Surname	Centre Number	Candidate Number
Other Names		0

GCSE LINKED PAIR PILOT

4364/01

W16-4364-01

METHODS IN MATHEMATICS

UNIT 2: Methods (Calculator)
FOUNDATION TIER

A.M. MONDAY, 18 January 2016

1 hour 30 minutes

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**3**	
2.	**4**	
3.	**4**	
4.	**7**	
5.	**5**	
6.	**6**	
7.	**5**	
8.	**3**	
9.	**2**	
10.	**13**	
11.	**5**	
12.	**5**	
13.	**3**	
14.	**7**	
15.	**5**	
16.	**3**	
Total	**80**	

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ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

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.

Take π as 3·14 or use the π 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.

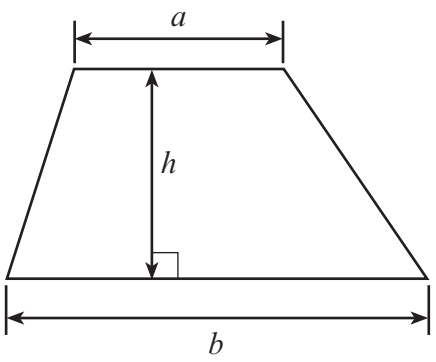
Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

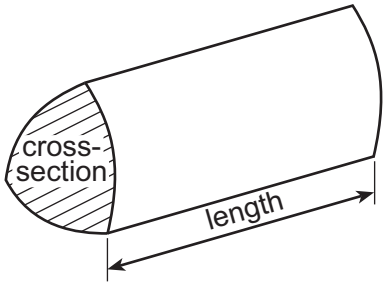
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question **5**.

Formula List

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



Volume of prism = area of cross-section × length



Examiner only

1. *(a)* Write down the **largest** four-digit number that can be written using all the digits 7, 1, 0 and 3. [1]

(b) Write down the **largest odd** four-digit number that can be written using all the digits 7, 1, 0 and 3. [1]

(c) Write down a four-digit number that is **divisible by 5** and can be written using all the digits 7, 1, 0 and 3. [1]

2. *(a)* In the following list, draw a circle around each number that has the same value as 0·9. [2]

90% **0·9%** $\frac{9}{1000}$ $\frac{9}{10}$ **0·09%**

(b) Use either the symbol < or > to make each statement true. [2]

3 7

–15 11

–4 ..... –5

3. *(a)* What is the remainder when 250 is divided by 8? [1]

.....

.....

(b) The length of a plank of wood is 5 m.
A piece of length 1·5 m is cut off one end of the plank.
The remaining plank is cut into 7 equal pieces.
How long is one of these 7 pieces? [3]

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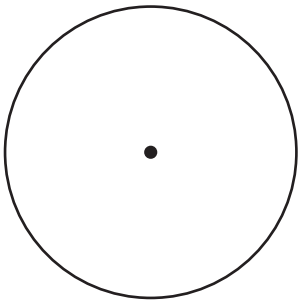
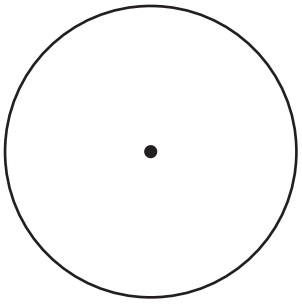
Examiner only

4. *(a)* For each circle, draw the following: [3]

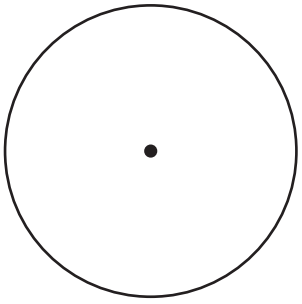
- a radius



- an arc



- a sector.



