4.17 Transformations: Translation and Enlargement: 1-hour Pack

Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The points P (-3, -2) and Q (-4, 6) are enlarged by scale factor 4 about (2, 1). Write down the coordinates of the images P' and Q'.

(3)

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2 Triangle A has sides 4 cm, 5 cm and 6 cm. Triangle B is an enlargement of A with scale factor 3. Work out the perimeter of triangle B.

(3)

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3 A shape is enlarged by scale factor 4. A side of length 7 cm on the original shape is enlarged. What length is the matching side on the image?

(1)

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4 The point P (-5, 5) is reflected in the x-axis and the image is then translated by 1 units to the right and 3 units up (negative means left or down). Write down the coordinates of the final image.

(3)

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5 A point A (5, -5) is mapped to A' (6, -2) by a translation. Write down the translation as a column vector in the form (x y), where x is the horizontal move and y the vertical move.

(2)

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6 A shape is enlarged by scale factor 5. A side of length 7 cm on the original shape is enlarged. What length is the matching side on the image?

(1)

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7 The point P (4, 2) is reflected in the y-axis and the image is then translated by -1 units to the right and 1 units up (negative means left or down). Write down the coordinates of the final image.

(3)

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8 The points P (1, 2) and Q (1, 1) are enlarged by scale factor 3 about the origin. Write down the coordinates of the images P' and Q'.

(2)

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9 The points A (2, 3) and B (4, 0) are translated by -5 units to the right and 2 units up (negative values mean left or down). Write down the coordinates of A' and B'.

(2)

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10 A point A (-4, 3) is mapped to A' (-3, 3) by a translation. Write down the translation as a column vector in the form (x y), where x is the horizontal move and y the vertical move.

(2)

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11 The point P (-4, -5) is reflected in the y-axis and the image is then translated by 4 units to the right and 3 units up (negative means left or down). Write down the coordinates of the final image.

(3)

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12 A shape is enlarged by scale factor 3. A side of length 2 cm on the original shape is enlarged. What length is the matching side on the image?

(1)

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13 A point A (4, 0) is mapped to A' (4, 6) by a translation. Write down the translation as a column vector in the form (x y), where x is the horizontal move and y the vertical move.

(2)

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14 A point A (5, -4) is mapped to A' (6, -1) by a translation. Write down the translation as a column vector in the form (x y), where x is the horizontal move and y the vertical move.

(2)

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15 A shape of area 17 cm² is enlarged by scale factor 5. Work out the area of the image.

(2)

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16 A point A (4, 5) is mapped to A' (-2, 2) by a translation. Write down the translation as a column vector in the form (x y), where x is the horizontal move and y the vertical move.

(2)

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17 The points A (5, 2) and B (-4, -2) are translated by -3 units to the right and 2 units up (negative values mean left or down). Write down the coordinates of A' and B'.

(2)

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18 The points P (4, 5) and Q (1, 2) are enlarged by scale factor 4 about the origin. Write down the coordinates of the images P' and Q'.

(2)

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19 The points P (1, 0) and Q (-4, -1) are enlarged by scale factor -2 about (0, 2). Write down the coordinates of the images P' and Q'.

(3)

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20 A triangle has vertices at A(1, 2), B(3, 2) and C(2, 4). Translate the triangle by the vector (4, -1). Write the new coordinates of A, B and C.

(2)

21 Enlarge the triangle with vertices (1, 1), (3, 1) and (1, 4) by scale factor 2 about the origin (0, 0). Write the coordinates of the image.

(3)

22 A translation is given by the column vector (0, -7). Describe this translation in words.

(1)

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Mark scheme · 4.17 Transformations: Translation and Enlargement: 1-hour Pack

Question 1

vector from the centre to a point found	M1
scaled by the scale factor	M1
(-18, -11) and (-22, 21) cao	A1

Answer: **(-18, -11), (-22, 21)**

Question 2

perimeter of A = 15	M1
x 3	M1
45 cm cao	A1

Answer: **45 cm**

Question 3

28 cm cao	B1

Answer: **28 cm**

Question 4

reflection carried out	M1
intermediate image (-5, -5)	A1
(-4, -2) cao	A1

Answer: **(-4, -2)**

Question 5

subtracts the coordinates (new - old)	M1
(1 3) cao	A1

Answer: **(1 3)**

Question 6

35 cm cao	B1

Answer: **35 cm**

Question 7

reflection carried out	M1
intermediate image (-4, 2)	A1
(-5, 3) cao	A1

Answer: **(-5, 3)**

Question 8

multiplies the position vector(s) from the centre by the scale factor	M1
(3, 6) and (3, 3) cao	A1

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

Question 9

A' = (-3, 5)	B1
B' = (-1, 2)	B1

Answer: **(-3, 5), (-1, 2)**

Question 10

subtracts the coordinates (new - old)	M1
(1 0) cao	A1

Answer: **(1 0)**

Question 11

reflection carried out	M1
intermediate image (4, -5)	A1
(8, -2) cao	A1

Answer: **(8, -2)**

Question 12

6 cm cao	B1

Answer: **6 cm**

Question 13

subtracts the coordinates (new - old)	M1
(0 6) cao	A1

Answer: **(0 6)**

Question 14

subtracts the coordinates (new - old)	M1
(1 3) cao	A1

Answer: **(1 3)**

Question 15

$5^2 = 25$	M1
425 cm² cao	A1

Answer: **425 cm^2**

Question 16

subtracts the coordinates (new - old)	M1
(-6 -3) cao	A1

Answer: **(-6 -3)**

Question 17

A' = (2, 4)	B1
B' = (-7, 0)	B1

Answer: **(2, 4), (-7, 0)**

Question 18

multiplies the position vector(s) from the centre by the scale factor	M1
(16, 20) and (4, 8) cao	A1

Answer: **(16, 20), (4, 8)**

Question 19

vector from the centre to a point found	M1
scaled by the scale factor	M1
(-2, 6) and (8, 8) cao	A1

Answer: **(-2, 6), (8, 8)**

Question 20

Adds vector to each point correctly, showing at least one correct addition	M1
All three coordinates correct: A'(5,1), B'(7,1), C'(6,3) cao	A1

Answer: **A'(5, 1), B'(7, 1), C'(6, 3)**

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Question 21

Multiples coordinates by 2 for at least one point correctly	**M1**
Shows method for other points or lists transformed coordinates	**M1**
All three correct: (2,2), (6,2), (2,8) cao	**A1**

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

Question 22

Description equivalent to "7 squares down" or "down 7" cao	**B1**

Answer: **Translate down 7**

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