Test 2 **Essential Maths Book 8H Units 3 & 4**

You need a ruler, protractor, tracing paper and compasses. No calculators

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

a)

b)

(2 marks)

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2. Lee had 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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3. Each number in this sequence is -3 times the number before.
Copy the sequence and write the missing numbers.

$\frac{1}{3}$, - 1 , 3 , ☐ , ☐ , . . .

(2 marks)

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4. 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

(4 marks)

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

$$A = 6rh + 3r^2$$

[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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6. Write down each statement and write next to it 'always true' or 'not always true'.

a) $3x - x = 2x$

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

c) $\frac{a + a}{a} = 2$ (3 marks)

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7. Draw an accurate full size triangle as shown.

Measure the angle marked x. (2 marks)

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8. Look at the number pattern.

3 x 4 = 3 + 3 x 3
4 x 5 = 4 + 4 x 4
5 x 6 = 5 + 5 x 5

a) Copy and complete 10 x 11 = ____ (1 mark)

b) Copy and complete n x ( ) = ____ (2 marks)

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9. The price of spade was £80 but it was increased by 4%.

Work out the new price. (2 marks)

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10. Solve the equations to find n in each case.

a) $6(n - 1) = 2$ (1 mark)

b) $5(n - 2) = 3(n + 2)$ (2 marks)

11. Measure the bearing on which each person is moving.

(2 marks)

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12. The table below shows the marks of 10 students in an English test and a Maths test.

English	74	60	40	80	52	66	50	84	58	70
Maths	70	62	44	76	54	56	46	70	56	64

a) Using squared paper, plot the marks on a scatter graph. (2 marks)

b) Describe the correlation, if any, between the sets of marks. (1 mark)

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13. Write the following as decimals

a) 4% (1 mark)

b) 0.042 ÷ 0.2 (2 marks)

c) $\frac{2}{11}$ (2 marks)

14. Use a straight edge and a pair of compasses to construct a rhombus so it has four equal sides of length 6cm. You must leave in your construction lines.
[Do not use a protractor.]

(3 marks)

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15. The frequency table shows how often some people had been to the cinema in the previous two months.

Cinema Trips	0	1	2	3	4	5
Frequency	49	21	17	7	4	2

Find the mean number of cinema trips. (3 marks)

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16. Given that $m = 5$ and $n = -2$, find the value of the expression
$n\,(mn + n^2)$ (2 marks)

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17. The diagram shows a solid cuboid with dimensions a, b and c.

a) Find a formula for S, the total surface area of the cuboid, in terms of a, b and c.
Write 'S = _____'
(2 marks)

b) Find the value of S when $a = 3$, $b = 4$, $c = 5$. (1 mark)

18. A house for sale is priced at £150000. This price is reduced by 10% but it is still not sold. After six months the new price is reduced by a further 20%. Work out the final price of the house. (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 the expression in each box is found by adding the expressions in the two boxes underneath. For example:

a) Copy and complete the diagram.

(4 marks)

b) Given that $14m - 7n = 7$ and that $m = 2$, work out the value of n (1 mark)