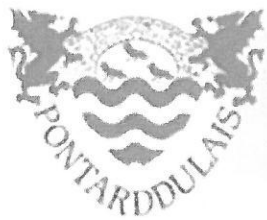


# GCSE Maths Intermediate Booklet 2

Name: .....

Set: .....



# Problem Solving

F U I June 2017

11

Examiner  
only

10. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

The diagram shows **part** of a rectangle and some identical circles drawn inside the rectangle. The circles touch each other or the sides of the rectangle, as shown in the diagram.

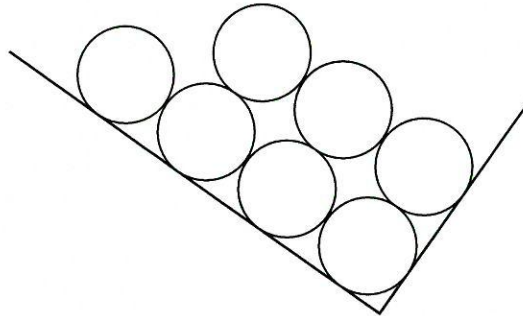


Diagram not drawn to scale

The rectangle measures 30 cm by 1 m.  
The diameter of every circle is 5 cm.

What is the largest number of circles that will fit into this rectangle?  
The circles must be arranged in the way shown above.  
You must show all your working.

[3 + 2 OCW]

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F+1 ul Nov 2016

Examiner only

3. A shop has 31 plant pots.  
Some are blue, some are yellow and the rest are red.  
There are five more blue pots than yellow pots.  
There are four times as many blue pots as there are red pots.

Calculate how many pots there are of each colour.

[3]

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

Blue ..... Yellow ..... Red .....

4. (a) Write down the next two numbers in the following sequence.

[2]

33    26    19    12    .....    .....

.....  
.....

- (b) Simplify the expression  $10g - 5f - 3g + 3f$ .

[2]

.....

- (c) Using the formula  $2T = M + 3K$ , find the value of  $K$  when  $T = 11$  and  $M = 4$ .

[2]

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

3300U301  
05



F+I U1 June 2017<sup>7</sup>

Examiner  
only

5. Team A and Team B play in a competition.

Team A has nine more points than Team B.  
Team A has four times as many points as Team B.

How many points does each team have?

[2]

.....

.....

.....

.....

.....

Team A: ..... points

Team B: ..... points

3300U301  
07



07

# Four Rules

F Maths Nov 2017<sup>3</sup> U2

Examiner  
only

1. (a) Write twenty million in figures. [1]

.....

- (b) Write 2.46 in words. [1]

.....

- (c) Insert one pair of brackets into the calculation below to make it correct. [1]

$$5 \times 4 + 2 = 30$$

- (d) In each of the following questions, use all of the digits 5, 1, 3 and 6 to make four-digit numbers.

- (i) What is the largest number that can be made? [1]

.....

- (ii) What is the largest number that can be made which is divisible by 2? [1]

.....

- (e) Write down the remainder when 488 is divided by 16. [1]

.....

.....

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

5	.....	2
---	-------	---

4.3	.....	4.25
-----	-------	------

-8	.....	4
----	-------	---

-7	.....	-6
----	-------	----

3300U201  
03



1. Fill in the boxes below to make each calculation correct.

[4]

$$\boxed{\text{£}3.26} + \boxed{89\text{p}} = \boxed{\text{£} \dots\dots\dots}$$

$$\boxed{78\text{p}} + \boxed{\text{£} \dots\dots\dots} = \boxed{\text{£}5.45}$$

$$\boxed{7} \times \boxed{46\text{p}} = \boxed{\text{£} \dots\dots\dots}$$

$$\boxed{\dots\dots\dots} \times \boxed{25\text{p}} = \boxed{\text{£}9.75}$$

2. (a) Write 2453 correct to the nearest 10.

[1]

.....

(b) Write in figures the number that is one less than ten thousand.

[1]

.....



F U1 June 2017<sup>3</sup>

Examiner  
only

1. (a) Write the number fifty thousand and four in figures. [1]

.....

(b) Calculate £7.20 divided by 9. [2]  
Write your answer in pence.

.....

.....

.....

Answer: ..... pence

(c) Mair thought of two whole numbers. [2]  
When she multiplied them together, the answer was 20.  
When she added them together, the answer was 9.  
What are the two numbers that Mair thought of?

.....

.....

.....

Numbers are ..... and .....

3300U101  
03



F U2 June 2017<sup>3</sup>

Examiner  
only

1. Fill in the missing numbers in the calculations below.

[4]

245	+	.....	=	1023
-----	---	-------	---	------

.....	-	263	=	642
-------	---	-----	---	-----

46	×	.....	=	1610
----	---	-------	---	------

.....	÷	15	=	43
-------	---	----	---	----

2. Use either the symbol  $<$  or  $>$  to make each statement true.

[2]

3	.....	12
---	-------	----

4	.....	-3
---	-------	----

0.25	.....	0.5
------	-------	-----

-20	.....	-15
-----	-------	-----

3300U201  
03





1. (a) Fill in the boxes below to make each calculation correct.

[4]

8	×	£0.45	=	£ .....
---	---	-------	---	---------

6	×	£ .....	=	£6.30
---	---	---------	---	-------

.....	×	65p	=	£7.80
-------	---	-----	---	-------

£3.60	÷	.....	=	36p
-------	---	-------	---	-----

(b) (i) Find the total of £7.30, £15.60 and 87p.

[1]

.....

.....

.....

(ii) Write this total correct to the nearest £1.

[1]

.....

(iii) Write this total correct to the nearest £10.

[1]

.....



3. *In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.*

Books cost £2.80 each.

What is the greatest number of books that can be bought with £35?

You must show all your working.

[2 + 2 OCW]

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5. (a) Write a number in each box to make the following calculations correct. [2]

(i)  $22 \div \square + 5 = 7$

(ii)  $\square \times 9 - 4 = 50$

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

(b) (i) The number 283 is multiplied by 10.  
What is the value of the 2 in the answer? [1]

.....  
Value of the 2 is .....

(ii) The number 6518 is divided by 100.  
What is the value of the 6 in the answer? [1]

.....  
Value of the 6 is .....

(c) Work out the mean of the following numbers. [2]

7      13      10      4      6

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

Mean = .....



F 42 June 2017 6

Examiner  
only

6. (a) Find the value of  $\frac{235 \times 20^2}{17}$ .

Write your answer correct to the nearest 10.

[2]

.....  
.....

- (b) Find the value of  $\sqrt{56 - 37} + 28$ .

Write your answer correct to 2 decimal places.

[2]

.....  
.....

7. Find the value of  $8x + 3y$ , when  $x = 3$  and  $y = -2$ .

[2]

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





7. Find the whole number that satisfies all of the following conditions.

- It is a whole number between 1 and 100 inclusive.
- 10% of the number is greater than 2 but less than 8.
- $\frac{1}{2}$  of the number is a square number.
- The number is **not** a multiple of 4.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

The number is .....





9. A number is multiplied by 5.  
3 is added to the answer to get 17.  
What was the number?  
You must show all your working.

[2]

.....

.....

.....

.....

.....

10. Find the value of each of the following.

(a)  $\frac{4}{5}$  of 134

[2]

.....

.....

(b) 30% of 275

[2]

.....

.....





1. (a) Calculate 8% of £3.25.

[3]

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

(b) Evaluate  $0.65 \times 280 - \frac{2}{9}$  of 513.

[3]

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

(c) Calculate  $3.5^2 - \sqrt{8.6}$ .

Give your answer correct to 2 decimal places.

[2]

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



F+I Nov 2017 maths u1

Examiner  
only

1. Calculate each of the following.

(a)  $3^4 \times 10^3$

[2]

.....  
.....

(b)  $\frac{1}{0.5}$

[1]

.....  
.....

(c)  $5.6 - 3.82$

[1]

.....  
.....

(d)  $\frac{5}{6} - \frac{2}{3}$

[2]

.....  
.....

.....  
.....

(e)  $0.2 \times 0.3$

[1]

.....  
.....

.....  
.....

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3300U301  
03



03

F + I U2 June 2017<sup>3</sup>

Examiner  
only

1. (a) Calculate 39% of £576. [2]

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

- (b) Calculate  $\frac{3}{7}$  of 100. [2]  
Give your answer correct to the nearest whole number.

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

- (c) How many quarters are there in 10? [1]

.....  
.....

- (d) What **fraction** is equal to 50% of  $\frac{1}{6}$ ? [1]

.....  
.....

