Test 1 **Essential Maths 8C units 1 and 2**

You need a protractor and ruler. No calculators.

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1. A sequence of numbers starts at the number 9 and the numbers **increase by 3** each time.

9	12	15	18	21

The sequence goes on forever.

(a) Will the number **42** be in the sequence?

Answer Yes or No.

Explain your answer. (1 Mark)

(b) Will the number **99** be in the sequence?

Answer Yes or No.

Explain your answer. (1 Mark)

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2. Find the missing numbers to make pairs of equivalent fractions

(a) $\frac{1}{4} = \frac{\square}{20}$ (1 Mark)

(b) $\frac{24}{42} = \frac{4}{\square}$ (1 Mark)

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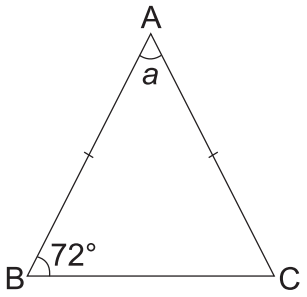
3. Look at this equation $\boxed{a + b = 9}$

Write three different solutions to the equation.

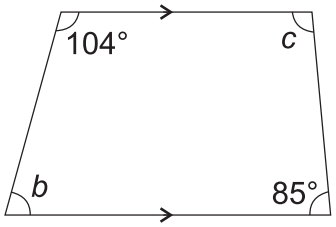
For each solution write a =...., b =….. (2 Marks)

4. Find the angles marked by letters

(a) AB = AC (1 Mark)



(b) (2 Marks)



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5. Find the missing numbers.

(a) $3^3 \div 3 = \square$ (1 Mark)

(b) $(-5) \times \square = 30$ (1 Mark)

(c) $2^3 \times 5^2 = \square$ (1 Mark)

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6. A jar weighs 190g when empty. The jar weighs 610g when it is full of sweets. How much does the jar weigh when it is half full? (2 Marks)

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7. (a) Work out $\frac{3}{5}$ of £40 (1 Mark)

(b) Work out $\frac{3}{4} - \frac{1}{3}$ (2 Marks)

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8. Look at these numbers

4	7	10	21
25		29	40

(a) Which of the numbers are prime numbers? (1 Mark)

(b) Which of the numbers are factors of 20? (1 Mark)

(c) Which of the numbers are multiples of 5? (1 Mark)

9. Write down which one below is equal to π.

The circumference of a circle divided by its radius.

The diameter of a circle divided by its circumference.

The circumference of a circle divided by its diameter. (1 Mark)

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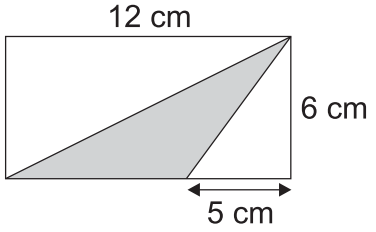
10. The diagram shows a rectangle divided into three parts.

Find the area of the shaded triangle. (2 Marks)



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11. Write an **estimate** for each calculation.

You must show your working.

(a) $\dfrac{4098 - 511}{94.99}$ (1 Mark)

(b) $19.61^2 \times 107$ (1 Mark)

(c) 9.5% of £20800 (1 Mark)

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12. The rule for the sequences below is

'*multiply by 3 and add 1*'

Copy each sequence and fill in the missing numbers.

(a) [ ] [4] [13] [ ] (1 Mark)

(b) [3] [ ] [ ] [ ] (1 Mark)

(c) [ ] [ ] [7] [22] (2 Marks)

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13. The perimeter of a **rectangle** is one metre.

Each **longer** side is 38 centimetres.

(a) Work out the length of each **shorter** side. (2 Marks)

(b) Work out the **area** of the rectangle. (1 Mark)

14. The shaded column shows the total of each row.

For example: $a + a + a = 21$

Work out the values of a, b and c

(3 Marks)

a	a	a	21
a	b	b	25
a	b	c	40

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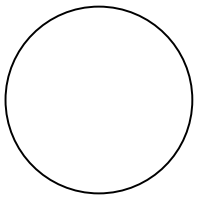
15. The circle has a diameter of 35 centimetres.

Work out the circumference of the circle.

Take the value of $\pi = \frac{22}{7}$



(2 Marks)

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16. Write down all the **two-digit** numbers whose digits add to eleven. (2 Marks)

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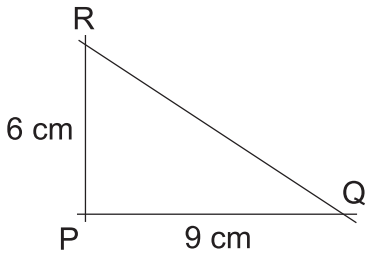
17. (a) Use a ruler and protractor to construct the right-angled triangle PQR. (1 Mark)

(b) Draw the perpendicular bisector of PQ. Mark this line X. (1 Mark)

(c) Draw the line which bisects angle Q. Mark this line Y (1 Mark)



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18. (a) Work out $\frac{3}{5} - 0.41$, giving your answer as a decimal. (2 Marks)

(b) Work out 7% of £45. (1 Mark)

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19. Write each statement with a decimal point in the correct place. Add zeros if you need to.

(a) The width of this sheet of paper. 2120 cm (1 Mark)

(b) The length of an average car. 385 m (1 Mark)

(c) The weight of a large apple. 151 kg (1 Mark)

20. Here are three expressions

A. $n + n + n + 5$	**B**. $4n \div 2$	**C**. $2(n + 1)$

(a) Evaluate expression **A** when $n = -1$. (1 Mark)

(b) Simplify expression **B**. (1 Mark)

(c) What expression when added to expression **C** gives you $3n + 5$? (2 Marks)

(d) What is the difference between an *equation* and an *expression*? (1 Mark)

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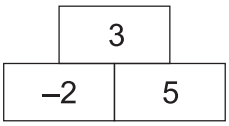
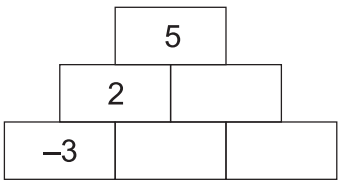
21. In this diagram the number in each box is found by adding the numbers in the two boxes underneath.

For example:



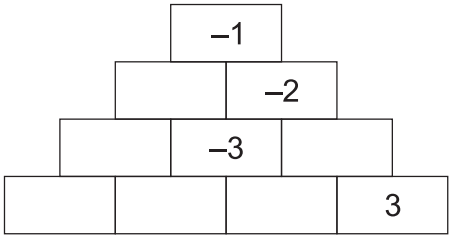
Copy each diagram and fill in the missing numbers.

(a)



(2 Marks)

(b)



(3 Marks)