

# KS3 Practice Paper

## Mathematics

### Higher

# Non-Calculator

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1 hour (60 marks)

Name: \_\_\_\_\_

Class: \_\_\_\_\_



**Maths**

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1. Complete the following calculation using the digits 1 to 9. You may use digits more than once.  
The first one has been completed.

$$\begin{array}{|c|} \hline 2 \\ \hline \end{array} \begin{array}{|c|} \hline 3 \\ \hline \end{array} \times \begin{array}{|c|} \hline 1 \\ \hline \end{array} \begin{array}{|c|} \hline 6 \\ \hline \end{array} = \begin{array}{|c|} \hline 3 \\ \hline \end{array} \begin{array}{|c|} \hline 6 \\ \hline \end{array} \begin{array}{|c|} \hline 8 \\ \hline \end{array}$$

$$\begin{array}{|c|} \hline 3 \\ \hline \end{array} \begin{array}{|c|} \hline 4 \\ \hline \end{array} \times \begin{array}{|c|} \hline 2 \\ \hline \end{array} \begin{array}{|c|} \hline 7 \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array} \begin{array}{|c|} \hline \\ \hline \end{array}$$

(2 marks)

2. Calculate:

a.  $546 \div 7$

(1 mark)

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b.  $7.56 \div 0.6$

(2 marks)

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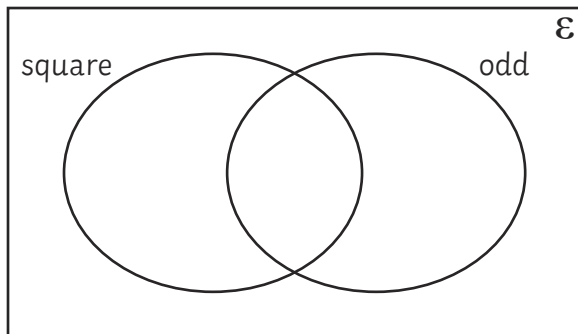


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3. Place the following numbers in the Venn diagram:

5, 8, 16, 10, 4, 25, 9

(3 marks)



4. Write the number 0.071 using standard form.

(1 mark)

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5. Calculate the following, giving your answers in standard form:

a.  $3.2 \times 10^4 + 3.6 \times 10^3$

(3 marks)

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b.  $\frac{(4 \times 10^6) \times (2 \times 10^{-1})}{(2 \times 10^{-3})}$  (2 marks)

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6. A chocolate bar is sold in two different packs. A pack of 6 costs £1.20. A pack of 10 bars costs £1.90  
Calculate the cheapest way to buy at least 28 bars. Show that this is the cheapest way. (3 marks)

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7. Estimate:  $\frac{6.54 \times 48.5}{0.69}$  (2 marks)

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8. Find the value of  $x$ :  
 $11x - 12 = 5x + 42$  (2 marks)

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9. a. Expand fully:  
 $7a(2a + 3)$  (1 mark)

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b. Expand fully and simplify:  
 $(b + 9)(b - 9)$  (2 marks)

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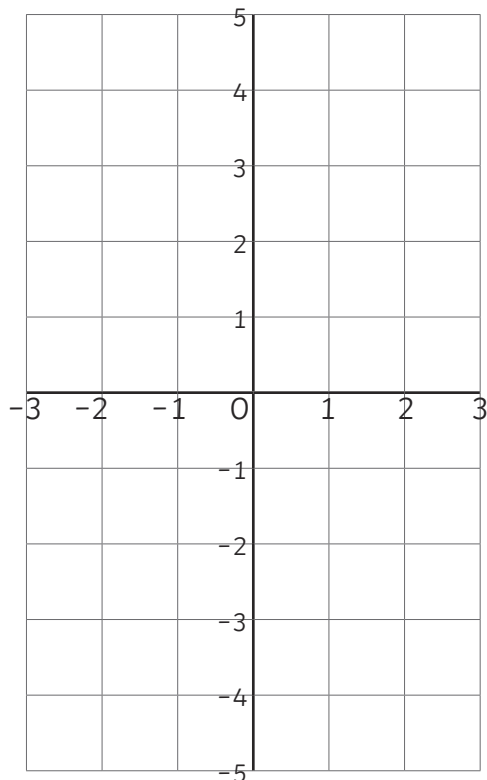
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10.