(b) What is the special name given to a chord which goes through the centre of a circle? [1]

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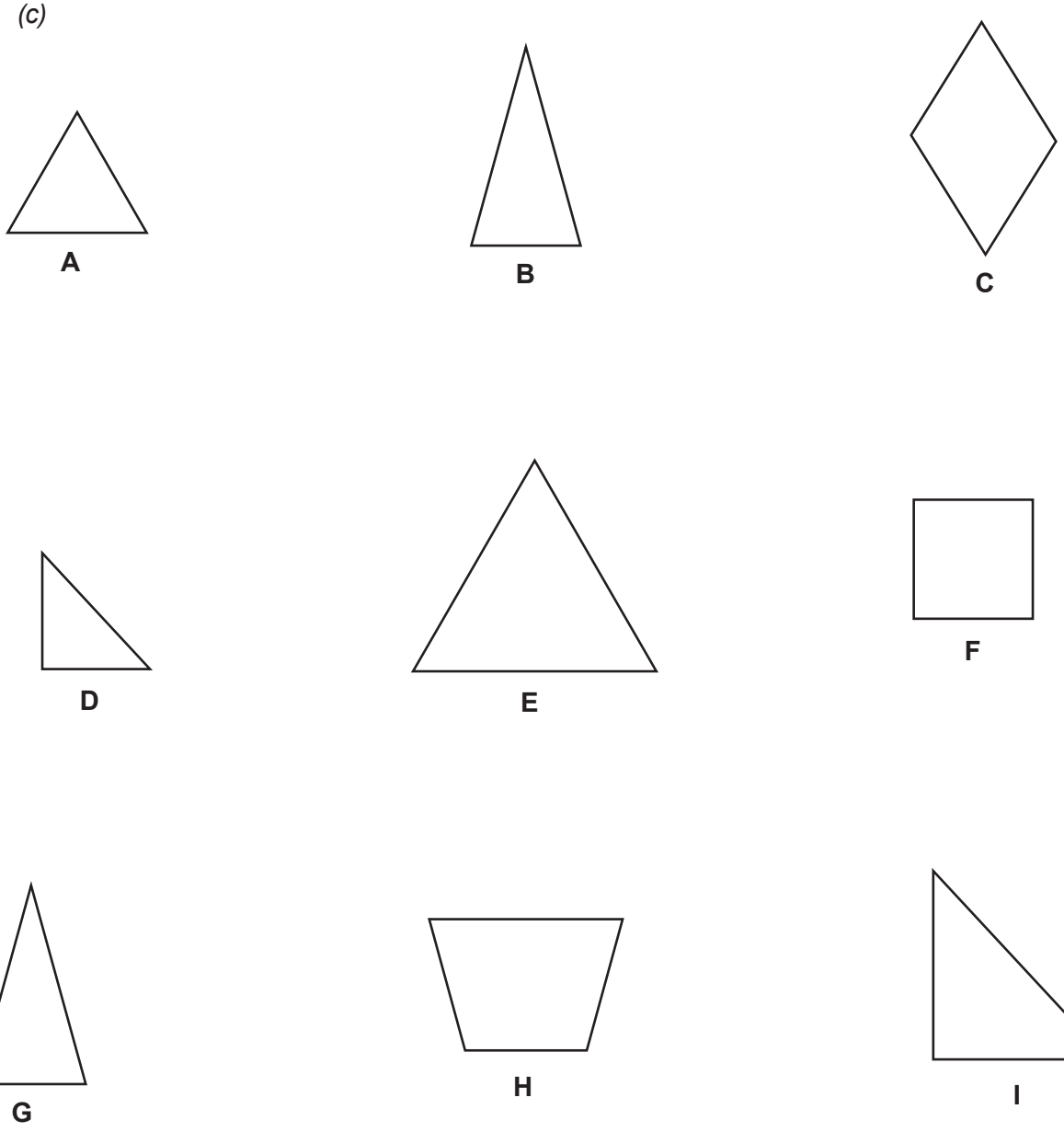
Examiner only

(c)



Use the diagrams above to identify and write down: [3]

- a pair of congruent shapes,

..... and .....

- a pair of shapes that are similar but not congruent,

..... and .....

- another pair of shapes that are similar but not congruent.

..... and .....

