



Aberdare Community School
Mathematics Department

WJEC GCSE

Higher – Non Calculator
Shape

Properties of shapes

Name:

Set:

Date:

Teacher:

6. (a) Complete the following table by placing a tick (✓) in any box where the given statement is true.

Statement	Rectangle	Parallelogram	Rhombus
The diagonals are not equal in length.			
All angles are equal.			
The sum of the interior angles is 360° .			

[2]

(b) Write down

- (i) the name of the three-dimensional solid which has four triangular faces and one square face,

.....

- (ii) the name of the three-dimensional solid which has two triangular faces and three rectangular faces.

.....

[2]

5.

(b) Explain why three lines of lengths 3 cm, 5 cm and 10 cm cannot be used to form a triangle.

.....

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.....

.....

[1]

5. (a) Complete the following table by placing a tick (✓) in any box where the given statement is true.

Statement	Square	Parallelogram	Trapezium
The diagonals are equal in length			
Opposite angles are equal			
Only one pair of opposite sides are parallel			
The diagonals are lines of symmetry			

[3]

6. (a) Complete the following table by placing a tick (✓) in any box where the given statement is true.

Statement	Kite	Rhombus	Parallelogram
The diagonals are not equal in length			
Only one line of symmetry			
The diagonals bisect each other			

[2]

- (b) Write down

- (i) the name of the three-dimensional solid that has only four faces, all of which are triangular,

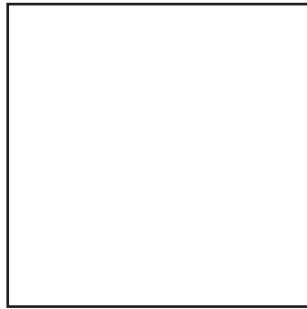
..... [1]

- (ii) the name of the three-dimensional solid that has only five faces, two of which are triangular and three of which are rectangular.

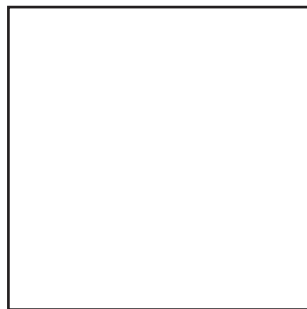
..... [1]

6. (a) A **square** piece of paper is to be folded exactly in half, then folded exactly in half again. The original square piece of paper can be folded in this way to make a square or an isosceles right-angled triangle. In each case, draw lines on the original square paper shown below, to show where the paper needs to be folded.

- (i) To make a square.

