

# Mathematics Equivalence Test

## Sample Papers

There are two papers, Non-calculator and Calculator, each worth 50 marks. These papers reflect the current National Curriculum and GCSE for England. You are assessed across the two papers.

## Paper 2

You **MAY** use a calculator.

Time: 1 hour

Answer all questions in the answer spaces.

Show your working where relevant.

The total number of marks for this paper is 50.

You may use pen, pencil and appropriate mathematical equipment (ruler, angle measurer (protractor), compasses and scientific calculator).

Diagrams are **not** to scale unless the question specifies the scale.

1 Tick all the true statements.

$$\frac{5}{14} > \frac{5}{13}$$

$$\frac{5}{8} = 0.53$$

$$\frac{3}{7} < \frac{10}{21}$$

$$\frac{7}{10} = 0.7$$

$$\frac{9}{4} = 2.25$$

$$3\% = 0.03$$

[3]

2

1	2	3	4	5	6	7	8	9	10
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(a) Find a pair of numbers so that

- the product is  $2^3 \times 3$  and
- the LCM is 12.

..... [3]

(b) From these cards, select four numbers with

- a median of 4,
- a mean of 5 and
- a range of 8.

..... [3]

3 Write the name of each shape.

I am a quadrilateral.  
I have no line (reflection) symmetry.  
I have rotation symmetry order 2.  
I have two pairs of equal angles.

My name is .....

I am a regular polygon.  
My external angle is  $45^\circ$ .

My name is

.....

[2]

4 Use this list to complete the statements.

$\frac{4}{3}$  4 30%  $\frac{1}{4}$   $0.4$  3  $\frac{3}{4}$  4%  $\frac{1}{3}$  40

The reciprocal of 4 is .....

A score of 18 out of 60 as a proportion is .....

To work out 25% the multiplier is .....

The scale factor from 90 g to 30 g is .....

[4]

5 Write the name of each shape.

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I have two pairs of equal angles.

My name is .....

I am a regular polygon.  
My external angle is  $45^\circ$ .

My name is

.....

[2]

6 A television is for sale at £790 plus VAT at 20%.  
In a sale the total price is then reduced by 25%.

Work out the sale price.

£ ..... [3]

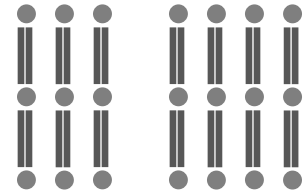
7 (a) Complete this sentence.

The gradient of  $y = 3x + 11$  is ..... and the  $y$ -intercept is ..... [2]

(b) Rearrange  $y = 3x + 11$  to make  $x$  the subject.

$x =$  ..... [3]

8 Shaun is making patterns with matchsticks and counters. The diagram shows Pattern 3 and Pattern 4.



(a) Write down the ratio sticks : counters for the pattern. Give your answer in its simplest form.

..... [2]

(b) Complete these statements.

Pattern 10 has ..... sticks. [1]

Pattern  $n$  has ..... counters. [2]

9 Amin is at a festival. He can choose one band to see at 7:30 pm, one at 9 pm and one at 10:30 pm. For example, he could see Blond Beards, then Overalls, then Kindred.

	7:30pm	9pm	10:30pm
Stage 1	<b>Blond Beards</b>	<b>The Nose Flutes</b>	<b>Kindred</b>
Stage 2	<b>Van Boys</b>	<b>Overalls</b>	<b>Blond Beards</b>

(a) How many different combinations are there?

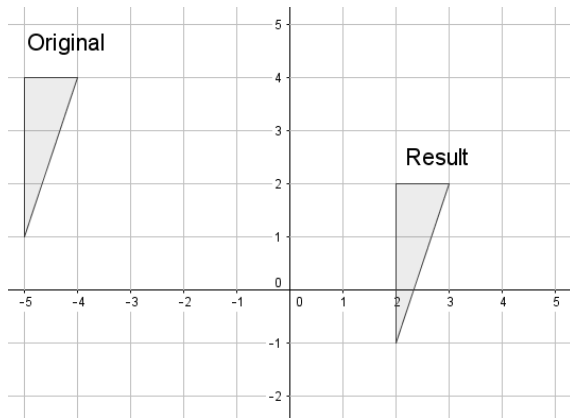
..... [2]

(b) Amin says "If I choose a stage at random at each time, the probability I see Blond Beards is one third". Is Amin correct? Show how you decide.

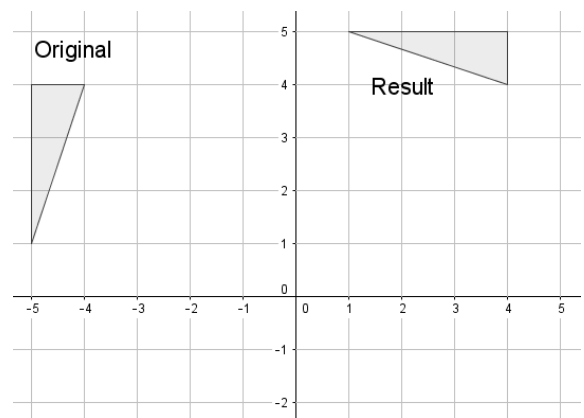
[3]