Examiner only

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

The total cost of 4 magazines is £3.60.
Each magazine costs the same amount.
How much do 17 magazines cost?
You must show all your working. [5]

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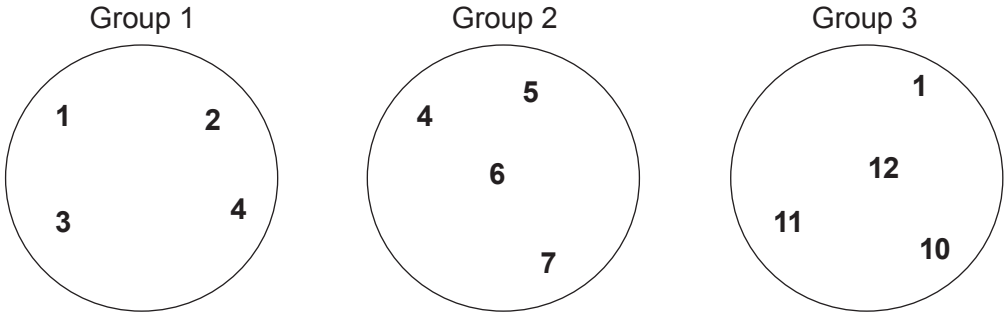
6. *(a)* Here are three groups of numbers.



A number is moved from one of the groups to one of the other groups.
The sum of the numbers in each group is now the same.

Which number is moved to which group? [1]

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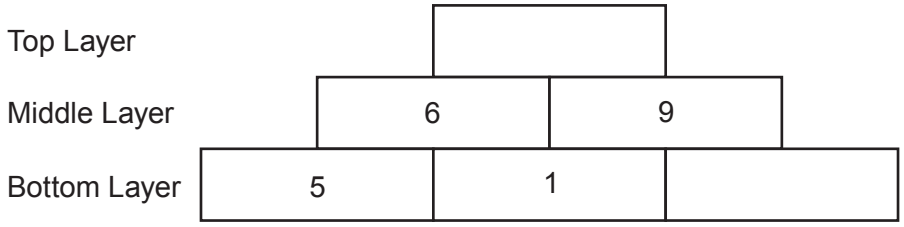
.....

The number ..... is moved from group ..... to group .....

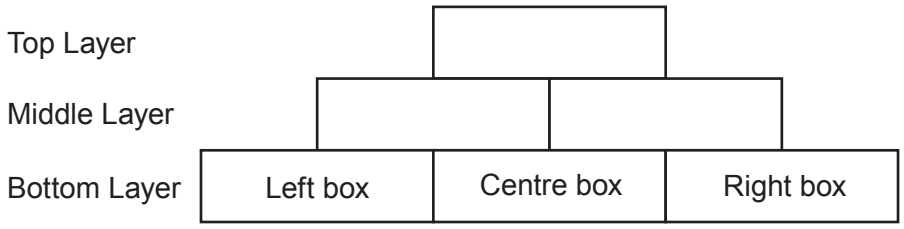
Examiner only

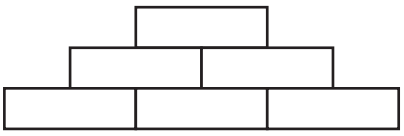
(b) To fill in a box in each layer of the following diagram, you must add the values in the two boxes directly below it.
For example, the 6 is found from 5 + 1 = 6 in the diagram below.

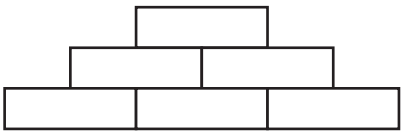
(i) Fill in the empty boxes. [2]

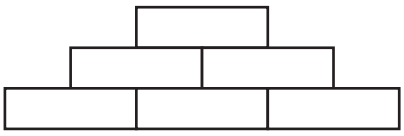


(ii) You start out with **three different numbers** in the bottom layer.
In order to get the greatest number on the top layer, in which of the three boxes in the bottom layer should the largest of the three starting numbers go?
You must show all your working.
You may wish to use the diagrams provided. [3]









