$

Which of these fractions can be written as a recurring decimal?
Explain your answer.

....

....

....

....

(Total for Question 15 is 2 marks)

16 $v = r - 6$
$r = 4$

(a) Work out the value of v.

....

(1)

$D = 3e + 4f$
$e = 2$
$f = 5$

(b) Work out the value of D.

....

(2)

$y = 3(x - 2)$
$x = 8$

(c) Work out the value of y.

....

(2)

(Total for Question 16 is 5 marks)

17 There are 200 counters in a bag.
The counters are blue or red or yellow.

$\dfrac{1}{4}$ of the counters are blue.

$\dfrac{2}{5}$ of the counters are red.

Work out the number of yellow counters in the bag.

....

(Total for Question 17 is 4 marks)

*18

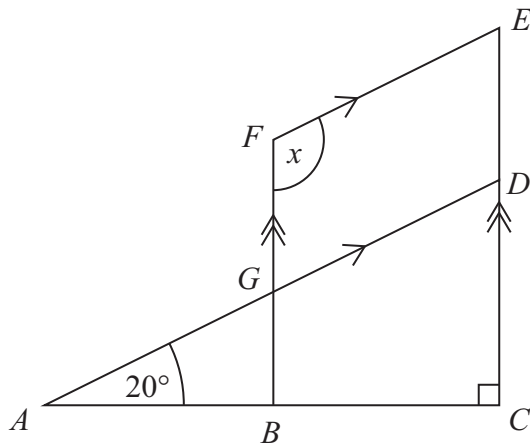
Diagram **NOT** accurately drawn

ABC is a straight line.
BGF is parallel to *CDE*.
AGD is parallel to *FE*.

Angle *CAD* = 20°
Angle *ACD* = 90°

Work out the size of the angle marked *x*.
Give reasons for your answer.

(Total for Question 18 is 4 marks)

19 5 pencils cost £1.85

Work out the cost of 9 of these pencils.

£..

(Total for Question 19 is 2 marks)

20 The diagram shows a cuboid.

Diagram **NOT**
accurately drawn

2 cm

8 cm
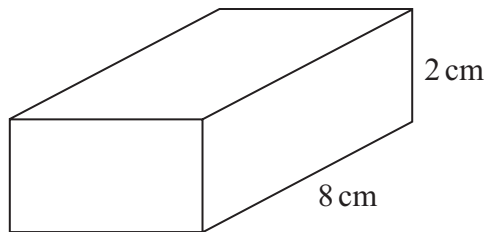
The cuboid has

a volume of 64 cm³
a length of 8 cm
a height of 2 cm

(a) Work out the width of the cuboid.

....cm
(2)

A solid cube has a surface area of 150 cm².

(b) Work out the volume of the cube.

.... cm³
(3)

(Total for Question 20 is 5 marks)

21 (a) Work out the value of $4x^3$ when $x = 2$

....
(1)

(b) Make c the subject of the formula $a = b + 5c$

$c =$ ....
(2)

(Total for Question 21 is 3 marks)

22 Express 84 as a percentage of 240

.... %

(Total for Question 22 is 2 marks)

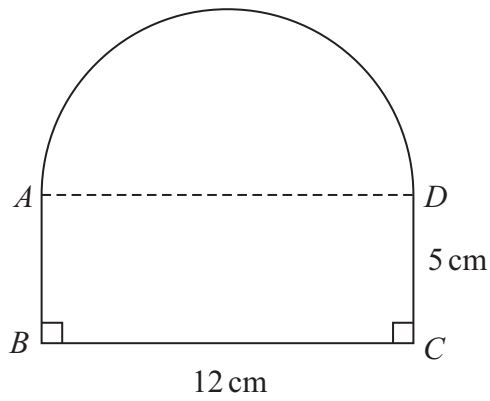**23** The diagram shows a shape made from a semi-circle and a rectangle.

Diagram **NOT** accurately drawn

A ------------------------- D

5 cm

B ⌐ _____ ⌐ C

12 cm

$BC = 12$ cm
$CD = 5$ cm

AD is the diameter of the semi-circle.

Work out the perimeter of the shape.
Give your answer correct to 1 decimal place.

....cm

(Total for Question 23 is 4 marks)

24 $-2 < n \leqslant 3$

n is an integer.

(a) Write down all the possible values of n.

....

(2)

x is a number.
Another number is 9 greater than x.
Both numbers are whole numbers.

The total of the two numbers is less than 60

(b) Find the greatest possible value of x.

....