- (e) Circle the fraction that is a recurring decimal. [1]

$$\frac{21}{35}$$

$$\frac{10}{12}$$

$$\frac{17}{68}$$

$$\frac{15}{24}$$

$$\frac{51}{170}$$

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

3300U401  
03



03

F + I W1 Nov 2016<sup>3</sup>

Examiner  
only

1. Calculate each of the following.

(a)  $0.4 \times 0.7$

[1]

.....  
.....

(b)  $13.8 - 7.45$

[1]

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

(c)  $3^3 - 2^4$

[2]

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

(d)  $\frac{9}{10} - \frac{3}{5}$

[2]

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

3300U301  
03



03

F+1 W1 Nov 2016 4

Examiner  
only

2. Circle either TRUE or FALSE for each of the following statements.

[3]

20% of 70 is the same as 70% of 20.	TRUE	FALSE
$\frac{1}{2}$ of $\frac{1}{8}$ is the same as $\frac{1}{8}$ of $\frac{1}{2}$	TRUE	FALSE
A number is halved. The answer is halved, and then this answer is halved again. This gives the same answer as dividing the original number by 6.	TRUE	FALSE
Dividing a number by 15 is the same as first dividing by 10 and then dividing the answer by 5.	TRUE	FALSE
Multiplying a number by 2.5 is the same as first multiplying by 10 and then dividing the answer by 4.	TRUE	FALSE

Space for working:

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F+I Nov 2017 maths 42

Examiner  
only

6. (a) Express 54 as a percentage of 129.  
Give your answer to the nearest whole number.

[3]

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.....

.....

- (b) Share 25.8 kg in the ratio 5 : 1.

[2]

.....

.....

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..... kg and ..... kg



7. (a) Kian thinks of a number.  
A quarter of his number is 37.

What is 10% of Kian's number?  
You must show all your working.

[3]

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10% of Kian's number is .....

- (b) Sophie thinks of a number between 1 and 9.  
She multiplies her number by six and then adds 25.  
Her final answer can be divided exactly by 7.

What number did Sophie first think of?

[3]

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.....

Sophie's number is .....



F+1 W1 Nov 2016

8. Two types of number are added or multiplied together. Complete the table below to show whether the answer will be odd or even. One answer has been filled in for you.

[3]

Calculation:	Answer will be:
even number + even number	even
even number + odd number	
odd number + odd number	
even number × even number	
even number × odd number	
odd number × odd number	

3300U301  
09





F+I U1 June 2017<sup>10</sup>

Examiner  
only

8. (a) Estimate the value of  $\frac{41.3 \times 29.6}{198.7}$ .

You must show all your working.

[2]

.....

.....

.....

.....

.....

(b) Given that  $54 \times 84.2 = 4546.8$ , write down the exact value of each of the following.

(i)  $540 \times 842 = \dots\dots\dots$

[1]

(ii)  $\frac{4546.8}{5.4} = \dots\dots\dots$

[1]

(iii)  $\frac{454.68}{84.2} = \dots\dots\dots$

[1]



I 11 June 2017<sup>17</sup>

Examiner  
only

14. A **whole** number is written on a card.

You are given three clues to help you work out the number on the card.

Clue 1 : **Double** the number is between 8 and 18 inclusive.

Clue 2 : The number is a prime number.

Clue 3 : The number is **not** a factor of 100.

What is the number on the card?

You must show all your working.

[3]

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The number on the card is .....



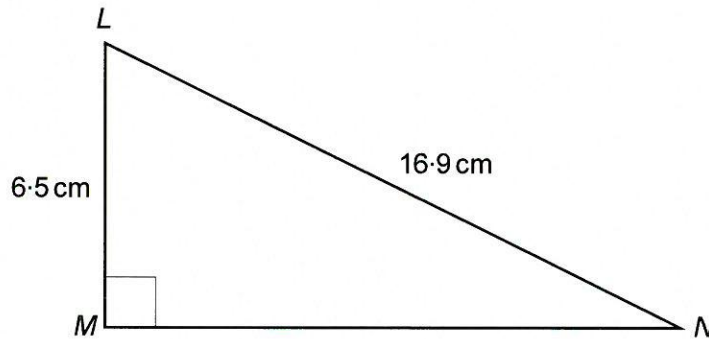
# Pythagoras' Theorem and Trigonometry

I 112 June 2017

13

Examiner  
only

14. A right-angled triangle  $LMN$  is shown below.  
 $LN = 16.9$  cm and  $LM = 6.5$  cm.



*Diagram not drawn to scale*

Calculate the length  $MN$ .

[3]

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16. Calculate the length of the side QR in the triangle PQR shown below.

[3]

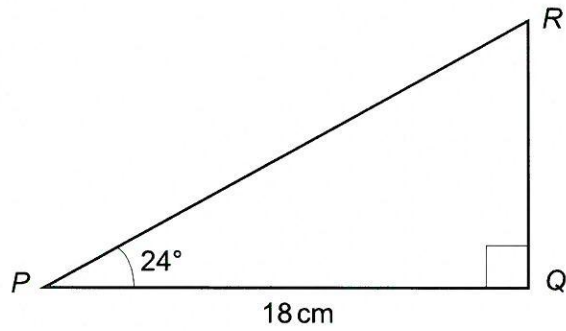


Diagram not drawn to scale

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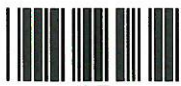
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# Standard form

I 11 Nov 2016

15

Examiner  
only

13. (a) Make  $m$  the subject of the formula  $y = 6m + 7$ . [2]

.....

.....

.....

.....

- (b) Factorise  $6x^2 - 12x$ . [2]

.....

14. Find the value of each of the following in standard form.

(a)  $\frac{7.5 \times 10^6}{5000}$  [2]

.....

.....

.....

.....

(b)  $(2.3 \times 10^3) + (6.4 \times 10^4)$  [2]

.....

.....

.....

.....



# Circle Theorems

I 17 Nov 2016<sup>18</sup>

Examiner  
only

17. Points  $A$ ,  $B$ ,  $C$  and  $D$  lie on the circumference of a circle, centre  $O$ .  
 $BD$  is a diameter of the circle.  
The straight line  $BC = 4.7$  cm and  $\hat{BAC} = 28^\circ$ .

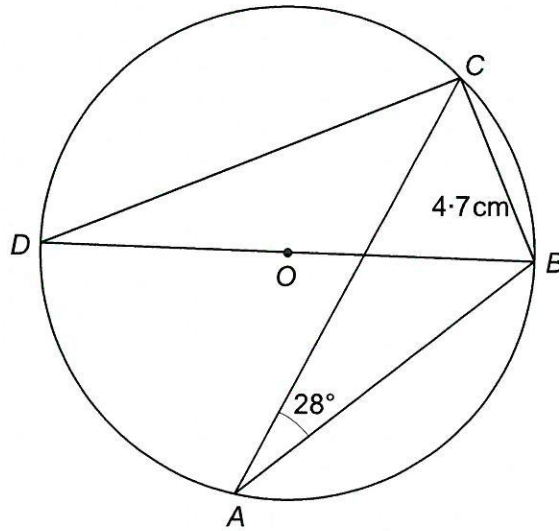


Diagram not drawn to scale

Write down the size of  $\hat{BDC}$ .  
Hence, calculate the length  $BD$ .  
You must show all your working.

[5]

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19. (a) Circle the equation of a straight line that is parallel to the line  $3y = 2x + 6$ . [1]

- $3y = 2x + 7$        $2y = 3x + 6$        $3y = -2x + 6$        $-3y = 2x + 6$        $2y = -3x + 6$

.....

.....

(b) Circle the equation of a straight line that is perpendicular to the line  $y = 5x - 3$ . [1]

- $y = \frac{x}{5} + 3$        $y = 5x + 3$        $y = 5x + \frac{1}{3}$        $y = -5x + 3$        $y = \frac{-x}{5} + 3$

.....

20. Points A, B and C lie on the circumference of a circle, centre O.  
 $\widehat{ACB} = 37^\circ$ .

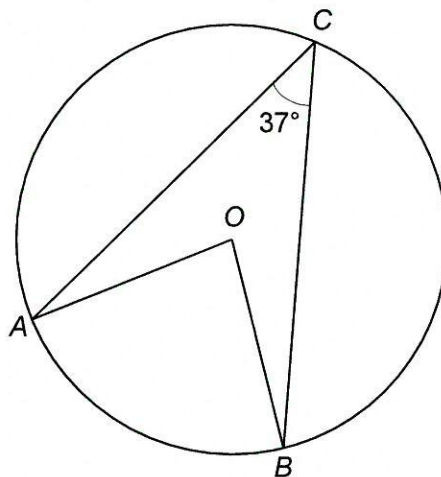


Diagram not drawn to scale

Calculate the size of the reflex angle  $\widehat{AOB}$ . [2]

.....