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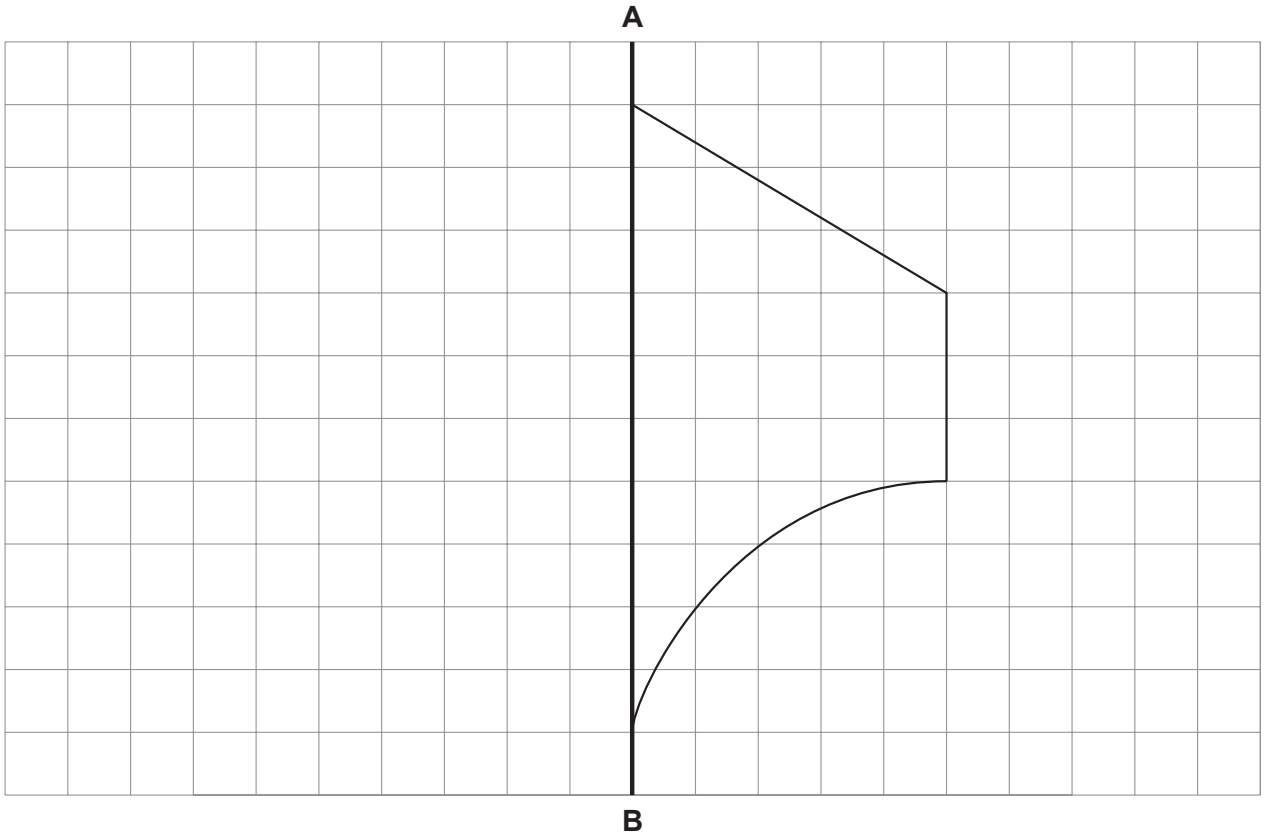
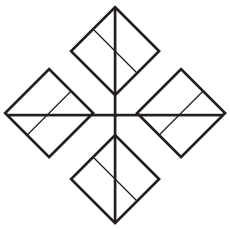
The largest number should be placed in the ..... box.

Examiner only

7. *(a)* Complete the following diagram so that **AB** is a line of symmetry. [2]



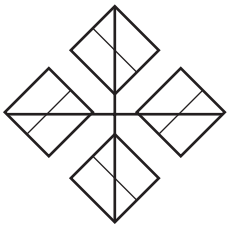
(b) (i) Write down the order of rotational symmetry of the shape below. [1]

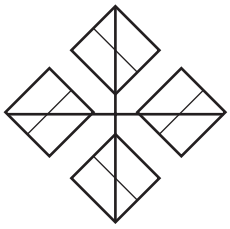


Order of rotational symmetry = ...

