**Pearson
Edexcel GCSE**

Centre Number

Candidate Number

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

**Foundation Tier**

Wednesday 13 November 2013 – 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 $\pi$ button, take the value of $\pi$ 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**

**GCSE Mathematics 2MM01**

Formulae: Foundation Tier

**You must not write on this formulae page.**
**Anything you write on this formulae page will gain NO credit.**

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

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

**1**   (a) Work out   $2.8 + 42 + 9$

.................................................

**(1)**

(b) Write down the value of   $\sqrt{134}$

.................................................

**(1)**

(c) Work out   $1000 - 99.9$

.................................................

**(1)**

(d) Write down the value of   $4.7^2$

.................................................

**(1)**

(e) Work out   $3.24 \times 15$

.................................................

**(1)**

**(Total for Question 1 is 5 marks)**

**2** Here are two regular polygons.

Write down the name of each polygon.
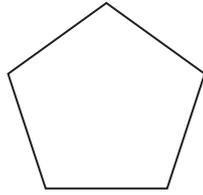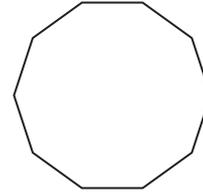
(i) ................................................... (ii) ...................................................

**(Total for Question 2 is 2 marks)**

**3**
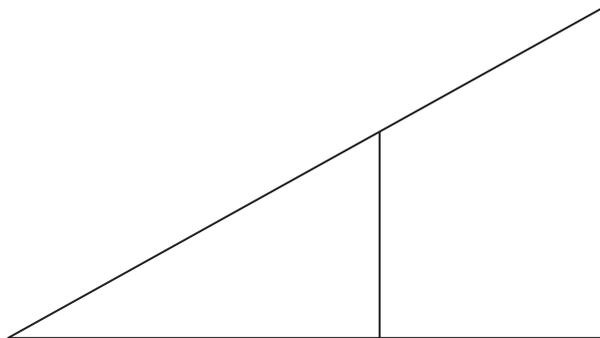
There is a pair of parallel lines in this diagram.

(a) Mark, with arrows (>>), the pair of parallel lines.

**(1)**

(b) Mark, with the letter *y*, two angles which are the same size.

**(1)**

**(Total for Question 3 is 2 marks)**

**4** (a) Write $\frac{1}{4}$ as a decimal.

.............................................
**(1)**

(b) Work out $\frac{1}{5}$ of 40

.............................................
**(1)**

(c) Work out 30% of £300

£.............................................
**(2)**

**(Total for Question 4 is 4 marks)**

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

(i) $3.57 \times$ [ ............................. ] $= 3570$

(ii) $3.68 \div$ [ ............................. ] $= 0.0368$

**(2)**

$3.57 + 12.81$ is smaller than $3.68 + 12.75$

(b) How much smaller?

.............................................
**(2)**

**(Total for Question 5 is 4 marks)**

*Turn over* ▶

**6** (a) Work out the difference between –5 °C and 3 °C.

........................................°C

**(1)**

(b) What temperature is 12 °C lower than –5 °C?

........................................°C

**(1)**

A temperature is –3 °C.
This temperature rises by 5 °C.

(c) What is the new temperature?

........................................°C

**(1)**

Here are six temperatures.

–3 °C    –5 °C    3 °C    –2 °C    –7 °C    6 °C

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

........................................°C

**(2)**

**(Total for Question 6 is 5 marks)**

**7**   Here is a shape on a grid.
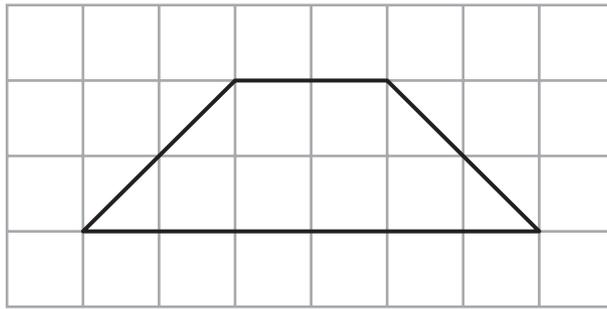


This shape can be made from **four** congruent triangles.

