8.9 Geometry: Coordinates and Transformations: 2-hour Pack

Total Marks

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Point A is at (2, -6). It is translated by the vector (-4, 3), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

---

2 Point P is at (2, -5). It moves 5 units up.

What are the coordinates of the new point?

Answer: (___, ___)

(1)

---

3 Point B is at (-5, -6). It is reflected in the x-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(1)

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4 Triangle T has vertices at (1, 1), (4, 1) and (1, 4). Translate triangle T by the vector (2, -3). Write the coordinates of the image triangle T'.

(2)

---

5 Two angles in a triangle are 77 degrees and 27 degrees.

What is the third angle?

Answer: ___ degrees

(2)

---

6 Point A is at (-5, -4). It is translated by the vector (4, 3), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

---

7 Three angles in a quadrilateral are 59, 61 and 66 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

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

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

Answer: ___

(2)

---

9 A line joins (0, 0) and (8, 0).

What are the coordinates of the midpoint of the line?

Answer: (___, ___)

(2)

---

10 A shape has vertices A(5, 6), B(5, 4), C(4, 2). It is translated 2 units right.

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

Answer: ___

(2)

---

11 Point B is at (-2, -5). It is reflected in the x-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

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12 Point A is at (3, 3). It is translated by the vector (0, 1), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(1)

---

13 Point P is at (5, 9). It moves 2 units left and 3 units down.

What are the coordinates of the new point?

Answer: (___, ___)

(2)

---

14 Three angles in a quadrilateral are 89, 126 and 113 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

---

15 Point P is at (4, 0). It moves 1 unit left and 4 units up.

What are the coordinates of the new point?

Answer: (___, ___)

(1)

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16 An isosceles triangle has two equal angles of 22 degrees each.

What is the third angle?

Answer: ___ degrees

(2)

---

17 Three angles in a quadrilateral are 124, 57 and 77 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

---

18 Three angles in a quadrilateral are 66, 65 and 103 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

---

19 Point B is at (5, 1). It is reflected in the y-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

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

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

Answer: ___

(2)

---

21 Three angles in a quadrilateral are 116, 104 and 110 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

---

22 Three angles in a quadrilateral are 67, 127 and 80 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

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23 Three corners of a rectangle are (-3, -4), (1, -4) and (1, -2). The sides are parallel to the axes.

What are the coordinates of the fourth corner?

Answer: (___, ___)

(2)

---

24 Two angles in a triangle are 95 degrees and 46 degrees.

What is the third angle?

Answer: ___ degrees

(2)

---

25 Three angles in a quadrilateral are 105, 78 and 70 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

---

26 Three angles in a quadrilateral are 106, 126 and 94 degrees.

What is the fourth angle?

Answer: ___ degrees

(2)

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27 Two angles in a triangle are 56 degrees and 90 degrees.

What is the third angle?

Answer: ___ degrees

(2)

---

28 Point A is at (-2, -1). It is translated by the vector (1, 2), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

---

29 Reflect point G at (-2, 5) in the line y = x. What are the coordinates of G' after the reflection?

(2)

---

30 Point P is at (0, 3). It moves 2 units up.

What are the coordinates of the new point?

Answer: (___, ___)

(1)

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31 A shape has vertices A(1, 2), B(5, 1), C(1, 0). It is translated 2 units right and 2 units up.

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

Answer: ___

(2)

---

32 Two angles in a triangle are 39 degrees and 79 degrees.

What is the third angle?

Answer: ___ degrees

(2)

---

33 Point B is at (-2, 6). It is reflected in the x-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

---

34 Point B is at (-4, 2). It is reflected in the y-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

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35 An isosceles triangle has two equal angles of 59 degrees each.

What is the third angle?

Answer: ___ degrees

(2)

---

36 Three corners of a rectangle are (-6, -2), (-3, -2) and (-3, 2). The sides are parallel to the axes.

What are the coordinates of the fourth corner?

Answer: (___, ___)

(1)

---

37 Points C and D are at (-1, -4) and (-1, -1). Each grid square is 1 unit wide.

How far is C from D?

Answer: ___ units

(1)

---

38 A shape has vertices A(4, 6), B(3, 3), C(3, 5). It is translated 1 unit left.

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

Answer: ___

(2)

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39 Point A is at (6, 2). It is translated by the vector (0, 4), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

---

40 An isosceles triangle has two equal angles of 70 degrees each.

What is the third angle?

Answer: ___ degrees

(2)

---

41 Point A is at (6, -2). It is translated by the vector (0, -4), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

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42 An isosceles triangle has two equal angles of 44 degrees each.

What is the third angle?

Answer: ___ degrees

(2)

---

43 Point A is at (3, 8). It is translated by the vector (-1, -5), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

---

44 Point A is at (6, 5). It is translated by the vector (-2, -1), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(1)

---

45 Point A is at (-1, -2). It is translated by the vector (-5, -2), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

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46 Point A is at (-6, -1). It is translated by the vector (5, 4), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(1)

---

47 Point P is at (6, 3). It moves 3 units right and 2 units down.

What are the coordinates of the new point?

Answer: (___, ___)

(2)

---

48 Point A is at (-6, 2). It is translated by the vector (0, -4), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(2)

---

49 Point B is at (6, -6). It is reflected in the y-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

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50 Point B is at (4, 6). It is reflected in the y-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(1)

---

51 Point B is at (2, -5). It is reflected in the y-axis.

What are the coordinates of the image of B?

Answer: (___, ___)

(2)

---

52 Point A is at (5, 8). It is translated by the vector (-1, -1), where the first number is the move to the right and the second is the move up.

What are the coordinates of the image of A?