(ii) Parts of the shape above can be shaded so that the order of rotational symmetry remains the same as in the original shape.

Show two different ways to shade parts of the shape so that it still has the **same order of rotational symmetry**. [2]





Examiner only

8. A shape is made up of five identical rectangles.
The area of the complete shape is 500 m^2.
The width of each rectangle is 4 m.
Calculate the length of one of the rectangles. [3]

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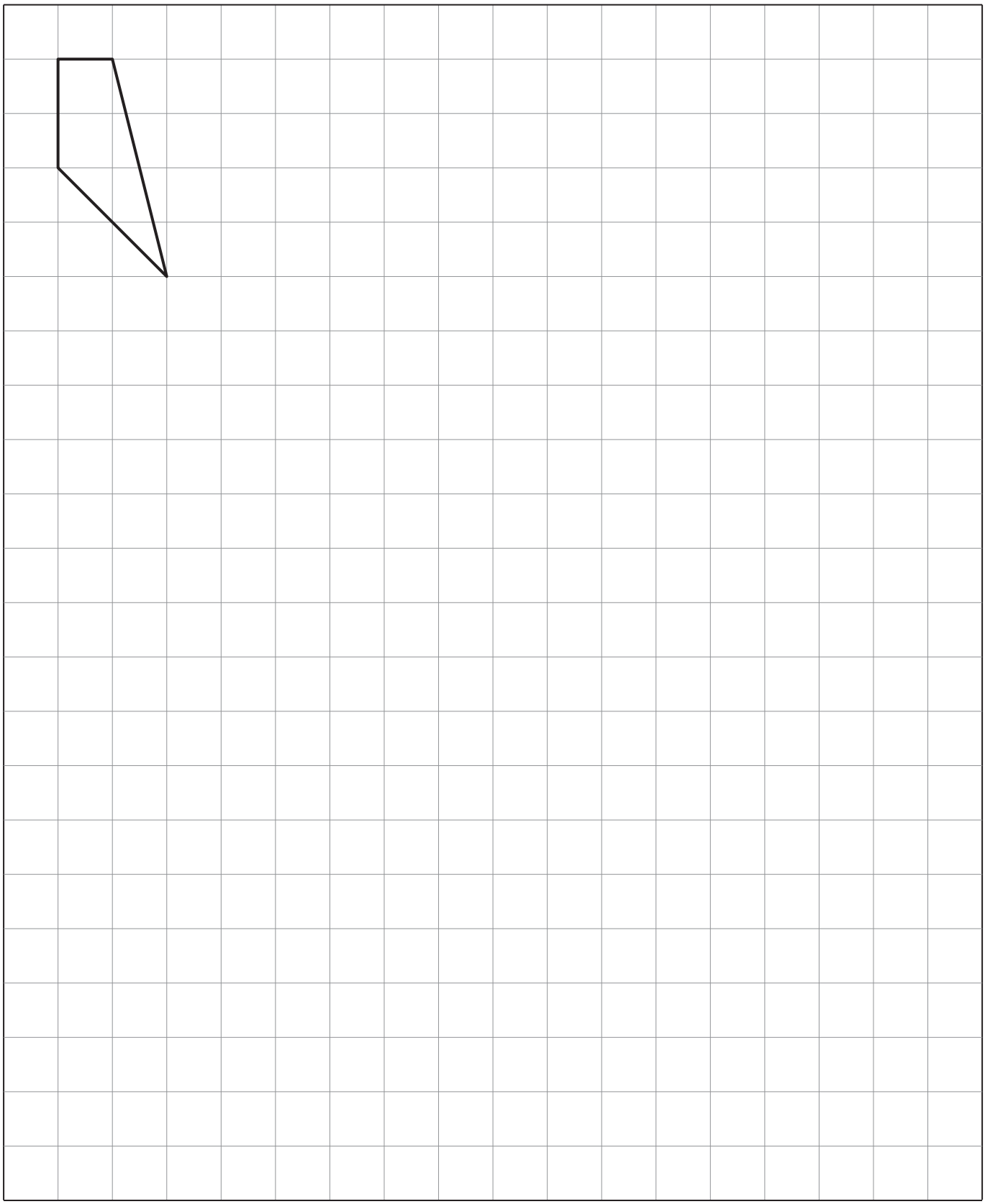
Length = ... m

Turn over.