(a) On the grid below, draw **one** of these congruent triangles.
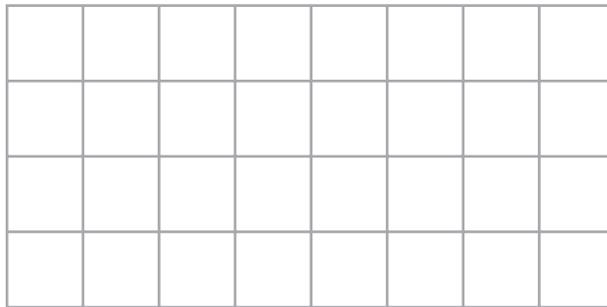


**(1)**

Here are two triangles.
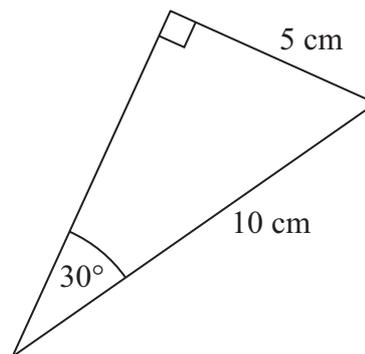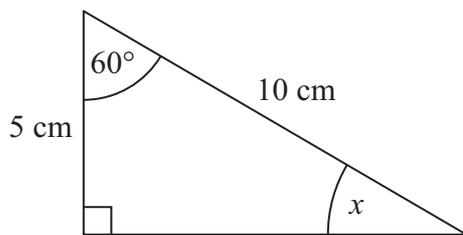
Diagram **NOT**
accurately drawn



These two triangles are congruent.

(b) Write down the size of the angle marked *x*.

.............................................  °

**(1)**

**(Total for Question 7 is 2 marks)**

**8** Ben thinks of a number.
He adds 7 to his number.
His answer is 18

(a) What number did Ben first think of?

.............................................
**(1)**

Josie thinks of a number.
She divides her number by 6
She then adds 13
Her answer is 16

(b) What number did Josie first think of?

.............................................
**(2)**

**(Total for Question 8 is 3 marks)**

**9** (a) Write these numbers in order of size.
   Start with the smallest number.

$$0.48 \qquad 0.5 \qquad 0.4 \qquad 0.03 \qquad 0.05$$

.............................................................................................

**(1)**

(b) Write these fractions in order of size.
   Start with the smallest fraction.

$$\frac{3}{4} \qquad \frac{9}{16} \qquad \frac{5}{8} \qquad \frac{3}{5} \qquad \frac{13}{20}$$

.............................................................................................

**(2)**

**(Total for Question 9 is 3 marks)**

**10** (a) Change 17% to a fraction.

.......................................................
**(1)**

(b) Change 84% to a decimal.

.......................................................
**(1)**

Here is a shape.
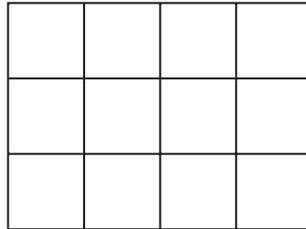


(c) Shade $\frac{2}{3}$ of this shape.

**(1)**

(d) Write 36 as a fraction of 54
Give your fraction in its simplest form.

.......................................................
**(2)**

**(Total for Question 10 is 5 marks)**

**11** Here is a number machine.

Input $\longrightarrow$ $\times 3$ $\longrightarrow$ $+ 2$ $\longrightarrow$ Output

(a) Complete the table for this number machine.

| Input | Output |
|-------|--------|
| 1 | 5 |
| 2 | 8 |
| 3 | 11 |
| 4 | .......................... |
| .......................... | 29 |

**(2)**

This is a table for a different number machine.

| Input | Output |
|-------|--------|
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |
| 5 | 10 |

(b) Complete the number machine for this table.

Input $\longrightarrow$ .................. $\longrightarrow$ Output

**(1)**

**(Total for Question 11 is 3 marks)**

*P 4 3 6 0 7 A 0 1 1 2 4*

**12** Shapes are made from solid cubes.
Each cube has sides of length 1 cm.
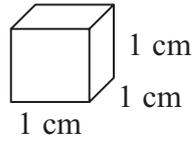
Diagrams **NOT**
accurately drawn

1 cm
1 cm
1 cm

Here is a solid prism made from these cubes.
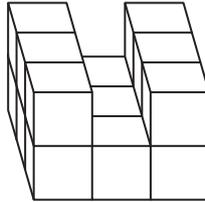
(a) How many cubes have been used to make this solid prism?

.............................................

(2)
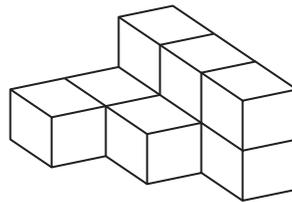
Diagram **NOT**
accurately drawn

(b) How many more cubes of side 1 cm need to be added to this solid shape to make
a cube of side 3 cm?

.............................................

(2)

**(Total for Question 12 is 4 marks)**

**13**  $e = 3f$
   $f = 8$

(a) Work out the value of $e$.

   $e =$ ............................................
   **(1)**

   $a = 2c + 5d$
   $c = 3$
   $d = 4$

(b) Work out the value of $a$.

