8.5 Geometry: Symmetry, Coordinates and Translation: Test Pack

Calculators not allowed · about 50 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 How many lines of symmetry does an equilateral triangle have? Write the number.

(1)

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2 Angles on a straight line add up to 180 degrees. Two angles on a straight line are 119 degrees and 11 degrees. A third angle fills the rest of the line.

What is the third angle?

Answer: ___ degrees

(2)

---

3 A point is at (0, 0). It is reflected in the x-axis then translated 1 right and 2 up. What are the final coordinates?

(2)

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4 Points C and D are at (0, 8) and (5, 8). Each grid square is 1 unit wide.

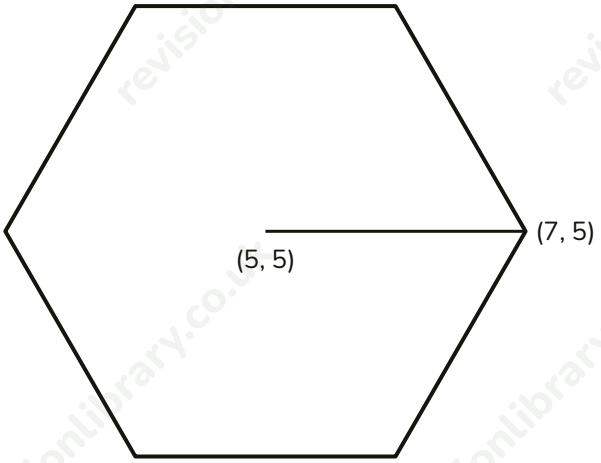
How far is C from D?

Answer: ___ units

(1)

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5 A regular hexagon has a centre at (5, 5). One vertex is at (7, 5). What are the coordinates of the vertex directly opposite that vertex? (Assume the hexagon is regular and centred on the grid lines.)



(2)

---

6 True or false: A circle has an infinite number of lines of symmetry. Tick the correct answer.

- ☐ True
- ☐ False

---

7 A point B is at (8, 2). It is translated to (5, 5). Describe this translation as 'a right/left x and up/down y' using numbers, for example '3 left and 2 up'.

.....

.....

(2)

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8 A shape has vertices at (1, 0), (3, 0), (3, 2) and (1, 2). A translation slide moves the shape 2 left and 4 up. After the translation, what is the area of the shape? Explain your steps and give the final area in square units.

(3)

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9 A shape has vertices A(0, 1), B(0, 3), C(3, 0), D(3, 3). It is translated 3 units right and 3 units up.

Write the coordinates of the translated vertices in the same order.

Answer: ___

(2)

---

10 A shape has vertices A(3, 1), B(1, 1), C(5, 3). It is translated 3 units right and 4 units up.

Write the coordinates of the translated vertices in the same order.

Answer: ___

(2)

---

11 Plot the point (3, 4) on a coordinate grid. Then plot the point (3, 1). What is the vertical distance between these two points? Give your answer as a number of units.

(2)

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12 Angles on a straight line add up to 180 degrees. One angle is 99 degrees.

What is the other angle?

Answer: ___ degrees

(1)

---

13 A square has one line of symmetry drawn through opposite corners. Is this line a line of symmetry for the square? Tick Yes or No and explain your answer in one sentence.

- ☐ Yes
- ☐ No

---

14 Four angles meet at a point and add up to 360 degrees. Three of the angles are 104, 57 and 42 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

---

15 A shape has vertices A(2, 1), B(1, 4), C(6, 3), D(0, 6). It is translated 3 units right and 1 unit down.

Write the coordinates of the translated vertices in the same order.

Answer: ___

(2)

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16 Here is a kite shape. It looks the same on the left and right when folded down the middle. Explain why this shows the kite has a line of symmetry. Full sentence please.

(1)

17 A shape has vertices A(0, 4), B(5, 3), C(0, 6). It is translated 3 units down.

Write the coordinates of the translated vertices in the same order.