(3)

(Total for Question 24 is 5 marks)

25 (a) Complete the table of values for $y = x^2 - 3x - 2$

x	-1	0	1	2	3	4	5
y			-4		-2	2	

(2)

(b) On the grid, draw the graph of $y = x^2 - 3x - 2$ for values of x from -1 to 5

(2)

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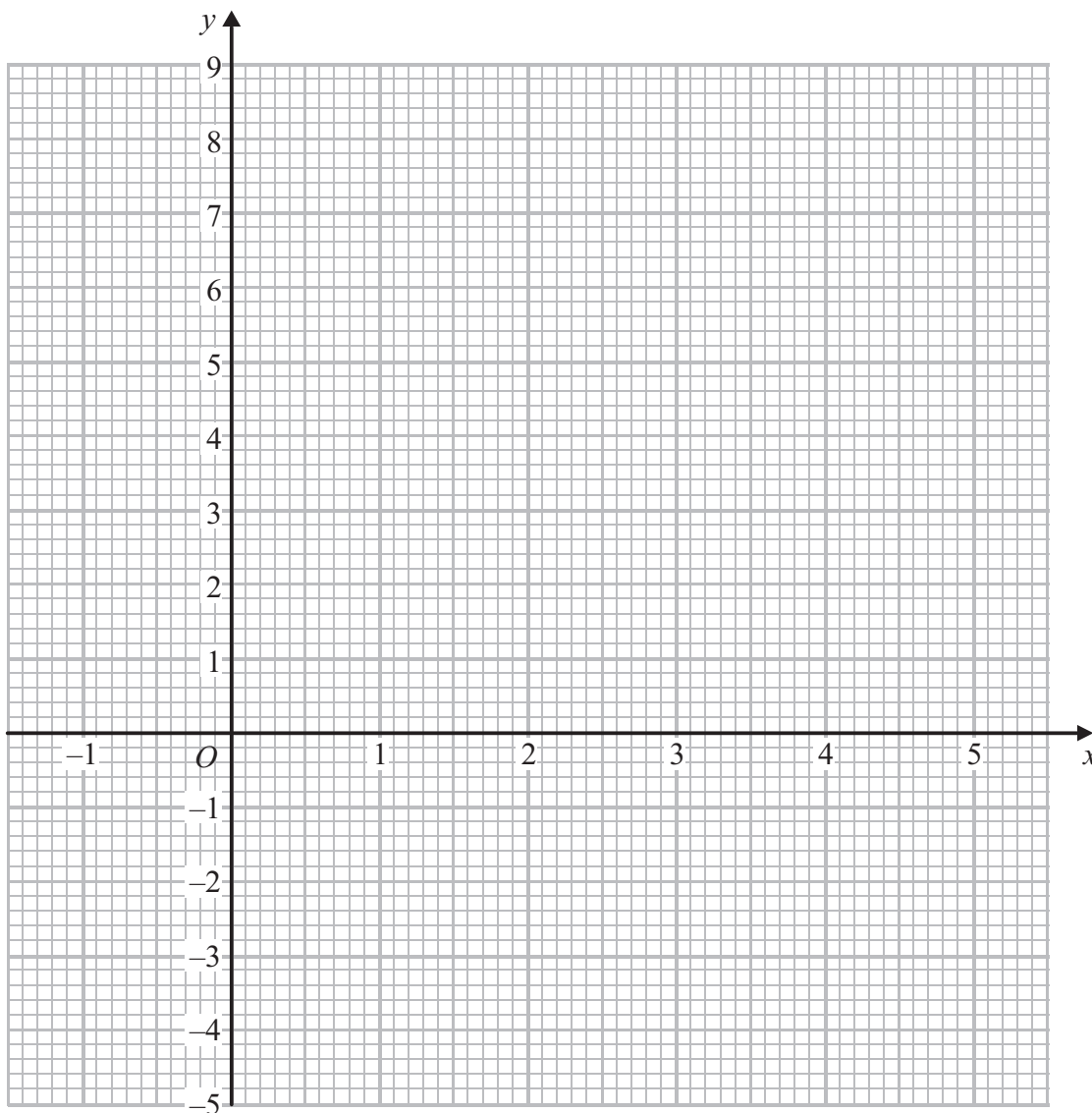
(c) Use your graph to find estimates of the values of x for which $x^2 - 3x - 2 = 0$

....

(Total for Question 25 is 6 marks)

26

C

Diagram **NOT**
accurately drawn

9 cm

A ⌐ B
6 cm
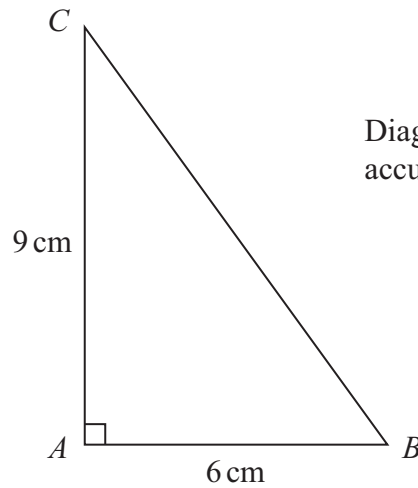
ABC is a right-angled triangle.
AB = 6 cm.
AC = 9 cm.

Work out the length of *BC*.
Give your answer correct to 3 significant figures.

....cm

(Total for Question 26 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

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