   $a =$ ............................................
   **(2)**

   $w = 3x + 4y$
   $x = 5$
   $y = -2$

(c) Work out the value of $w$.

   $w =$ ............................................
   **(2)**

**(Total for Question 13 is 5 marks)**

**14** You can use this rule to find the sum, in degrees, of the interior angles of a polygon.

> Subtract 2 from the number of sides
> then multiply by 180

A polygon has 14 sides.

(a) Use the rule to work out the sum, in degrees, of the interior angles of this polygon.

..............................................° 

**(2)**

The sum of the interior angles of a different polygon is 2880°.

(b) Work out how many sides this polygon has.

..............................................

**(3)**

**(Total for Question 14 is 5 marks)**

**\*15**

135°

Diagram **NOT**
accurately drawn

*x*

140°
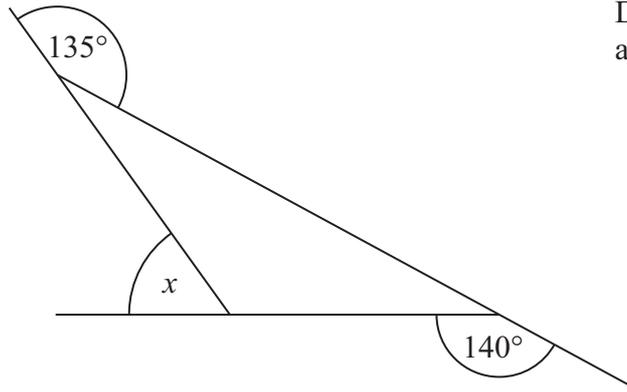
Work out the size of the angle marked *x*.
Give a reason for your answer.

**(Total for Question 15 is 3 marks)**

**16** (a) Write the ratio 10 : 16 in its simplest form.

.............................................
**(1)**

(b) Change $\dfrac{3}{8}$ into a percentage.

.............................................%
**(2)**

(c) Write $\dfrac{7}{20}$ as a decimal.

.............................................
**(2)**

**(Total for Question 16 is 5 marks)**

*P 4 3 6 0 7 A 0 1 5 2 4*

17  On the grid below, show how the quadrilateral tessellates.
    You should draw at least 6 shapes.
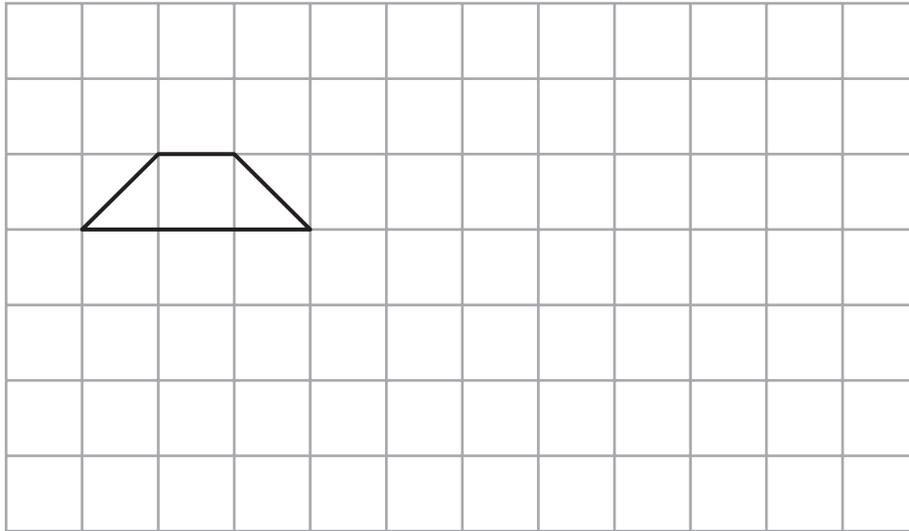


**(Total for Question 17 is 2 marks)**

*18  Here are three cards.
    There is a maths problem on each card.

| 80 – 48 | 35% of 80 | $\frac{3}{8}$ of 80 |
| :---: | :---: | :---: |
| **A** | **B** | **C** |

Which card shows the maths problem with the largest answer?

**(Total for Question 18 is 4 marks)**

**19** Some counters are red or green or blue.

$\frac{3}{10}$ of the counters are red.

$\frac{1}{10}$ of the counters are green.

The rest of the counters are blue.

There are 60 blue counters.

How many red counters are there?

.............................................

**(Total for Question 19 is 4 marks)**

**20** Increase £180 by 20%

£.............................................

**(Total for Question 20 is 3 marks)**

*Turn over* ▶

**21** $-2 < n \leqslant 3$

$n$ is an integer.