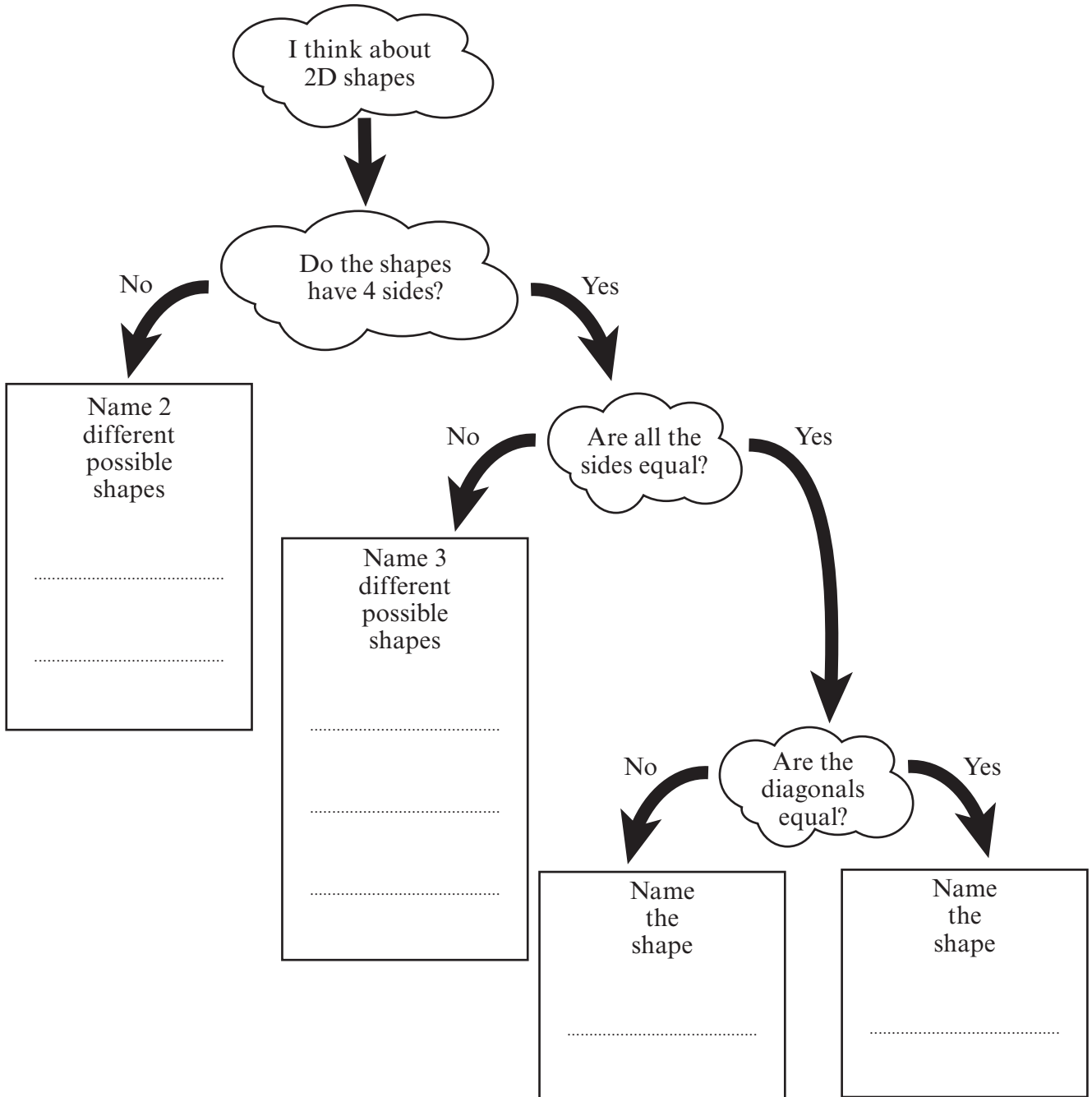


- (ii) To make an isosceles right-angled triangle.



[4]

1. Fill in the answers in the shape sorter below.



4363 02/0003

[5]

3. Two sets of rods of length 1, 2, 4, 8, 16 and 32 cm are available to make shapes.

1 cm	2 cm	4 cm	8 cm	16 cm	32 cm
1 cm	2 cm	4 cm	8 cm	16 cm	32 cm

Rods are joined end to end, with all parts of the rods forming part of the shape.

(a) Show how you could use some of these rods to make an equilateral triangle with sides of length 10 cm.

.....

.....

.....

[1]

(b) What would be the lengths of the sides of the **largest** possible equilateral triangle that could be made using these rods? You must state which rods are used and how the equilateral triangle is to be made.

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[2]

(c) Explain why it is not possible to create a rhombus using some of these rods.

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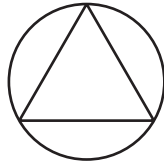
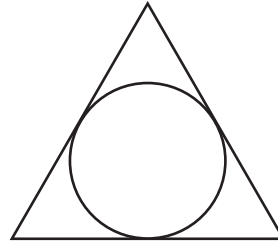
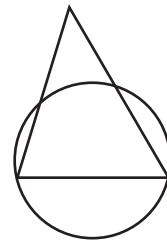
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[2]

3.

*A**B**C**D*

Match each statement in the table with one of the diagrams shown above.

Statement	Diagram
All three sides of the triangle are tangents to the circle	
All the vertices of the triangle touch the circle	
Only one side of the triangle is a chord of the circle	

[3]

4.



4.

- (b) Draw an example of a trapezium with equal diagonals.
You must make it clear why the diagonals are equal.



[3]

(b) Complete the table below.

