Test 2 **Essential Maths 8C units 3 and 4**

You need: ruler, protractor, tracing paper. Calculators may **not** be used.

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1. The total mass of six people is 264 kg.

   Work out the mean mass of the people (1 Mark)

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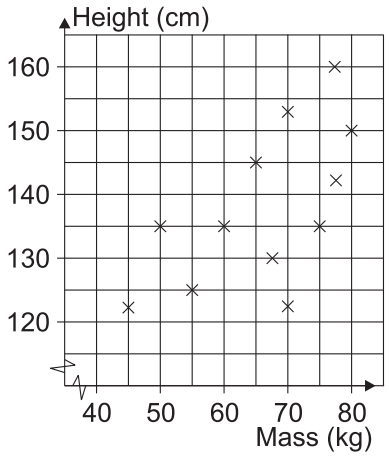
2. The scatter graph shows the heights and masses of some people.



   (a) What was the height of the tallest person? (1 Mark)

   (b) How many people weighed 65 kg or more? (1 Mark)

   (c) State whether you *agree* or *disagree* with the statement below.
   'In general as mass increases, height increases' (1 Mark)

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3. (a) Write these expressions as simply as possible.

   The first one is done for you.

   $2n + 3 + 2 \rightarrow 2n + 5$

   $4n + n \rightarrow$ ☐ (1 Mark)

   $5n + 2 - 2n + 1 \rightarrow$ ☐ (1 Mark)

   (b) Multiply $(3n + 2)$ by 2

   Write your answer without any brackets. (1 Mark)

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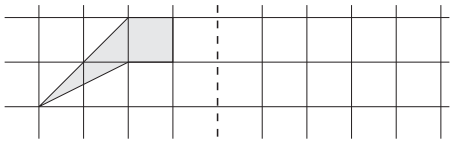
4. Work out: (a) $1.386 \div 6$ (1 Mark)

   (b) 0.4×0.07 (1 Mark)

   (c) $0.425 \div 0.5$ (2 Marks)

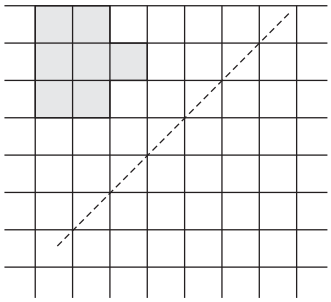
5. Copy each shape below on squared paper and then draw the image of each shape after reflection in the broken line.

(a)



(1 mark)

(b)



(2 Marks)

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6. Lee has five cards. The five cards have a mean of 6 and a range of 4. What are the missing numbers?

6	5	7		

(2 Marks)

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7. Write down each calculation and find the missing numbers.

(a)

$$\begin{array}{r} \square\ 1\ 4\ 2 \\ 1\ \square\ 2\ 6 \\ +\ 2\ 8\ \square\ 1 \\ \hline 7\ 2\ 7\ \square \\ \hline \end{array}$$

(2 marks)

(b) $\square\ \square\ \square \times 7 = 1078$

(2 marks)

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8. Here are two time intervals.

1 hour 25 minutes	1.25 hours

(a) Which is the longer time interval? (1 Mark)

(b) Work out the **difference** between the two time intervals (1 Mark)

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9. (a) Work out 50 – (80 ÷ 15) (1 Mark)

(b) Work out 8 + 16 ÷ 2 – 1 (1 Mark)

(c) Write the missing signs (+, –, ×, ÷) and brackets in the following calculation (2 Marks)

9 6 2 = 6

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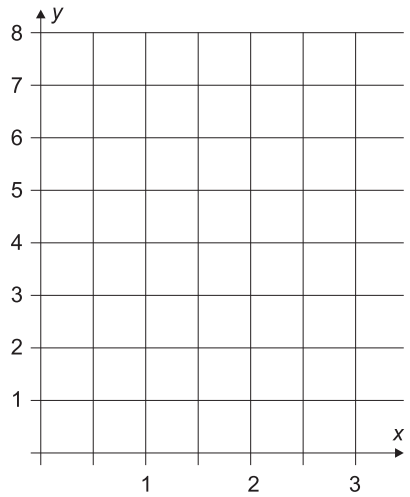
10. (a) Copy and complete the table for points on the line $y = 2x + 1$ (2 Marks)

x	0	1	2	3
y				

(b) On squared paper draw axes as show here.

(c) Draw the line $y = 2x + 1$ (1 mark)

(d) Write down the coordinates of the point where the line $y = 2x + 1$ meets the line $y = 4$. (1 mark)



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11. The total surface area A of a cylinder is given approximately by the formula

$$A = 6\,r\,h + 3r^2$$

[r is the radius of the cylinder and h is the height]

Find the value of A when $r = 4$ and $h = 7$. (2 Marks)

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12. Write down each statement and write next to it ‘true’ or ‘false’.