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

.......................................................

**(2)**

(b) Solve $2x + 3 < 8$

.......................................................

**(2)**

**(Total for Question 21 is 4 marks)**

**22** The diagram shows a solid L-shaped prism.

2 cm

Diagram **NOT**
accurately drawn

9 cm

6 cm

7 cm

10 cm
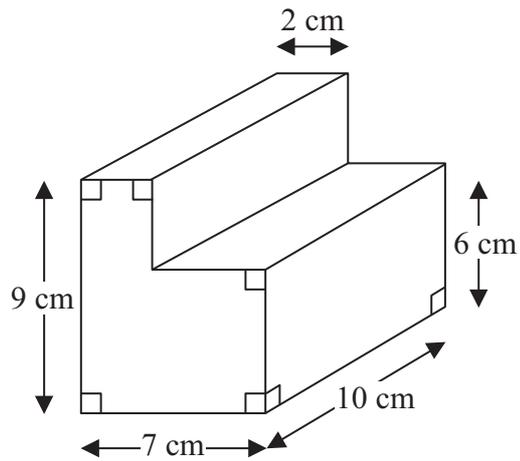
Calculate the volume of this prism.

.............................................. cm³

**(Total for Question 22 is 3 marks)**

**23** The diagram shows two diagonals in a rectangle.

Diagram **NOT**
accurately drawn

40 cm

50 cm
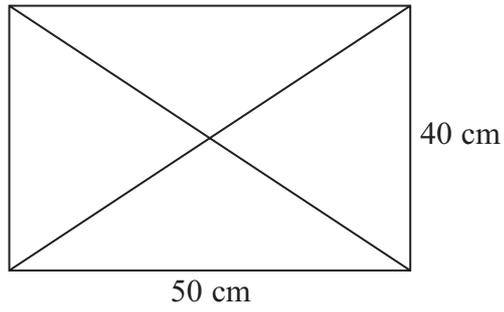
Work out the total length of the four sides of the rectangle and the two diagonals.

.............................................. cm

**(Total for Question 23 is 5 marks)**

**24** There are only red beads and green beads in a bag.

The ratio of the number of red beads to the number of green beads is 5 : 9

(a) What fraction of the beads are red?

.......................................

**(1)**

There is a total of 84 beads in the bag.

(b) How many of the beads are green?

.......................................

**(3)**

Susie is going to put some more beads in the bag.
There will still be only red beads and green beads in the bag.

Susie wants to have twice as many green beads as red beads in the bag.

*(c) What beads should she put in the bag?
   You must explain your answer.

**(3)**

**(Total for Question 24 is 7 marks)**

**25** The diagram shows a solid cuboid.

Diagram **NOT**
accurately drawn

8 cm

6 cm

10 cm
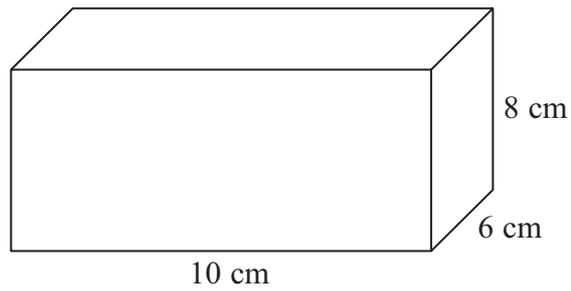
Find the total surface area of this cuboid.

.............................................

**(Total for Question 25 is 4 marks)**

*26

F

Diagram **NOT**
accurately drawn

E

75°

35°

x
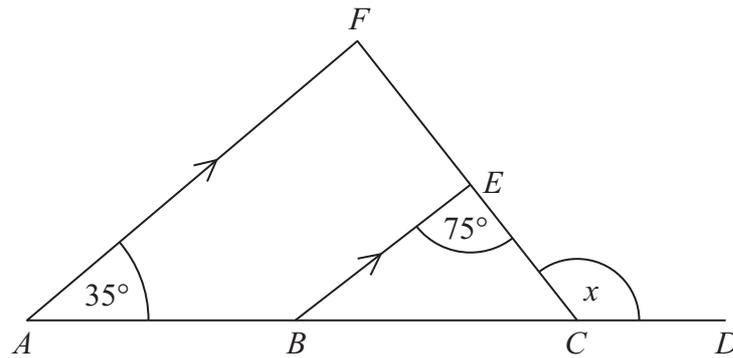
A          B          C          D

*ABCD* is a straight line.
*AF* is parallel to *BE*.
Angle *FAB* = 35°
Angle *CEB* = 75°

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

**(Total for Question 26 is 4 marks)**

**TOTAL FOR PAPER IS 100 MARKS**

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