.....

.....





# Averages and Range

F 112 NOV 2016

5

Examiner  
only

4. The number of points scored by the Welsh rugby team in their 9 games during the 2014-2015 season were as follows:

28    17    16    12    16    26    20    23    61

- (a) Find the mode of the number of points scored. [1]

.....  
.....

- (b) Find the median number of points scored. [2]

.....  
.....

- (c) Find the mean number of points scored. [3]

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

3300U201  
05



05

F 42 Nov 2016<sup>7</sup>

Examiner  
only

6. A sixth number is to be added to the list below.

12                  6                  15                  3                  5

When the sixth number is added, the range increases by 2.

Write down the two possible values for the sixth number.  
You must show all your working.

[3]

.....

.....

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3300U201  
07



07

11. Rhys wrote down four whole numbers.

The mode of the four numbers is 7.  
The median of the four numbers is 6.  
The range of the four numbers is 5.

What are the four numbers that Rhys wrote down?  
You must show all your working.

[3]

.....

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.....

.....

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.....

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.....

.....

.....

Rhys's numbers are ....., ....., ..... and .....

3300U201  
09



3. (a)

11

23

5

9

18

20

A number is to be written on the blank card.

The mode and the median of all seven numbers are both the same.

Find one possible number that can be written on the blank card.

[1]

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

Number on card .....

(b) One extra number is added to the following list of three numbers.

6      8      13

The mean of the new list of four numbers is 1 less than the mean of the original three numbers.

What number was added to the list?

[4]

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

Number added .....

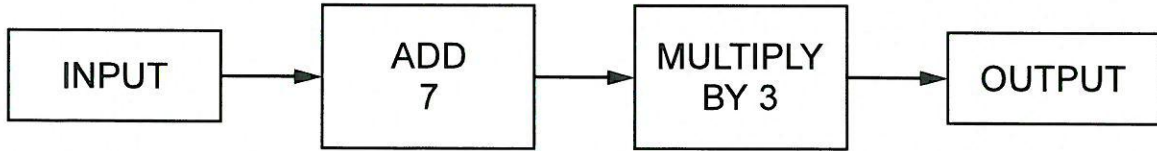
3300U401  
05



F + I U2 June 2017<sup>5</sup>

Examiner  
only

4. The diagram below shows a number machine.



Using the number machine, calculate:

(a) the INPUT when the OUTPUT is 36, [1]

.....  
.....

(b) the OUTPUT when the INPUT is  $n$ . [2]

.....  
.....

5. Write down three integers, all less than 25, whose

- range is 8, and
- mean is 13.

[2]

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

The three integers are ....., ....., and .....

3300U401  
05





F+1 W1 Nov 2016<sup>10</sup>

Examiner  
only

9. Write down five numbers that satisfy all of the following statements:

- They are all between 1 and 9 inclusive.
- They have a median value of 6.
- They have a range of 7.
- Their mean is 5.

[3]

.....

.....

.....

.....

.....

--	--	--	--	--



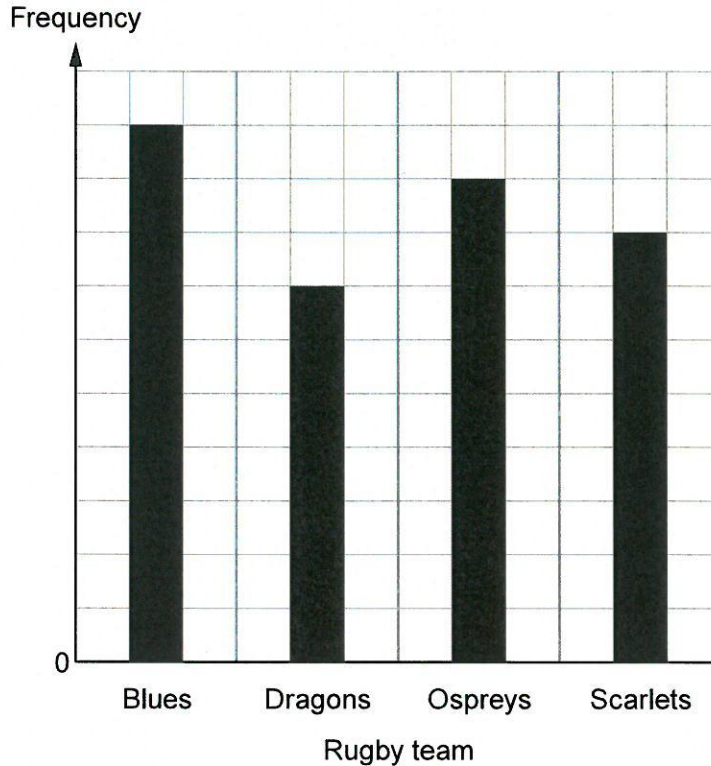
# Statistical Diagrams

F 11 June 2017

7

Examiner only

5. Blues, Dragons, Ospreys and Scarlets are four Welsh rugby teams. Aled asked a group of 170 pupils which of these 4 teams they preferred. He then drew this bar chart to show the data that he had collected.



- (a) Aled knew that 50 of these pupils said that they preferred the Blues. Complete the table below.

[3]

Rugby team preferred	Number of pupils
Blues	50
Dragons	
Ospreys	
Scarlets	

- (b) A pupil is chosen at random from this group. What is the probability that this pupil preferred the Blues?

[2]



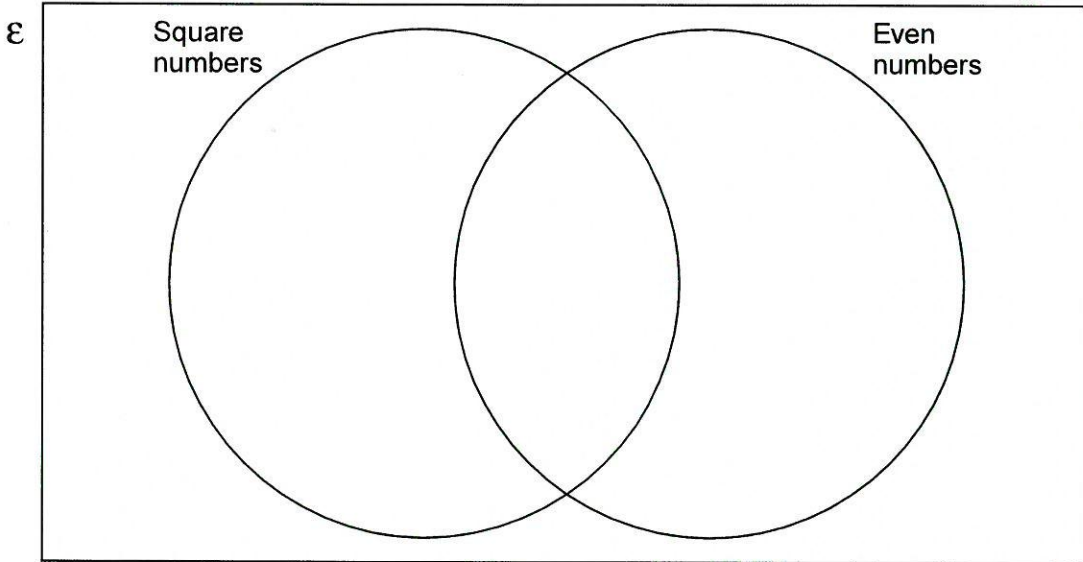
07



5. The Venn diagram below is used for showing square numbers and even numbers.

Place the numbers 1, 2, 3, 4 and 5 in the Venn diagram.

[2]



6. (a) Describe the rule for continuing each of the following sequences.

(i) 27, 32, 37, 42, 47, ... [1]

Rule:

.....  
.....

(ii) 6, 12, 24, 48, 96, ... [1]

Rule:

.....  
.....

(b) Write the next term in the sequence below.

[1]

0.2, 0.4, 0.6, 0.8, .....