Examiner only

9. Enlarge the following shape by a scale factor of 4. [2]



Examiner only

10. *(a)* Find 2·7% of 54. Give your answer correct to 2 decimal places. [3]

(b) Find $\frac{2}{5}$ of 255. [2]

(c) 0·7 kg of apples and 0·9 kg of bananas together cost £1.56.
Apples cost £1.20 per kg.
How much do bananas cost per kg? [5]

(d) Which of the fractions $\frac{3}{10}$, $\frac{5}{20}$ or $\frac{17}{80}$ is nearest to $\frac{1}{5}$?

You must show all your working. [3]

Examiner only

11. *(a)* Solve $x - 7 = 11$. [1]

(b) Solve $5x = 30$. [1]

(c) Solve $\frac{x+3}{2} = 16$. [2]

(d) Solve $\frac{7}{x} = 28$. [1]

Examiner only

12. *(a)* Water flows into a cylindrical tank at a constant rate.

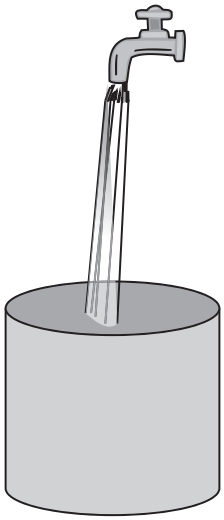


Diagram not drawn to scale

It took 36 minutes to fill the tank to a height of 40 cm.
How long did it take to fill to a height of 5 cm? [2]

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(b) The volume of a cuboid is 2400 cm^3.
Its height is 100 cm.
The length of the rectangular base is **2 cm longer** than its width.

Calculate the length and width of the rectangular base of this cuboid. [3]

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Length is ..... cm

Width is ..... cm

Turn over.

Examiner only

13. A long roll of wire is to be cut in the ratio 5 : 6 : 7.

Once it has been cut, explain why you cannot have $\frac{4}{9}$ of the roll as a single piece of wire.
You must show all your working. [3]

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Examiner only

14. *(a)* Seven times a whole number, x, subtract twenty-six is greater than forty-four.
What is the least possible value of this whole number? [3]

(b) The diagram shows a shape formed by joining a triangle to a square.

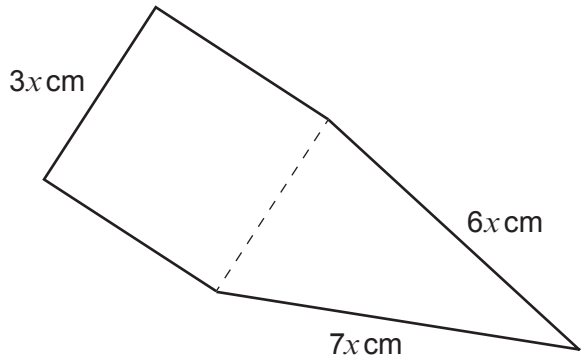


Diagram not drawn to scale

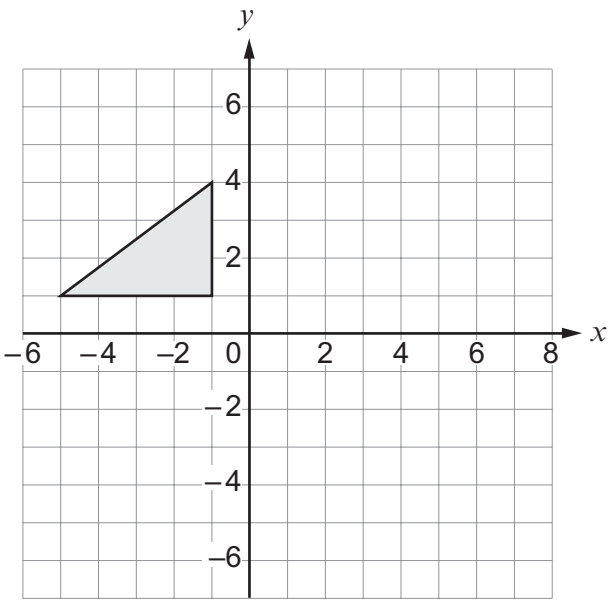
The perimeter of the shape is 1166 cm.