Name of quadrilateral	Number of lines of symmetry	Are both diagonals perpendicular to each other? Yes or No	Are both pairs of opposite angles always equal? Yes or No
Kite
Isosceles trapezium
.....	2	Yes	Yes

[3]

4.

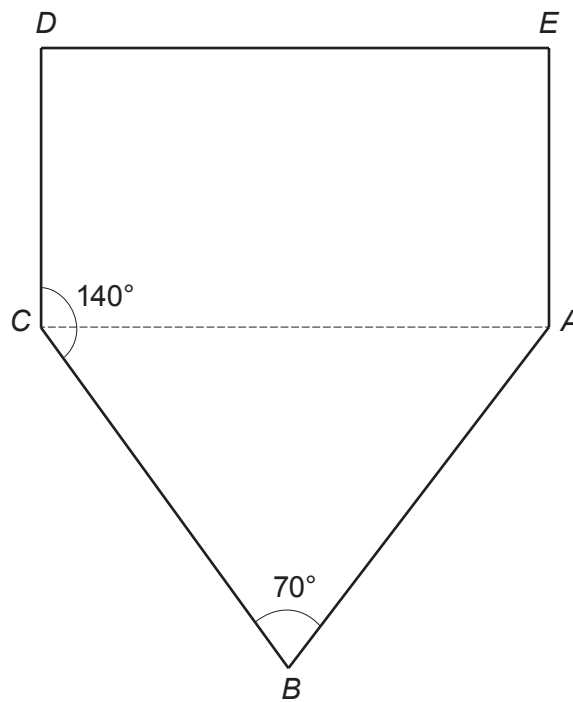


Diagram not drawn to scale

In this diagram, $ACDE$ is a rectangle, $\widehat{ABC} = 70^\circ$ and $\widehat{BCD} = 140^\circ$.
Using the given information, explain why the length of AB is **not** equal to the length of BC .
You must show all your working.

[4]

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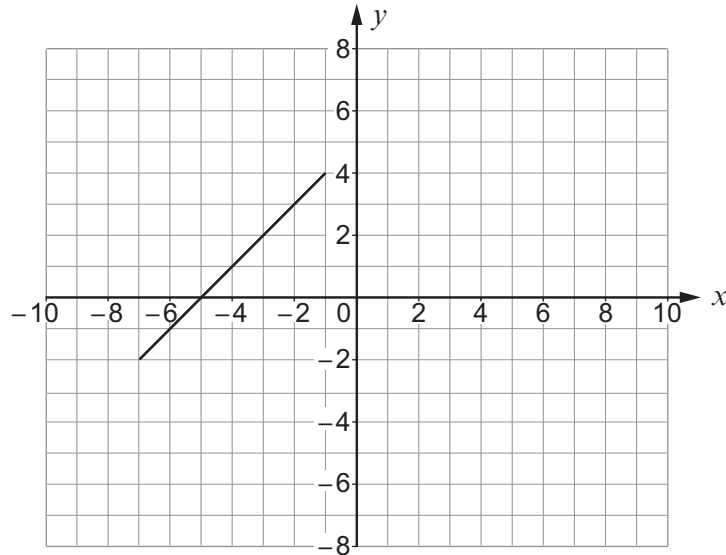
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3. Lorna has begun to draw two quadrilaterals, one on each of two grids. She had drawn a **diagonal** of a quadrilateral on each grid.

She then gives clues to help you draw the quadrilaterals.

By completing the drawings, write down the coordinates of the vertices of each of the quadrilaterals.

(a)