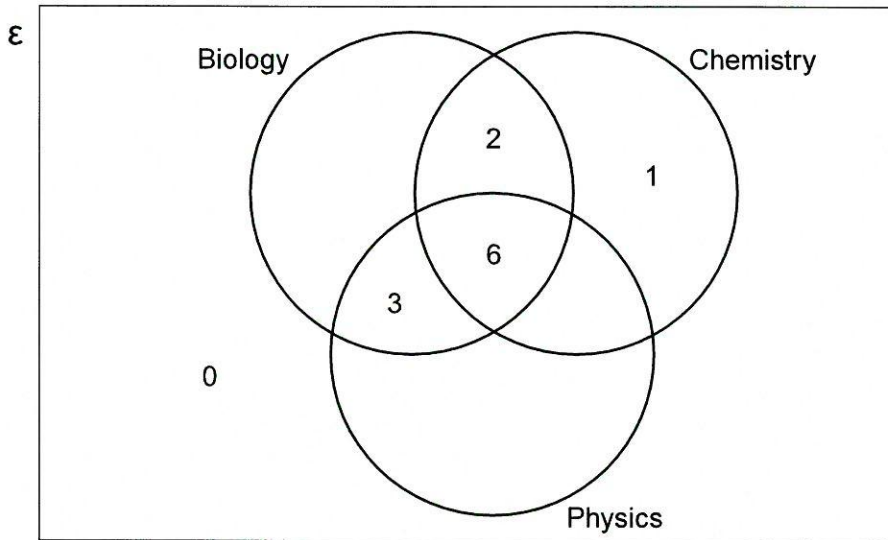
14. At a college, a total of 28 students study one or more of the science subjects: Biology, Chemistry and Physics.  
The 28 students form the universal set,  $\mathcal{E}$ .  
Some parts of the Venn diagram below have already been completed.

It is also known that:

- 5 students study only Biology
- 13 students study Chemistry

(a) Complete the Venn diagram.

[3]



.....

.....

.....

.....

(b) How many students study Biology and Chemistry but not Physics?

[1]

.....

(c) One of the students is chosen at random.  
What is the probability that this student studies Biology?

[2]

.....

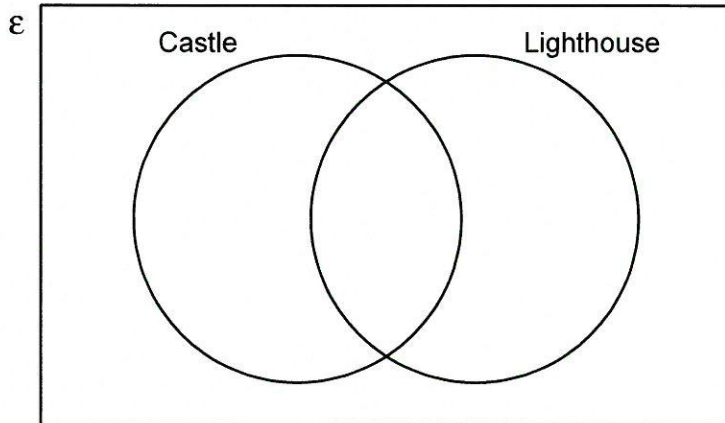
.....



16. A group of 20 people visited Anglesey for a weekend break.
- 10 of the group visited Beaumaris Castle.
  - 13 of the group visited South Stack Lighthouse.
  - 4 of the group did not visit either of these places.

(a) Complete the Venn diagram below to show this information.  
The universal set,  $\epsilon$ , contains all of the 20 people in the group.

[3]



.....

.....

.....

.....

(b) One person is chosen at random from the group.  
What is the probability that this person visited only one of the two places?

[2]

.....

.....

.....

.....



Time

F U2 June 2017<sup>7</sup>

Examiner  
only

8. Eira believes that 4 minutes 48 seconds is less than half of 9 minutes 18 seconds.  
Is Eira correct?  
You must show all your working.

[2]

.....

.....

.....

.....

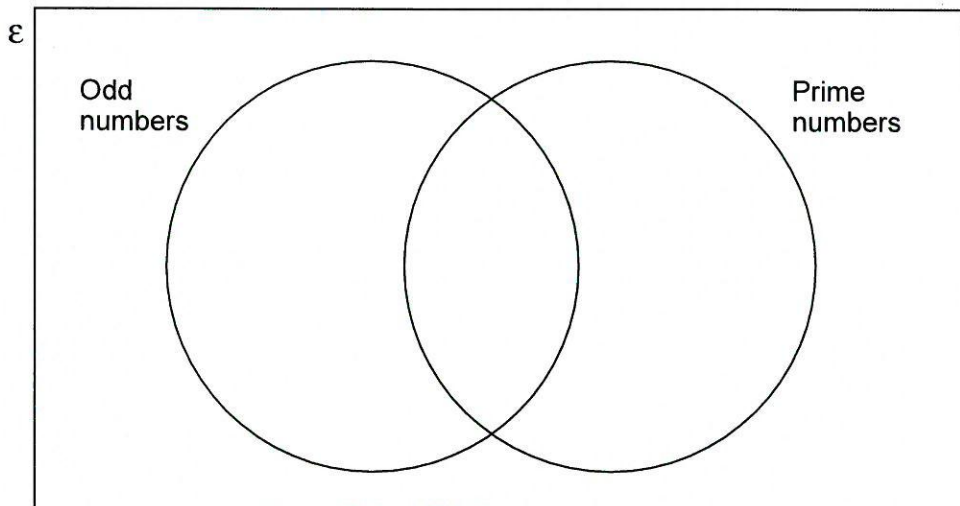
.....

.....

9. The Venn diagram below is used for showing
- odd numbers and
  - prime numbers.

Place the numbers 1, 2, 3, 4 and 5 in the Venn diagram.

[2]



3300U201  
07



07

2. (a) What is the difference between the following times?

'07:30 on 1st November 2017' and '13:20 on 3rd November 2017'

Give your answer in days, hours and minutes.

[2]

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..... days ..... hours ..... minutes

(b) Divide 16 hours 20 minutes by 5.

Give your answer in hours and minutes.

[2]

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..... hours ..... minutes



# Measurement + Conversions

F7I Maths Jre 3 2018 U1

Examiner  
only

1. Using only the numbers in the following list,

10    11    12    13    14    15    16    17    18    19    20

write down

(a) two **prime** numbers that have a sum of 32, [2]

.....  
The two numbers are ..... and .....

(b) a number that is a multiple of **both 4 and 6**, [2]

(c) a number that is a factor of 51. [1]

2. Circle the correct answer for each of the following.

(a) 16 km is approximately equal to [1]

5 miles    8 miles    10 miles    16 miles    32 miles

(b) 2.2 lb is approximately equal to [1]

1 kg    2 kg    4.4 kg    5 kg    10 kg

(c) 4 litres is approximately equal to [1]

4 pints    5 pints    6 pints    7 pints    8 pints

3300U301  
03



03

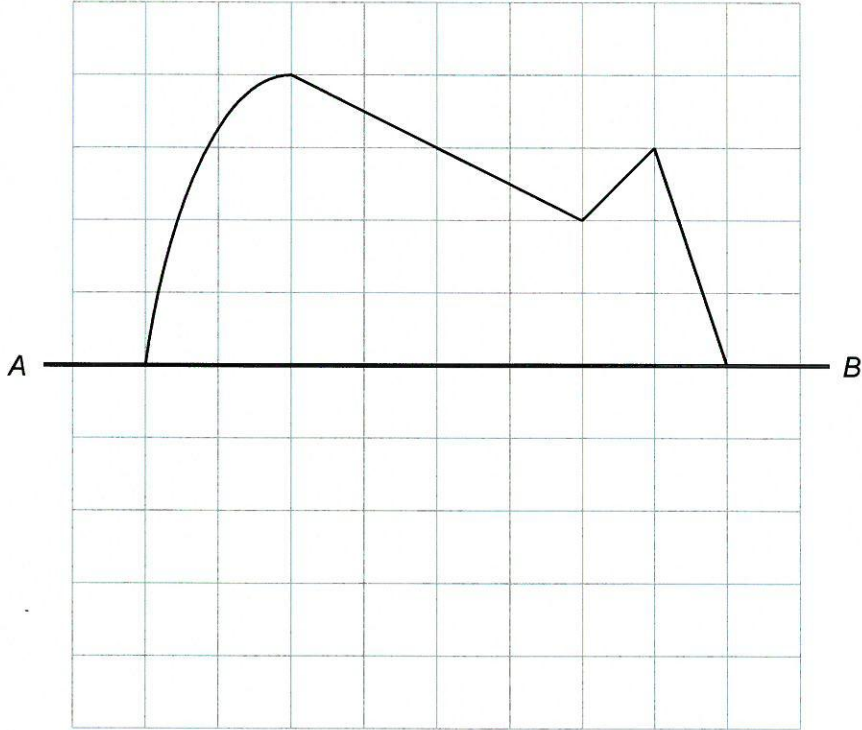
# Shape

F 11 NOV 2016

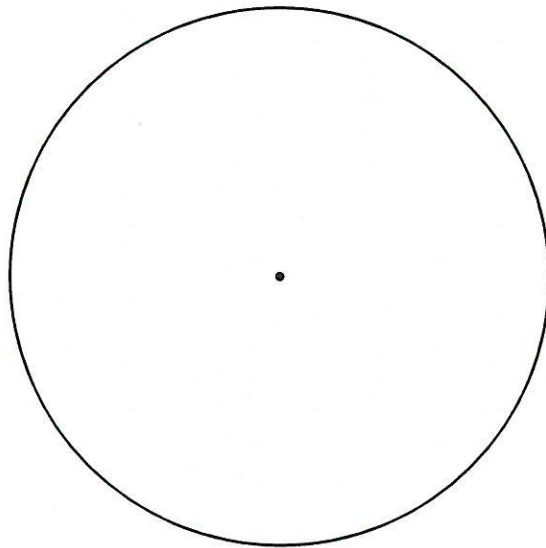
3

Examiner only

1. (a) Draw a reflection of this shape in the line AB. [2]



- (b) Measure the length of the radius of this circle using metric units. State the units you are using. [2]



Radius = .....

