4.17 Transformations: Translation and Enlargement: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Enlarge the rectangle with corners (1, 1), (5, 1), (5, 3), (1, 3) by scale factor 0.5 about the point (1, 1). Give the coordinates of the image.

(3)

2 A triangle has vertices at (2, 0), (4, 0) and (2, 3). It is enlarged by scale factor 3 about the point (2, 0). Give the coordinates of the image.

(3)

3 A pentagon has a vertex at (0, 2). After enlargement by scale factor 2 about the origin the image of that vertex is (0, 4). If instead the original pentagon (not its enlarged image) is translated by (1, -3), what are the coordinates of the image of the vertex (0, 2)?

(2)

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4 A point A (-2, -5) is mapped to A' (4, -7) 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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5 Write down the column vector that describes a translation 3 squares to the left and 5 squares down.

(1)

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6 The points A (-1, -1) and B (2, -5) are translated by 2 units to the right and -4 units up (negative values mean left or down). Write down the coordinates of A' and B'.

(2)

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7 A shape of area 11 cm² is enlarged by scale factor 3. Work out the area of the image.

(2)

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8 Triangle A has sides 6 cm, 7 cm and 8 cm. Triangle B is an enlargement of A with scale factor 2. Work out the perimeter of triangle B.

(3)

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9 The points A (2, 3) and B (-2, 5) are translated by 3 units to the right and 6 units up (negative values mean left or down). Write down the coordinates of A' and B'.

(2)

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10 Carry out the addition of the two column vectors. (2, -3) + (-1, 4).

(2)

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11 A translation is given by the column vector (4, 0). Describe this translation in words.

(1)

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Mark scheme · 4.17 Transformations: Translation and Enlargement: 30-minute Pack

Question 1

Subtracts centre (1,1) from a corner: e.g. (0,0), (4,0), (4,2), (0,2) then multiplies by 0.5	M1
Adds centre back to get image coordinates for points other than the centre	M1
Gives images: (1,1), (3,1), (3,2), (1,2) cao	A1

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

Question 2

Takes (2,0) as centre, subtracts centre for other points: (0,0), (2,0), (0,3)	M1
Multiplies by 3 and adds centre back correctly	M1
Image coordinates: (2,0), (8,0), (2,9) cao	A1

Answer: **(2, 0), (8, 0), (2, 9)**

Question 3

Applies translation to original vertex (0,2): (0+1,2-3)	M1
Gives (1, -1) cao	A1

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

Question 4

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

Answer: **(6 -2)**

Question 5

Correct column vector (-3, -5) cao	B1

Answer: **[-3, -5] (or column vector (-3, -5))**

Question 6

A' = (1, -5)	B1
B' = (4, -9)	B1

Answer: **(1, -5), (4, -9)**

Question 7

$3^2 = 9$	M1
99 cm² cao	A1

Answer: **99 cm^2**

Question 8

perimeter of A = 21	M1
x 2	M1
42 cm cao	A1

Answer: **42 cm**

Question 9

A' = (5, 9)	B1
B' = (1, 11)	B1

Answer: **(5, 9), (1, 11)**

Question 10

Adds components correctly: (2 + -1, -3 + 4) or equivalent	M1
Gives final vector (1, 1) cao	A1

Answer: **[1, 1] (or column vector (1, 1))**

Question 11

Description equivalent to "4 squares to the right" or "right 4" cao	B1

Answer: **Translate right 4**

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