**10** Describe each transformation in full.

**(i)**



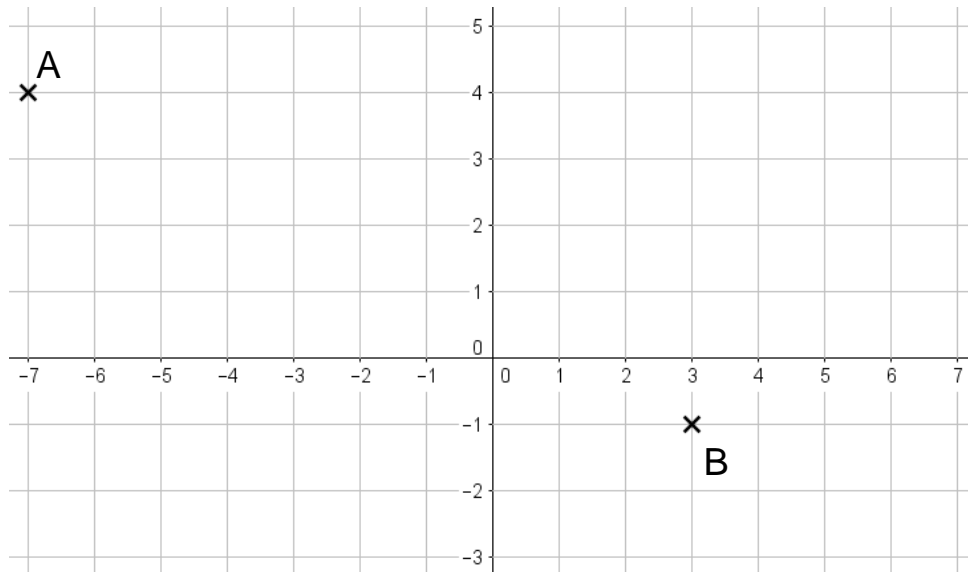
**(ii)**



**(i)** ..... [1]

**(ii)** .....  
 ..... [2]

**(b)** The point C divides the line AB in the ratio 1 : 4.



Write down the coordinates of the point C.  
 ..... [2]

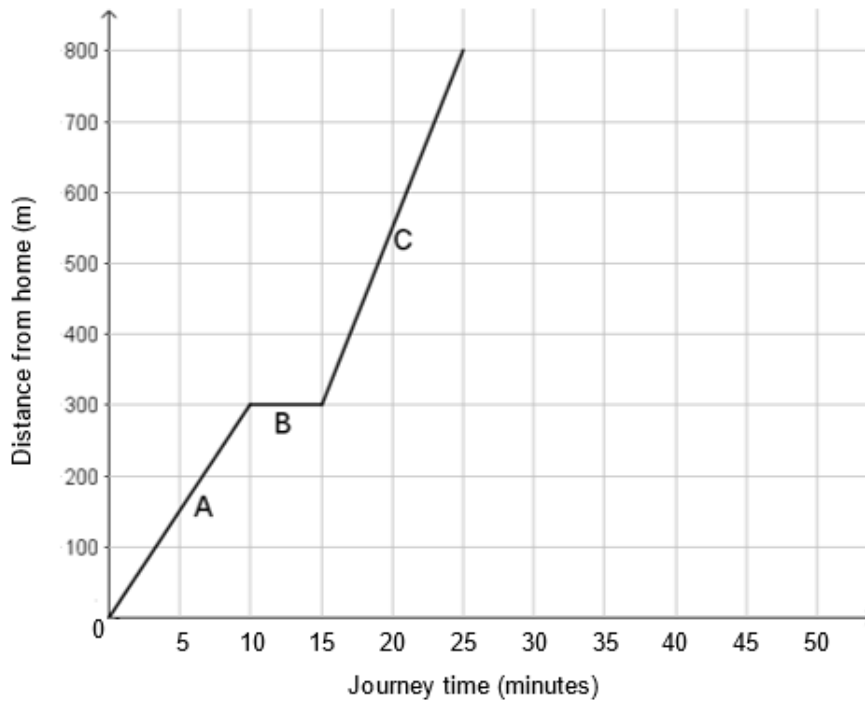
**11** Which of the following is equal to  $\frac{4 \cdot 5 \times 10^2}{(8^2 + \sqrt{36}) + \sqrt[3]{125}}$  ?

Circle your answer.

- 1.2      4.2      6      6.2      8.5      11.4

[2]

- 12** Sam walks from home to the shop and stops at the shop to buy a drink. She then walks to the park. This graph shows her journey.



- (a) Complete this statement.

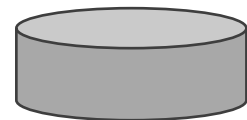
Her ..... metres walk from the shop to the park took ..... minutes. [2]

- (b) It takes Sam 20 minutes to walk directly home from the park, past the shop.

Work out her average speed in metres per minute for the walk home.

..... m per min [2]

- 13** Freya has a cylindrical paddling pool of diameter 160 cm. Her hose pressure is 10 000 cm<sup>3</sup> of water per minute. She uses the hose to add water to the pool for 40 minutes.



Work out the depth of water in the pool after 40 minutes. Give your answer to the nearest cm.

..... cm [4]

**END OF PAPER 2 - Now email [Christine.watson@worc.ac.uk](mailto:Christine.watson@worc.ac.uk) for the answers!**