a. Complete the table of values for  $y = -2x - 1$  (2 marks)

$x$	-2	-1	0	1	2
$y = -2x - 1$					

b. Use your table to draw the graph of  $y = -2x - 1$  (2 marks)

c. The equation of a straight line is  $2y = 5x - 2$   
 Find the gradient and coordinates of the y-intercept. (2 marks)

gradient = \_\_\_\_\_ y-intercept: (\_\_\_\_, \_\_\_\_)

11. An online retailer charges a shipping fee of £3.99 if an order is under £50. If the order is £50 or more, shipping is free.

a. Alice orders 6 items costing £8.30 each. Calculate the total cost Alice must pay. (3 marks)

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b. Aaron places an order. He pays a total cost of £48.30. Aaron has the option of adding an item costing £2.50 to the order.

Will Aaron save money by buying this item? Justify your answer. (3 marks)

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12. Make  $p$  the subject:

$r = 8p^2 + 20$  (2 marks)

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13. a. Write down the first 5 terms in the sequence with the  $n^{\text{th}}$  term  $9n - 5$  (2 marks)

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

b. Find the  $n^{\text{th}}$  term for the sequence: (2 marks)

7, 10, 13, 16, 19, ...

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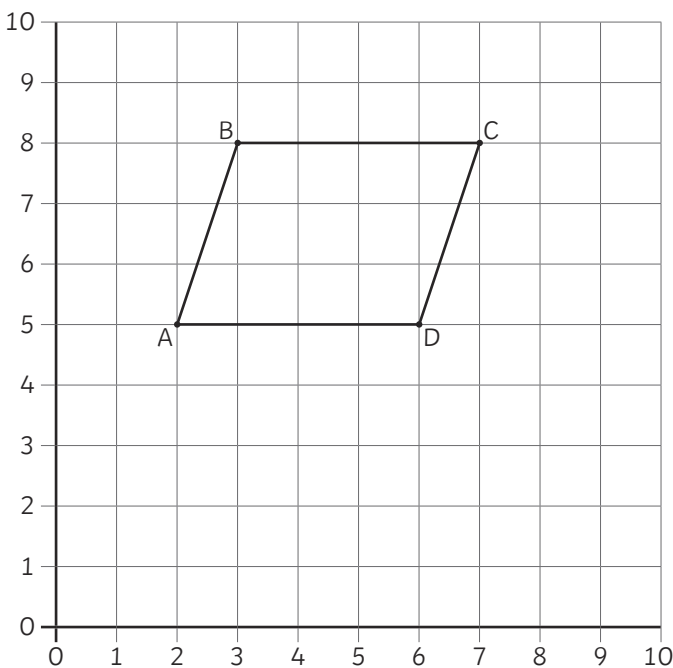
14. A cyclist travels 9.5km in 40 minutes. Find their average speed in kilometres per hour. (2 marks)

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15. ABCD is a parallelogram.



a. Translate ABCD using the vector  $\begin{pmatrix} -1 \\ -4 \end{pmatrix}$ . (2 marks)

b. Reflect ABCD in the line  $y = x$ . (1 mark)

16. Jared is carrying out some probability experiments. Jared has 7 blue counters and 3 red counters in a jar. He chooses a counter at random from the jar then replaces it.

a. Calculate the probability that the counter is blue. (1 mark)

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Jared also chooses a letter at random from the word 'PROBABILITY'. He also flips a fair coin.

b. Calculate the probability that he chooses the letter 'T'. (1 mark)

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c. Calculate the probability that he does not choose the letter 'B'. (1 mark)

d. Calculate the probability that Jared chooses a vowel from 'PROBABILITY' and obtains a head when he flips the coin. (2 marks)

e. Does Jared have a greater chance of choosing a consonant from 'PROBABILITY' or a blue counter from the jar? You must show your working out. (2 marks)

17. Convert  $\frac{4}{7}$  into a percentage, giving your answer correct to 1 decimal place. (2 marks)

18. A rectangular swimming pool measures 35m by 10m. It is 3.5m deep.

a. Calculate the total volume of water in the pool when it is full. (2 marks)

b. A different rectangular swimming pool holds  $600\text{m}^3$ . It is 25m long and 8m wide. Find its depth. (2 marks)