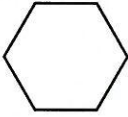

3300U101  
03



03

2. Circle either TRUE or FALSE for each of the following statements.

[2]

STATEMENT			
This shape is a pentagon.		TRUE	FALSE
The straight line shown in this circle is a diameter.		TRUE	FALSE
All quadrilaterals can be split into two triangles.		TRUE	FALSE
All isosceles triangles have 3 sides of equal length.		TRUE	FALSE

3. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Charlotte writes down 3 different factors of 20.  
The sum of the 3 factors is greater than 10 but less than 15.

What 3 factors could Charlotte have written down?  
You must show how you worked out your answer.

[3 + 2 OCW]

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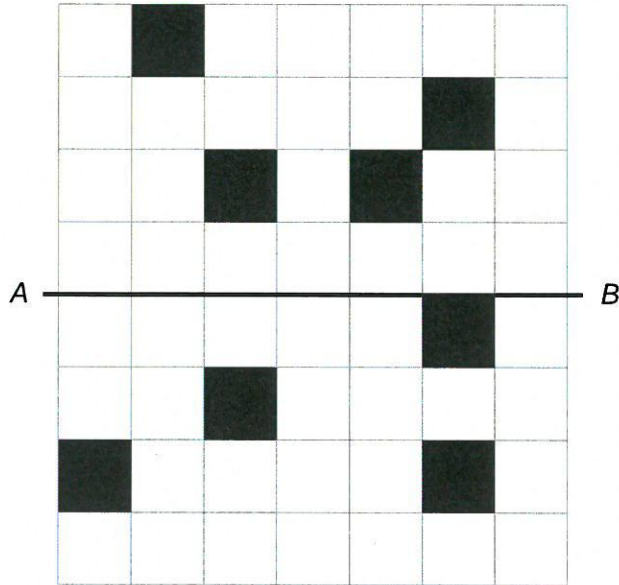




F 11 June 2017<sup>5</sup>

Examiner  
only

3. Shade the smallest number of squares needed to make the line  $AB$  a line of symmetry. [2]



3300U101  
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05

3. (a) (i) In the space below, draw a circle of radius 5 cm.

Use the point  $\times$  as the centre of your circle.

[1]



(ii) What is the length of the diameter of the circle you have drawn?

[1]

(b) What is the special name given to a triangle with three equal sides?  
Circle the correct answer.

[1]

Isosceles triangle

Tetrahedron

Scalene triangle

Right-angled triangle

Equilateral triangle



4. Matthew writes down three **different** numbers.
- One number is a square number.
  - The other two numbers are factors of 20.
  - The sum of the three numbers is 24.

What three numbers did Matthew write down?

[3]

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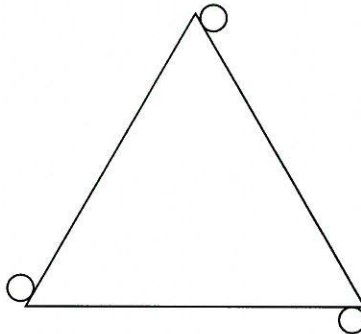
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Matthew's three numbers are ....., ..... and .....

5. (a) What is the order of rotational symmetry of the shape below?

[1]



.....

- (b) Name a 4-sided shape with rotational symmetry of order 4.

[1]

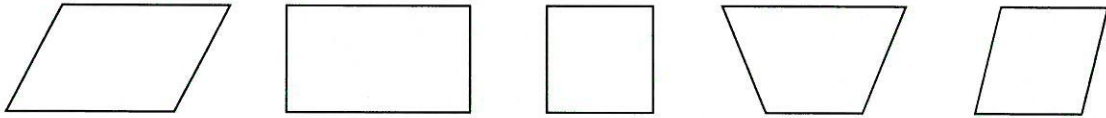
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4. (a) The special name of one of the quadrilaterals below is *trapezium*.  
Circle the trapezium.

[1]



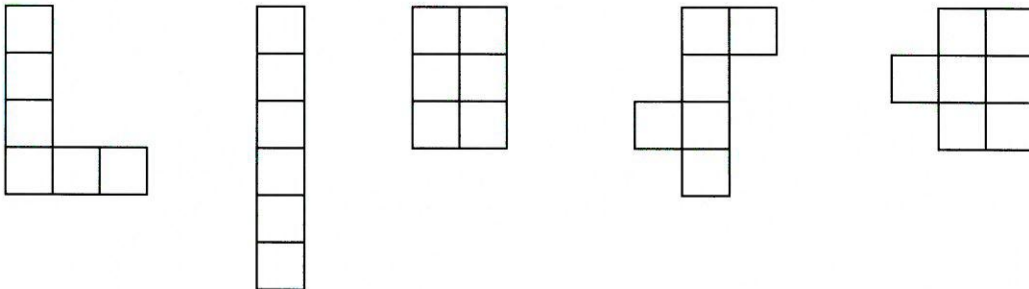
- (b) One of the angles marked below is an acute angle.  
Circle the acute angle.

[1]

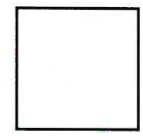
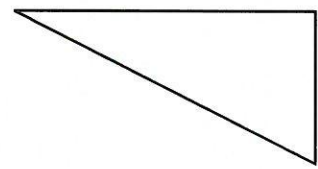
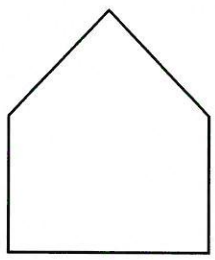
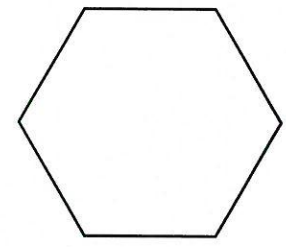
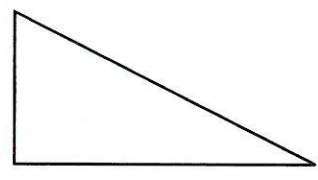
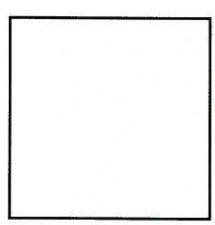


- (c) Only one of the nets below can be folded to form a cube.  
Circle the correct net.

[1]



4. Here are some shapes.



Circle either TRUE or FALSE for each of the following statements.