Answer: (___, ___)

(1)

---

53 A shape has vertices A(4, 1), B(4, 5), C(1, 6), D(0, 1). It is translated 2 units right and 2 units up.

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

Answer: ___

(2)

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Mark scheme · 8.9 Geometry: Coordinates and Transformations: 2-hour Pack

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

Question 1

adds the vector	M1
(-2, -3) cao	A1

Answer: **(-2, -3)**

Question 2

(2, 0) cao	B1

Answer: **(2, 0)**

Question 3

(-5, 6) cao	B1

Answer: **(-5, 6)**

Question 4

Add vector to at least one vertex correctly, showing translation method	M1
T' vertices (3, -2), (6, -2), (3, 1) cao	B1

Answer: **(3, -2), (6, -2), (3, 1)**

Question 5

104 seen	M1
76 degrees cao	A1

Answer: **76 degrees**

Question 6

adds the vector	M1
(-1, -1) cao	A1

Answer: **(-1, -1)**

Question 7

186 seen	M1
174 degrees cao	A1

Answer: **174 degrees**

Question 8

two vertices correct	M1
(2, 4), (4, 5), (8, 4) cao	A1

Answer: **(2, 4), (4, 5), (8, 4)**

Question 9

halves the horizontal distance	M1
(4, 0) cao	A1

Answer: **(4, 0)**

Question 10

two vertices correct	M1
(7, 6), (7, 4), (6, 2) cao	A1

Answer: **(7, 6), (7, 4), (6, 2)**

Question 11

one coordinate correct	M1
(-2, 5) cao	A1

Answer: **(-2, 5)**

Question 12

(3, 4) cao	B1

Answer: **(3, 4)**

Question 13

one coordinate correct	M1
(3, 6) cao	A1

Answer: **(3, 6)**

Question 14

328 seen	M1
32 degrees cao	A1

Answer: **32 degrees**

Question 15

(3, 4) cao	B1

Answer: **(3, 4)**

Question 16

44 seen	M1
136 degrees cao	A1

Answer: **136 degrees**

Question 17

258 seen	M1
102 degrees cao	A1

Answer: **102 degrees**

Question 18

234 seen	M1
126 degrees cao	A1

Answer: **126 degrees**

Question 19

one coordinate correct	M1
(-5, 1) cao	A1

Answer: **(-5, 1)**

Question 20

two vertices correct	M1
(7, 3), (9, 7), (3, 1), (9, 2) cao	A1

Answer: **(7, 3), (9, 7), (3, 1), (9, 2)**

Question 21

330 seen	M1
30 degrees cao	A1

Answer: **30 degrees**

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Question 22

274 seen	M1
86 degrees cao	A1

Answer: **86 degrees**

Question 23

one coordinate correct	M1
(-3, -2) cao	A1

Answer: **(-3, -2)**

Question 24

141 seen	M1
39 degrees cao	A1

Answer: **39 degrees**

Question 25

253 seen	M1
107 degrees cao	A1

Answer: **107 degrees**

Question 26

326 seen	M1
34 degrees cao	A1

Answer: **34 degrees**

Question 27

146 seen	M1
34 degrees cao	A1

Answer: **34 degrees**

Question 28

adds the vector	M1
(-1, 1) cao	A1

Answer: **(-1, 1)**

Question 29

Swap x and y as part of reflection in y = x	M1
(5, -2) cao	B1

Answer: **(5, -2)**

Question 30

(0, 5) cao	B1

Answer: **(0, 5)**

Question 31

two vertices correct	M1
(3, 4), (7, 3), (3, 2) cao	A1

Answer: **(3, 4), (7, 3), (3, 2)**

Question 32

118 seen	M1
62 degrees cao	A1

Answer: **62 degrees**

Question 33

one coordinate correct	M1
(-2, -6) cao	A1

Answer: **(-2, -6)**

Question 34

one coordinate correct	M1
(4, 2) cao	A1

Answer: **(4, 2)**

Question 35

118 seen	M1
62 degrees cao	A1

Answer: **62 degrees**

Question 36

(-6, 2) cao	B1

Answer: **(-6, 2)**

Question 37

3 units cao	B1

Answer: **3 units**

Question 38

two vertices correct	M1
(3, 6), (2, 3), (2, 5) cao	A1

Answer: **(3, 6), (2, 3), (2, 5)**

Question 39

adds the vector	M1
(6, 6) cao	A1

Answer: **(6, 6)**

Question 40

140 seen	M1
40 degrees cao	A1

Answer: **40 degrees**

Question 41

adds the vector	M1
(6, -6) cao	A1

Answer: **(6, -6)**

Question 42

88 seen	M1
92 degrees cao	A1

Answer: **92 degrees**

Question 43

adds the vector	M1
(2, 3) cao	A1

Answer: **(2, 3)**

Question 44

(4, 4) cao	B1

Answer: **(4, 4)**

Question 45

adds the vector	M1
(-6, -4) cao	A1

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

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Question 46

(-1, 3) cao **B1**

Answer: **(-1, 3)**

Question 47

one coordinate correct **M1**

(9, 1) cao **A1**

Answer: **(9, 1)**

Question 48

adds the vector **M1**

(-6, -2) cao **A1**

Answer: **(-6, -2)**

Question 49

one coordinate correct **M1**

(-6, -6) cao **A1**

Answer: **(-6, -6)**

Question 50

(-4, 6) cao **B1**

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

Question 51

one coordinate correct **M1**

(-2, -5) cao **A1**

Answer: **(-2, -5)**

Question 52

(4, 7) cao **B1**

Answer: **(4, 7)**

Question 53

two vertices correct **M1**

(6, 3), (6, 7), (3, 8), (2, 3) cao **A1**

Answer: **(6, 3), (6, 7), (3, 8), (2, 3)**

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