Answer: ___

(2)

18 Three corners of a rectangle are (6, 1), (9, 1) and (9, 6). The sides are parallel to the axes.

What are the coordinates of the fourth corner?

Answer: (___, ___)

(2)

19 Complete the table. A point is moved 4 left and 1 up from each start position. Write the new coordinates.
Start (7, 3) ->
Start (4, 6) ->

(2)

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20 A right angle is split into two angles. One of them is 71 degrees.

What is the other?

Answer: ___ degrees

(1)

---

21 A triangle has vertices at (1, 1), (1, 4) and (4, 1). Translate the triangle 2 right and 3 up. Give the coordinates of the three new vertices.

(2)

---

22 A shape has vertices A(1, 0), B(3, 0), C(4, 4), D(5, 5). It is translated 3 units right and 4 units up.

Write the coordinates of the translated vertices in the same order.

Answer: ___

(2)

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Mark scheme · 8.5 Geometry: Symmetry, Coordinates and Translation: Test Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

3 cao	B1

Answer: **3**

Question 2

130 seen	M1
50 degrees cao	A1

Answer: **50 degrees**

Question 3

Reflection in x-axis changes (0,0) to (0,0) or explanation that reflection leaves origin unchanged	M1
(1, 2) cao after translation	B1

Answer: **(1, 2)**

Question 4

5 units cao	B1

Answer: **5 units**

Question 5

Recognise opposite vertex is same distance on other side of centre: 2 units left	M1
(3, 5) cao	B1

Answer: **(3, 5)**

Question 6

True cao	B1

Answer: **True**

Question 7

Correct subtraction shown: 8 to 5 is 3 left, 2 to 5 is 3 up	M1
3 left and 3 up cao	B1

Answer: **3 left and 3 up**

Question 8

Recognise translation does not change area or find base and height before or after translation	M1
Calculate base = 3 - 1 = 2 and height = 2 - 0 = 2, so area = 2 x 2	M1
4 cm^2 or 4 square units cao	B1

Answer: **4**

Question 9

two vertices correct	M1
(3, 4), (3, 6), (6, 3), (6, 6) cao	A1

Answer: **(3, 4), (3, 6), (6, 3), (6, 6)**

Question 10

two vertices correct	M1
(6, 5), (4, 5), (8, 7) cao	A1

Answer: **(6, 5), (4, 5), (8, 7)**

Question 11

Difference in y-coordinates seen, e.g. 4 - 1 = 3	M1
3 cao	B1

Answer: **3**

Question 12

81 degrees cao	B1

Answer: **81 degrees**

Question 13

1 mark for ticking Yes	B1
1 mark for explanation, e.g. 'Because the diagonal splits the square into two identical triangles' oe	B1

Answer: **Yes**

Question 14

203 seen	M1
157 degrees cao	A1

Answer: **157 degrees**

Question 15

two vertices correct	M1
(5, 0), (4, 3), (9, 2), (3, 5) cao	A1

Answer: **(5, 0), (4, 3), (9, 2), (3, 5)**

Question 16

1 mark for a correct explanation, e.g. 'If folded along the middle the two halves match exactly so it has a line of symmetry' oe	B1

Answer: **If folded along the middle the two halves match exactly so it has a line of symmetry**

Question 17

two vertices correct	M1
(0, 1), (5, 0), (0, 3) cao	A1

Answer: **(0, 1), (5, 0), (0, 3)**

Question 18

one coordinate correct	M1
(6, 6) cao	A1

Answer: **(6, 6)**

Question 19

(3, 4) cao for first	B1
(0, 7) cao for second	B1

Answer: **(3, 4); (0, 7)**

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Question 20

19 degrees cao	**B1**

Answer: **19 degrees**

Question 21

Correct translation applied to each coordinate	**M1**
(3, 4), (3, 7), (6, 4) cao	**B1**

Answer: **(3, 4), (3, 7), (6, 4)**

Question 22

two vertices correct	**M1**
(4, 4), (6, 4), (7, 8), (8, 9) cao	**A1**

Answer: **(4, 4), (6, 4), (7, 8), (8, 9)**

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