[2]

STATEMENT		
The squares are congruent.	TRUE	FALSE
The triangles are congruent.	TRUE	FALSE
The pentagon is regular.	TRUE	FALSE
The triangles are isosceles.	TRUE	FALSE

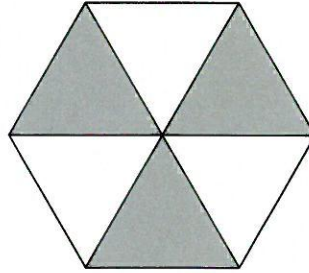
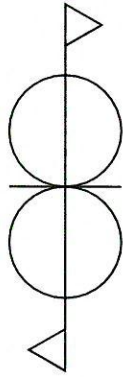
3300U201  
05



F 41 Nov 2016

8. Write down the order of rotational symmetry for each of the following.

[2]

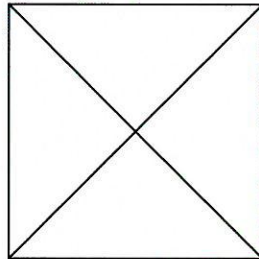


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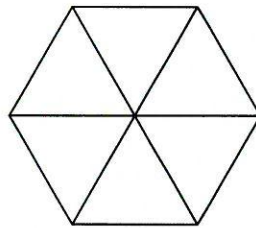
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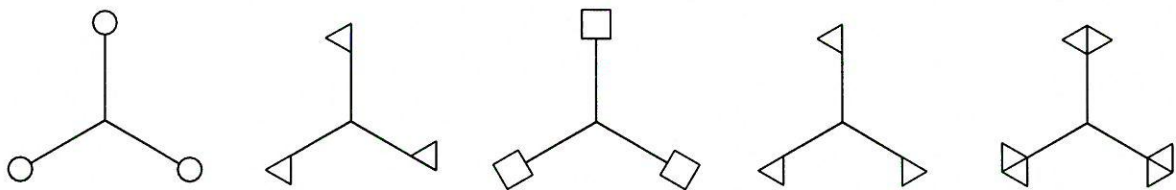
2. (a) The square drawn below has rotational symmetry of order 4.  
Place **two** identical dots (•) on the square so that it will have rotational symmetry of order 2. [1]



- (b) The regular hexagon drawn below has rotational symmetry of order 6.  
Place **three** identical dots (•) on the regular hexagon so that it will have rotational symmetry of order 3. [1]



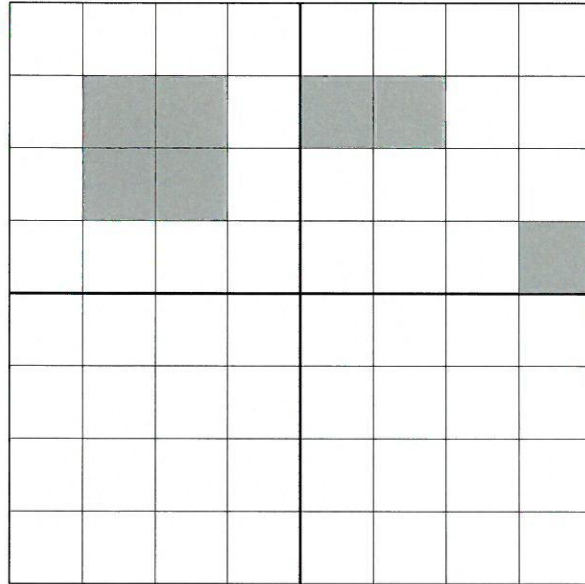
- (c) Which of the following shapes has rotational symmetry of order 3, but has **no** line symmetry?  
Circle the correct shape. [1]



F#1 112 Nov 2016

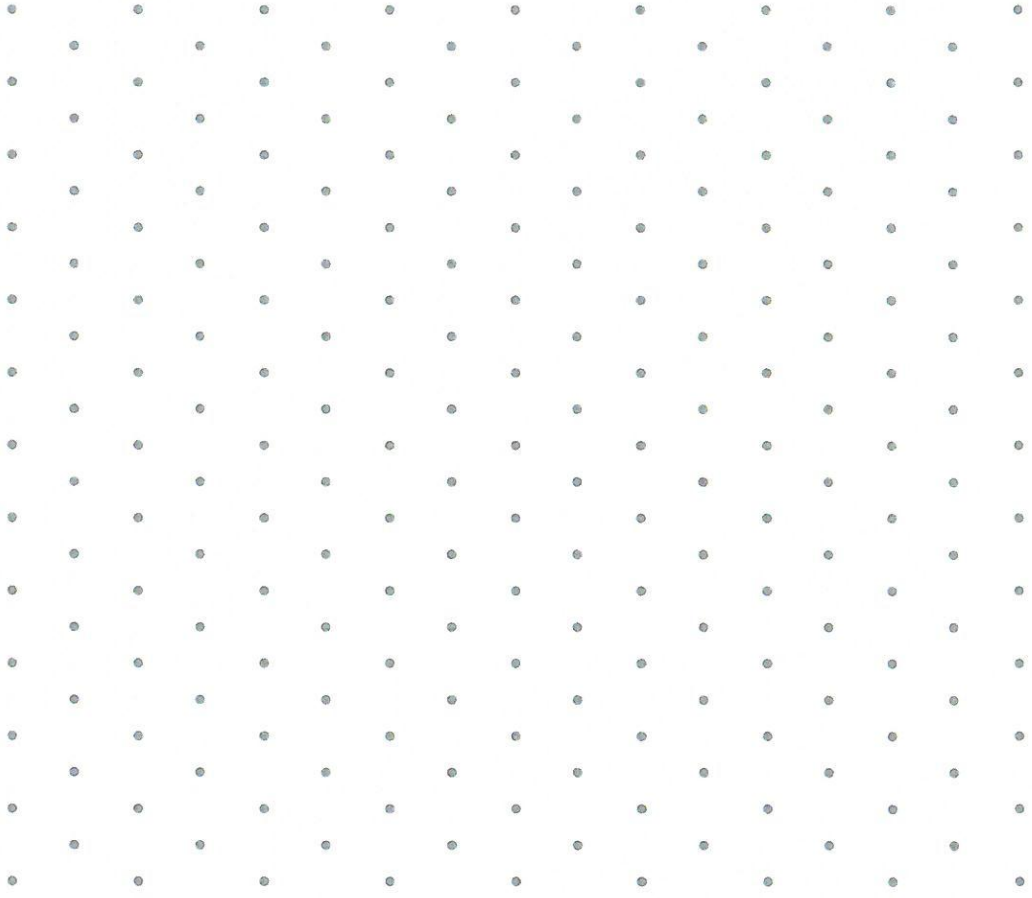
Examiner only

3. Shade the least number of squares in the lower two quadrants so that the grid has rotational symmetry of order 2. [3]





5. (a) Draw an isometric representation of a cuboid measuring 6 cm by 4 cm by 3 cm. Use the grid below. [2]



(b) Calculate the volume of the cuboid. Give the units of your answer. [3]

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F+1 U2 Nov 2016 7

Examiner  
only

7. Show clearly whether the following statement is true or false. [4]

'If you increase a positive number by 10% and then decrease that new value by 10%, you get back to your original number.'

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8. Circle either TRUE or FALSE for each statement given below. [2]

STATEMENT		
All equilateral triangles are congruent.	TRUE	FALSE
All squares with equal areas are congruent.	TRUE	FALSE
Circles with equal perimeters are congruent.	TRUE	FALSE
All regular octagons are congruent.	TRUE	FALSE

3300U401  
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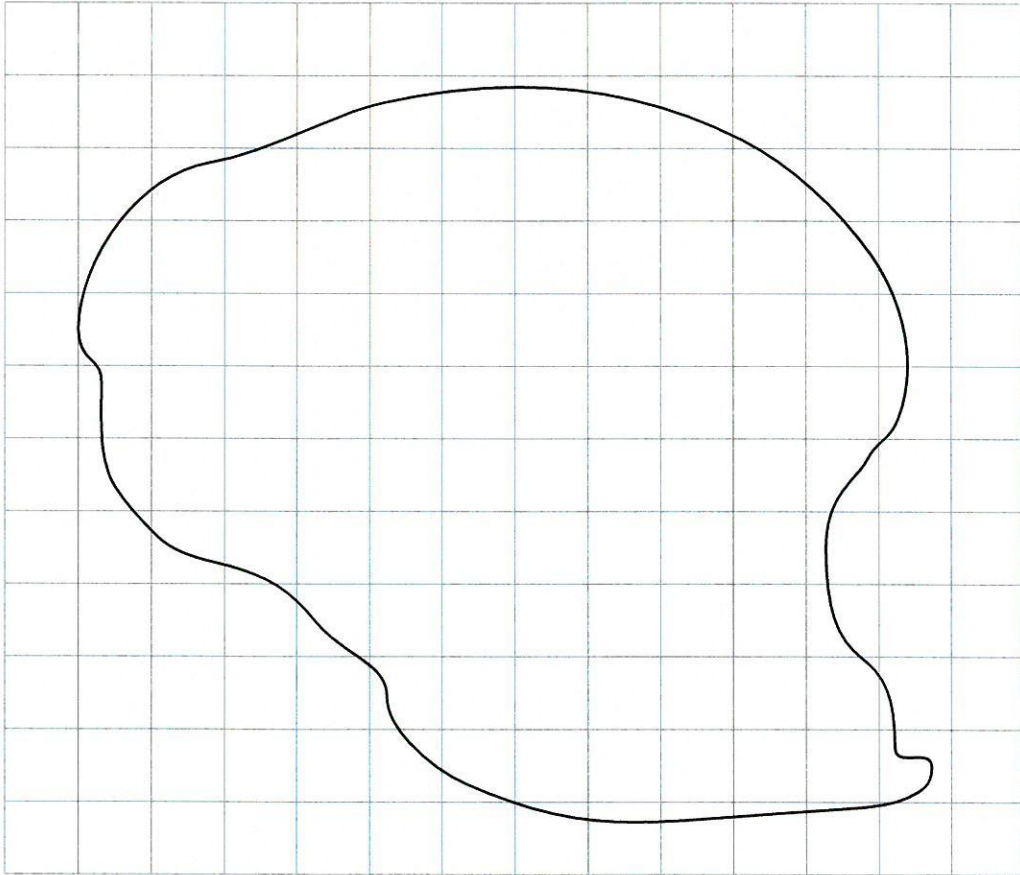
07

# Perimeter, Area and Volume

F U I June 2017 4

Examiner  
only

2.