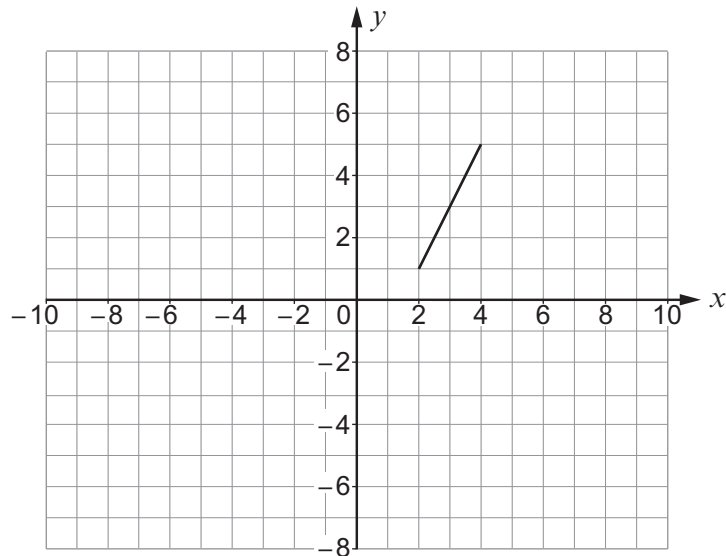
'My shape is a kite. One of the diagonals is shown.
One of the vertices of the kite is at $(-5, 4)$.'

The vertices of the kite are at

$(-5, 4)$, (..... ,), (..... ,) and (..... ,)

[2]

(b)



'My shape is a rhombus. The shorter diagonal is shown.
The other diagonal is twice as long as the one I have already drawn.'

The vertices of the rhombus are at

(..... ,), (..... ,), (..... ,) and (..... ,)

[2]



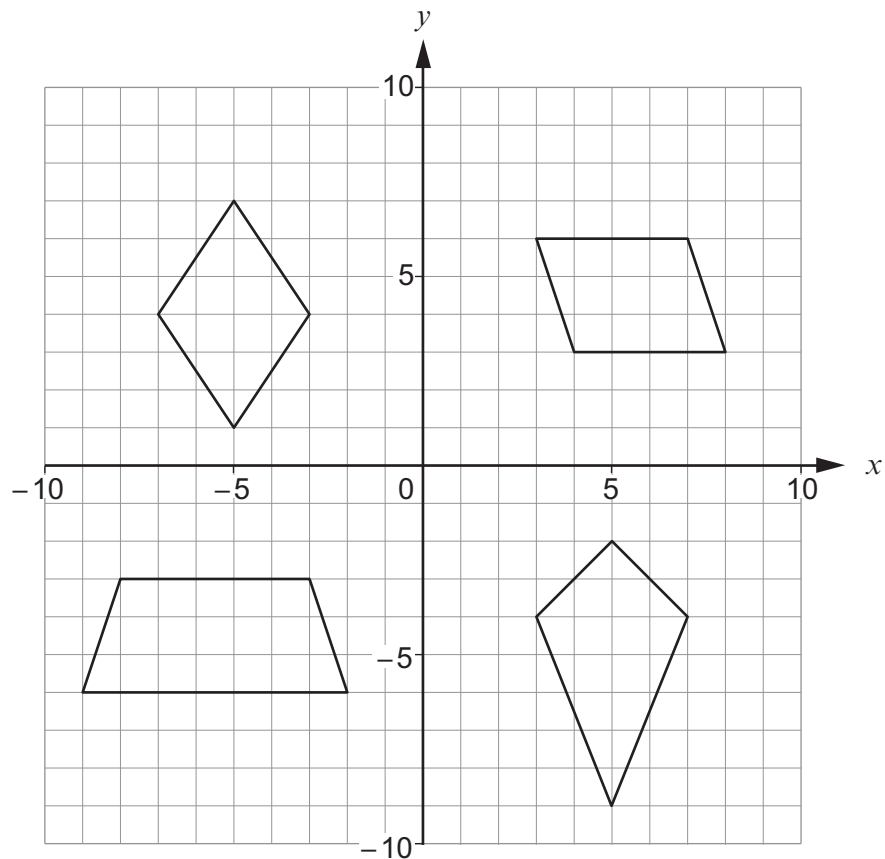
4. (a) Write down the name of a quadrilateral with diagonals that are equal in length. [1]

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- (b) Write down the name of a quadrilateral with rotational symmetry of order 2. [1]

.....

- (c) The diagram below shows four quadrilaterals drawn on a grid.



- (i) Write down the coordinates of the centre of rotational symmetry of the rhombus. [1]

(..... ,)

- (ii) Write down the coordinates of the intersection of the diagonals of the kite. [1]

(..... ,)