

# 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 1

You may **NOT** 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).

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

1 Here are some numbers.

19.2    12.9    -8.8    -1.7    4.6    -8.7

Write the numbers in pairs so that the sum of the numbers in each pair is the same.

..... and ....., ..... and ....., ..... and ..... [1]

2 (a) Simplify  $3ab + 8b - 2a + 5b - ab + 7a$ .

..... [1]

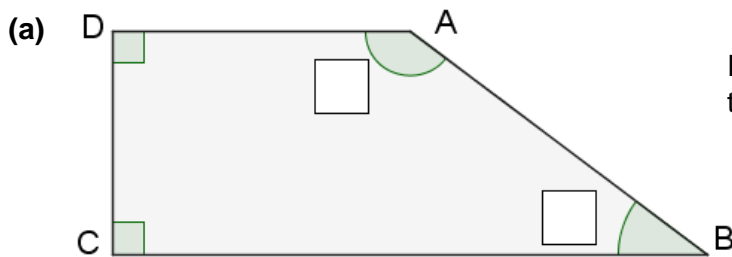
(b) Expand and simplify  $(p - 7t)(p + 2t)$ .

..... [2]

(c) Solve  $5x - 3 = 2x + 15$ .

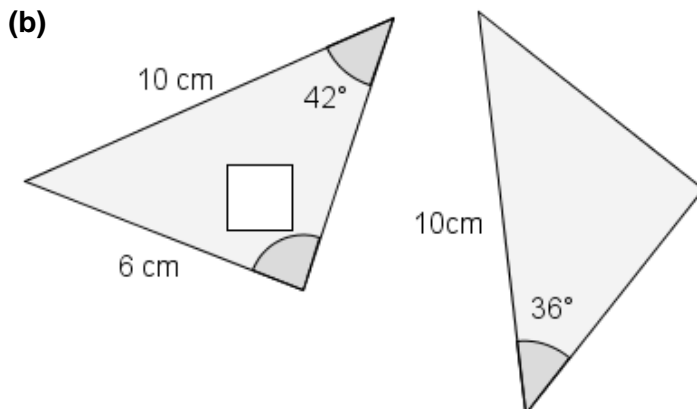
..... [3]

3 Complete the boxes to show the sizes of the missing angles.



In this shape, Angle A is three times the size of Angle B.

[3]



In this diagram, the two triangles are congruent.

[2]

4 Write numbers in the boxes below to make each statement true.

(a)  $24 \times 25 = \square \times 20 = 6 \times \square$  [1]

(b)  $81 = \square^4$  [1]

(c) 10 % of  $\square = \text{£}4.85$  [1]

(d) three fifths of  $\square = 18$  [1]

5 (a) Complete these conversions.

$85 \text{ cm} = \square \text{ m}$        $\square \text{ kg} = 4500 \text{ g}$  [2]

(b) A square with side length 10 cm is enlarged by scale factor 4.

Work out the area of the enlarged square.  
State the units of your answer.

..... [3]

6 A school organises a trip to the cinema for 17 students, costing £372.25 in total.

The transport costs £62.

The two teachers each get £10 cinema tickets.

Work out the cost of one student cinema ticket.

£ ..... [3]

7 Dave wants to find out whether toast always lands butter side down. He drops a buttered piece of toast 50 times. Complete this table to show all his results.

	Butter side up	Butter side down
Frequency		
Probability	$\frac{11}{25}$	

[3]

8 (a) The term-to-term rule for generating a sequence is **double then add 1**. The second term is 7. Complete these statements for this sequence.

First term = ..... Fifth term = ..... [2]

(b) Here are the first nine terms in a different sequence:

2, 2, 4, 6, 10, 16, 26, 42, 68, ...

(i) Write down the calculation to work out the tenth term.

..... [1]

(ii) Will this sequence ever contain an odd number? Ring your answer and explain how you decide.

Yes / No because .....

..... [1]

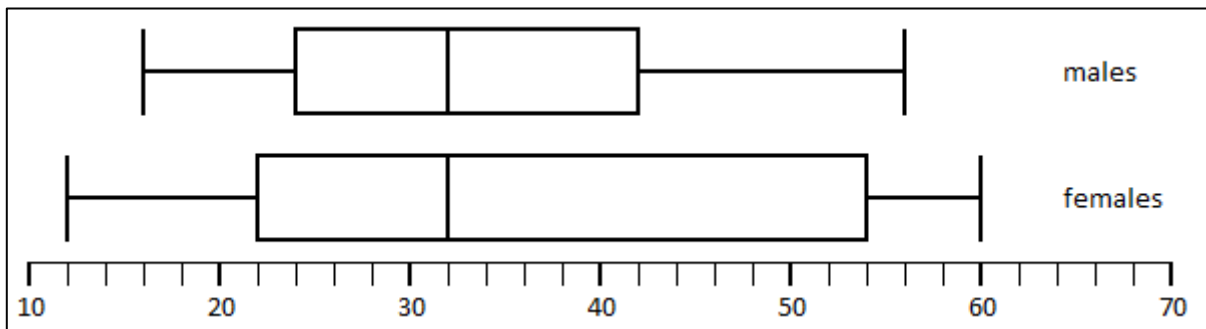
9 In this rectangle, the length and the width are in the ratio 5 : 2. The area of the rectangle is 90 cm<sup>2</sup>.



Work out the length and width of the rectangle.

length = ..... cm width = ..... cm [4]

- 10** 40 males and 35 females took an online test.  
This box and whisker diagram summarises the results of their scores.



- (a)** Tick the sentences that are true for these data.

Males scored a higher maximum score than females.

Females had a higher median than males.

The lower quartile for males is 22.

Scores for females are more consistent than for males.

[2]

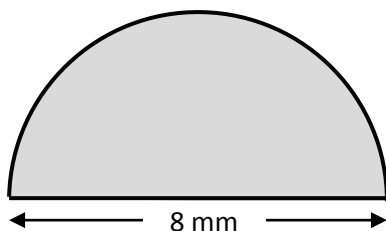
- (b)** Complete these sentences.

The interquartile range for females is .....

The median score for males is .....

[2]

- 11** Find the perimeter of this semicircle, giving your answer in terms of  $\pi$ .



..... cm [3]

12 Work out

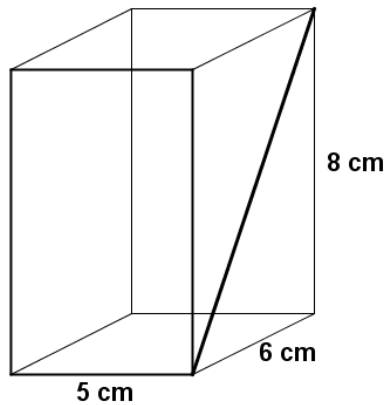
(a)  $4\frac{1}{2} \div \frac{3}{8}$

..... [2]

(b) 300 as a product of prime factors.

..... [2]

13 The diagram shows a cuboid with dimensions 5 cm, 6 cm and 8 cm.



(a) Work out the volume of the cuboid.

..... cm<sup>3</sup> [2]

(b) A diagonal is drawn across one face as shown.

Work out the length of the diagonal.

..... cm [2]

**END OF PAPER 1 – Now email [Christine.watson@worc.ac.uk](mailto:Christine.watson@worc.ac.uk) for the answers!**