The shape above has been drawn on a centimetre square grid.  
Estimate the area of the shape.

[2]

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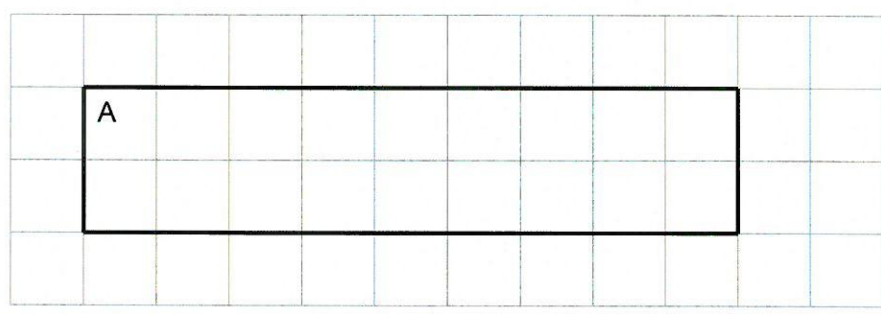
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Area of the shape = ..... cm<sup>2</sup>



4. (a) Rectangle A is drawn on the centimetre square grid below.



(i) What is the perimeter of rectangle A? [1]

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Perimeter = .....

(ii) What is the area of rectangle A? [2]  
Give the units of your answer.

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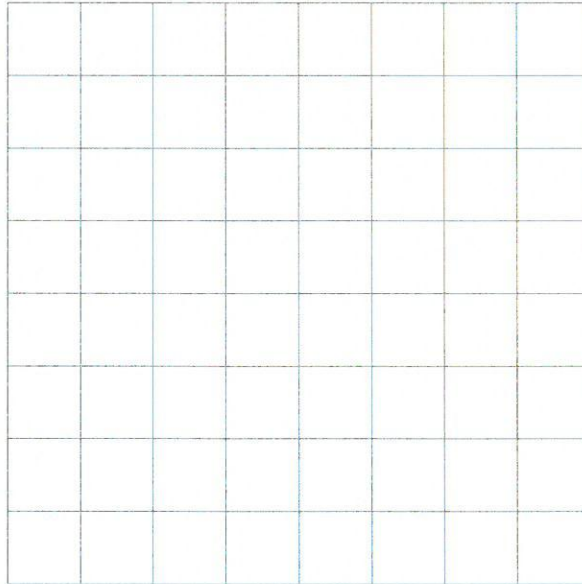
Area = .....



- (b) Rectangle B has the same area as rectangle A and fits on the centimetre square grid below.  
Rectangle B has a different perimeter from rectangle A.

Draw rectangle B on the grid below.

[1]



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F W 1 Nov 2016

4. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

A square is made using four rods of equal length joined end to end.  
The perimeter of this square is 72 cm.  
Three of these rods are now joined end to end to make an equilateral triangle.

What is the perimeter of this equilateral triangle?  
You must show all your working.

[3 + 2 OCW]

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5. Solve the following equations.

(a)  $20x = 120$

[1]

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(b)  $40 - y = 25$

[1]

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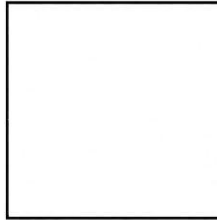
3300U101  
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F U2 June 2017<sup>8</sup>

Examiner  
only

10. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.



*Diagram not drawn to scale*

The perimeter of a square is 56 cm.  
Calculate the area of the square.  
You must show all your working.

[3 + 2 OCW]

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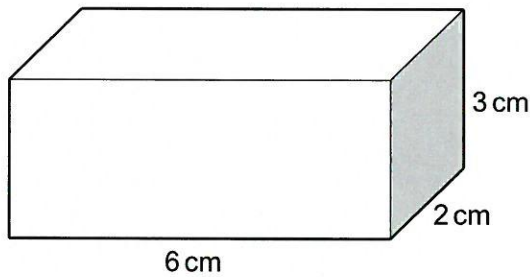
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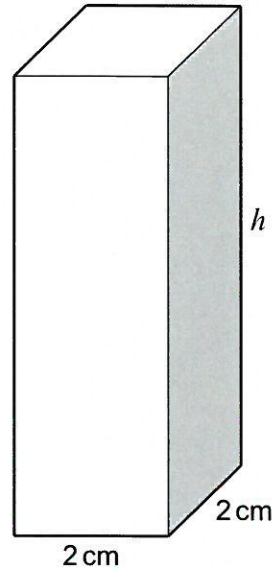


3. (a) In this part of the question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

The two cuboids shown below have equal volumes.



Cuboid A



Cuboid B

Diagrams not drawn to scale

Calculate the height  $h$  of Cuboid B.  
You must show all your working.

[4 + 2 OCW]

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- (b) How many cubic centimetres ( $\text{cm}^3$ ) are there in 2.5 litres?

[1]

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2.5 litres = .....  $\text{cm}^3$

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only





4. Which of the following fractions is nearest to  $\frac{1}{4}$ ?

$$\frac{1}{5}$$

$$\frac{7}{25}$$

$$\frac{13}{50}$$

You must show all your working.

[3]

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Answer .....

5. Calculate both the area and the perimeter of a rectangle 6 cm long and 4.5 cm wide.

Use the answer spaces to clearly identify which is the area and which is the perimeter. You must give the correct units for each of your answers.

[4]

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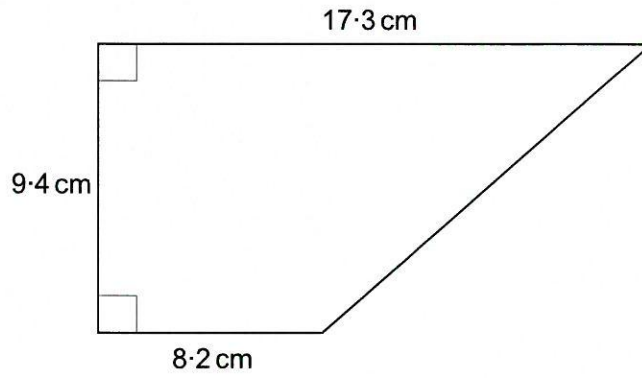
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Area = ..... Perimeter = .....



5. Calculate the area of the trapezium shown below.  
You must give the units of your answer.

[3]



*Diagram not drawn to scale*

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F+1 11 Nov 2016

6. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

A right-angled triangle  $BCD$  is joined to a rectangle  $ABDE$ , as shown below.

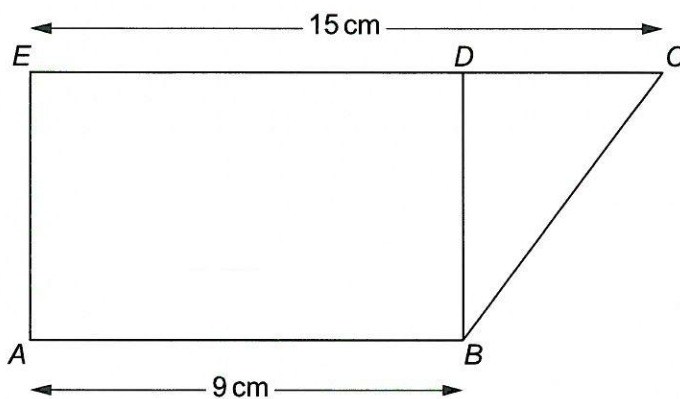


Diagram not drawn to scale

The area of the rectangle is  $45 \text{ cm}^2$ .

Calculate the area of the right-angled triangle.  
You must show your working.

[5 + 2 OCW]

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8. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

$AB$  is the diameter of a circle, centre  $O$ , with radius  $OA = 4.2$  cm.  
 $ABCD$  is a square.