(a) $3x - x = 2x$

(b) $n + n^2 = n^3$

(c) $\dfrac{a + a}{a} = 2$ (2 Marks)

13. Here are the prices of five paintings in a shop:

£3, £2, £89, £4, £2

(a) Find the **mean** price of the paintings. (1 Mark)

(b) Find the median price of the paintings. (1 Mark)

(c) Which average best describes this set of paintings? (1 Mark)

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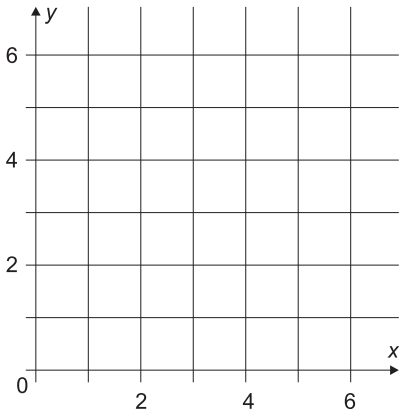
14. Copy the grid on squared paper.



(a) Draw triangle A with vertices at (1, 3), (3, 3) and (3, 6). (1 Mark)

(b) Draw the reflection of triangle *A* in the line $y = 3$ (1 Mark)

(c) Draw and label the line $y = x$ (1 Mark)

(d) Draw the reflection of triangle *A* in the line $y = x$. Label the reflection triangle *B*. (1 Mark)

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15. Solve the following questions.

(a) $3n + 4 = 6$ (1 Mark)

(b) $4n - 1 = 2n + 9$ (1 Mark)

(c) $3(2n - 1) = n + 7$ (2 Marks)

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16. The price of a coffee machine was £45.
In a sale the price was reduced by 10%.
Find the price of the coffee machine in the sale. (2 Marks)

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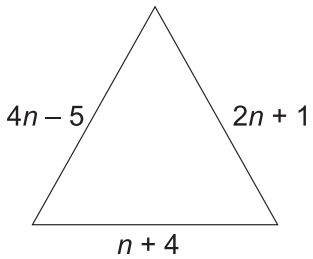
17. An **equilateral** triangle has sides of length $(4n - 5)$ cm, $(2n + 1)$ cm and $(n + 4)$ cm



(a) Form a suitable equation involving *n* and solve it to find the value of *n*. (3 Marks)

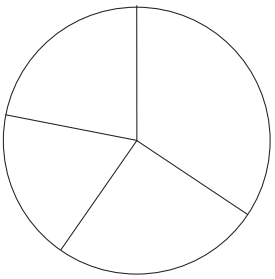
(b) Work out the length of the perimeter of the triangle. Give your answer in centimetres not involving *n*. (1 Mark)

18. In a survey people were asked

'Which programmes do you prefer on TV?'

The table shows the results. Sketch a pie chart which shows this information, showing the angle at the centre for each sector.

Programme	Frequency
Sport	11
Films	8
Drama	5
Comedy	12



(3 Marks)

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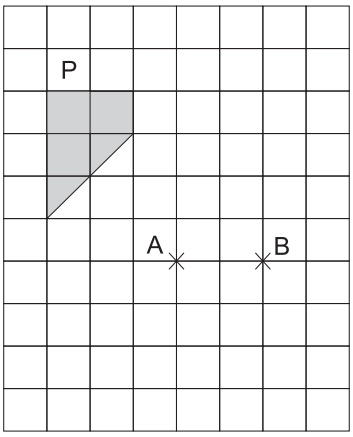
19. Copy the diagram on squared paper.



(a) Rotate shape *P* 90˚ clockwise about point *A*. Label the image *Q*. (1 Mark)

(b) Rotate shape *Q* 180˚ about point *B*. Label the image *R*. (1 Mark)

(c) Find and mark with letter *O*, the centre of the rotation which takes shape *P* onto shape *R*. (1 Mark)

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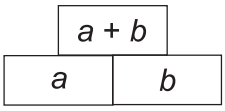
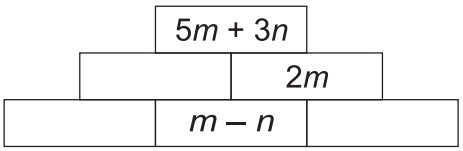
20. In the diagram below the expression in each box is found by adding the expressions in the two boxes underneath.

For example:



Copy and complete the diagram.



(3 Marks)