Write down an equation, in terms of x, for the perimeter of the shape.
Solve your equation and write down the length of one of the sides of the square. [4]

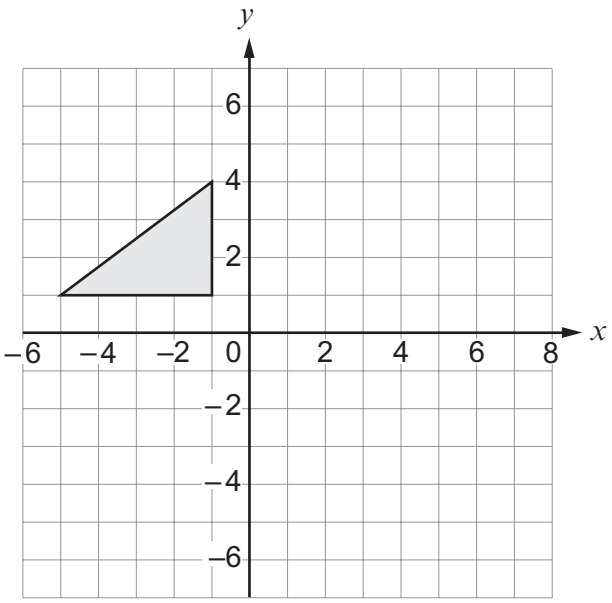
Length of a side of the square is ..... cm

Examiner only

15. *(a)* Reflect the triangle in the line $y = x$. [2]

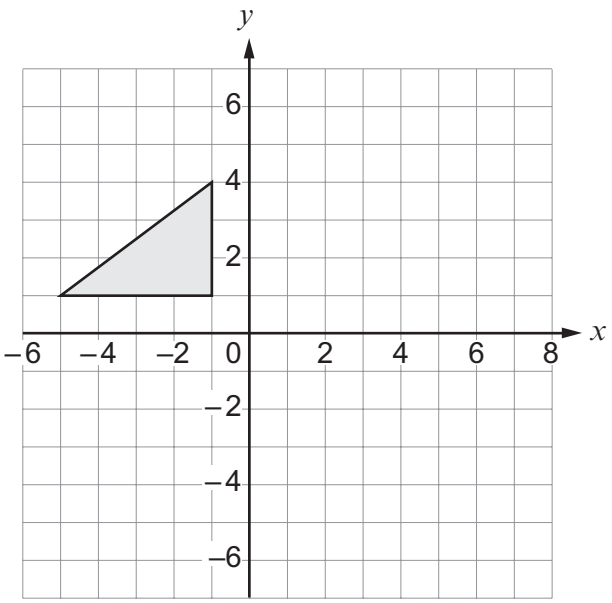


(b) Translate the triangle shown below by $\begin{pmatrix} 2 \\ -1 \end{pmatrix}$. [1]



Examiner only

(c) Rotate the triangle shown on the grid below through 90° clockwise about (0, –1). [2]



16.

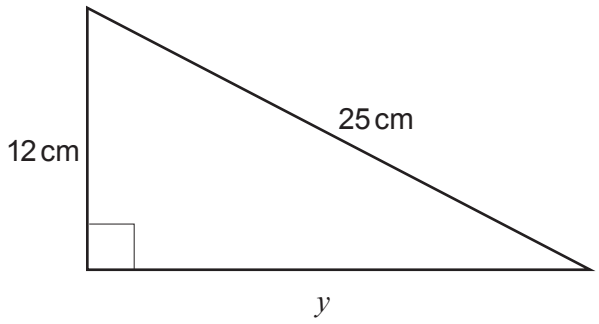


Diagram not drawn to scale

Calculate the length y. [3]

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