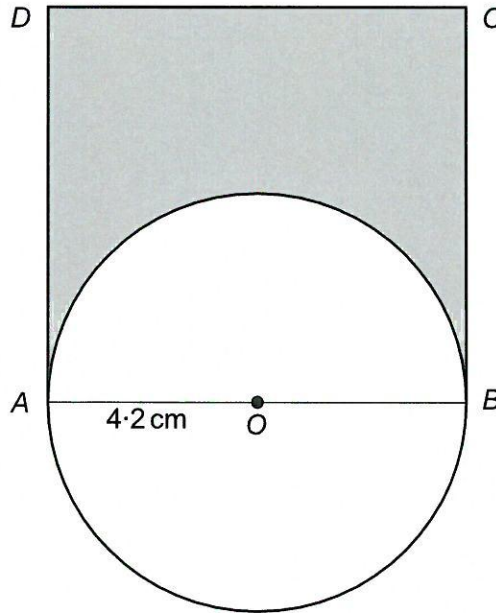


Diagram not drawn to scale

Calculate the area of the shaded region.  
You must show all your working.

[5 + 2 OCW]

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8. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

In the diagram below,  $ABCE$  is a square whose perimeter is 28 cm.  
 $CDE$  is a right-angled triangle whose area is  $35 \text{ cm}^2$ .

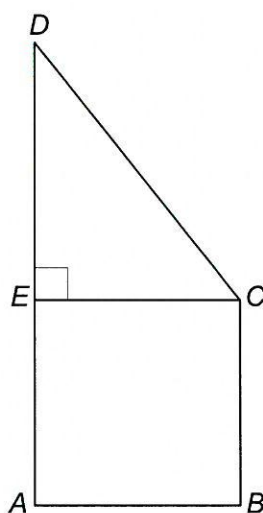


Diagram not drawn to scale

Calculate the length of  $DE$ .  
You must show all your working.

[4 + 2 OCW]

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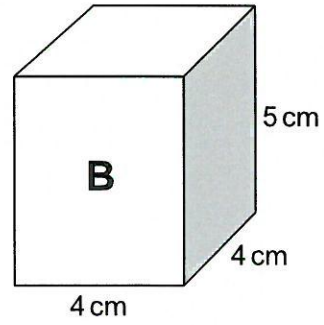
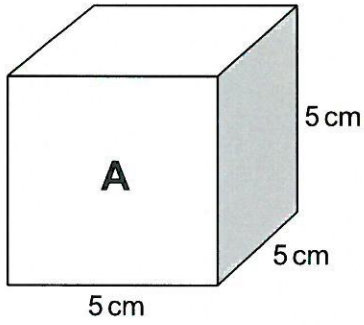
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09



8. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

Cube **A** and cuboid **B** are shown below.



*Diagrams not drawn to scale*

Express the volume of **B** as a percentage of the volume of **A**.  
You must show all your working.

[4 + 2 OCW]

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9. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

In the diagram below,

- $ABCD$  is a rectangle, and
- $PQ$  is parallel to  $AD$ .

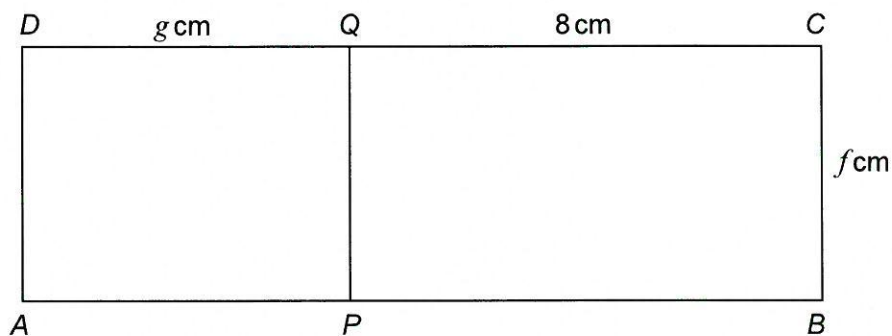


Diagram not drawn to scale

The area of  $ABCD$  is  $52\text{ cm}^2$ .

The area of  $APQD$  is  $20\text{ cm}^2$ .

Calculate the values of  $f$  and  $g$ .  
You must show all your working.

[5 + 2 OCW]

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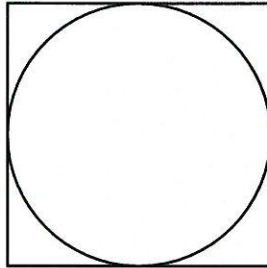
3300U301  
11



9. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

A square has a perimeter of 80 cm.

A circle fits exactly inside the square, as shown in the diagram.



Calculate the circumference of the circle.  
Give your answer correct to 1 decimal place.  
You must show your working.

[4 + 2 OCW]

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9. The diagram below shows an equilateral triangle  $ABC$  with  $AB = (4x - 7)$  cm.

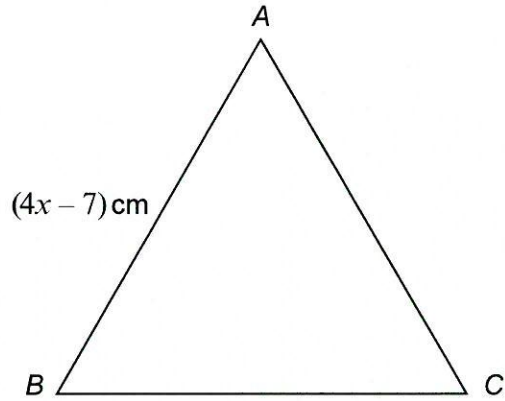


Diagram not drawn to scale

The perimeter of the triangle is 27 cm.  
Calculate the value of  $x$ .

[3]

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3300U401  
11



10. In this question, you will be assessed on the quality of your organisation, communication and accuracy in writing.

$ABCF$  is a rectangle.  
 $CDEF$  is a trapezium.  
 $BD$  is a straight line.

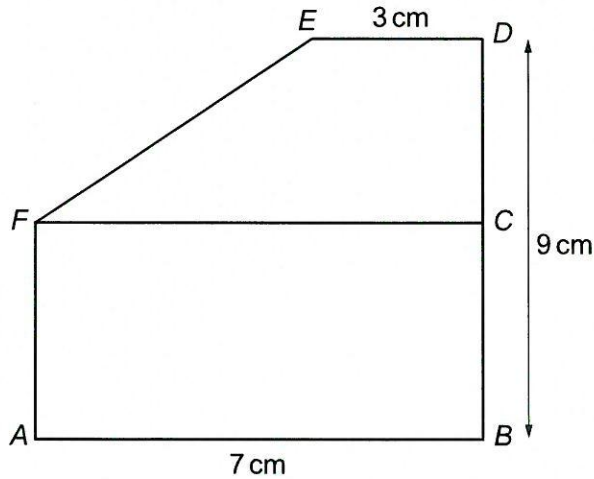


Diagram not drawn to scale

$AB = 7 \text{ cm}$ ,  $BD = 9 \text{ cm}$  and  $DE = 3 \text{ cm}$ .

The perimeter of rectangle  $ABCF$  is  $24 \text{ cm}$ .

Calculate the **area** of the trapezium  $CDEF$ .

You must show all your working.

[4 + 2 OCW]

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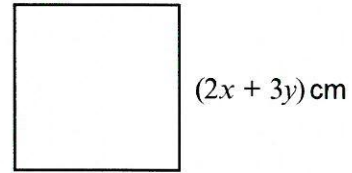
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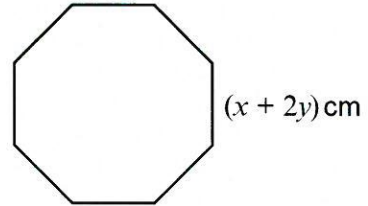
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15. Each side of a square is of length  $(2x + 3y)$  cm.  
The perimeter of the square is 62 cm.



Each side of a regular octagon is of length  $(x + 2y)$  cm.  
The perimeter of the octagon is 72 cm.



Use an algebraic method to find the value of  $x$  and the value of  $y$ .

[5]

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$x =$  .....       $y =$  .....

# Dimensions

I 11 June 2017

18

Examiner  
only

15. In the following formulae, each measurement of length is represented by a letter.

Consider the dimensions implied by the formulae.

Write down, for each case, whether the formula could be for a length, an area, a volume or none of these.

The first one has been done for you.

[3]

Formula

Formula could be for

$$d^3 - 3 \cdot 14r^2h$$

..... volume .....

$$d^2 + hw$$

.....

$$d + w + h$$

.....

$$2\pi r - \pi r^2$$

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$$(d + h)w$$

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$$d^3 + dwh$$

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