

G.CO.A.2: Analytical Representations of Transformations 1

- 1 A polygon is transformed according to the rule: $(x,y) \rightarrow (x+2,y)$. Every point of the polygon moves two units in which direction?
 - 1) up
 - 2) down
 - 3) left
 - 4) right
- 2 What is the image of point $(2,5)$ under the translation that shifts (x,y) to $(x+3,y-2)$?
 - 1) $(0,3)$
 - 2) $(0,8)$
 - 3) $(5,3)$
 - 4) $(5,8)$
- 3 What are the coordinates of P' , the image of $P(-4,0)$ under the translation $(x-3,y+6)$?
 - 1) $(-7,6)$
 - 2) $(7,-6)$
 - 3) $(1,6)$
 - 4) $(2,-3)$
- 4 The image of point $(3,-5)$ under the translation that shifts (x,y) to $(x-1,y-3)$ is
 - 1) $(-4,8)$
 - 2) $(-3,15)$
 - 3) $(2,8)$
 - 4) $(2,-8)$
- 5 What is the image of point $(-3,4)$ under the translation that shifts (x,y) to $(x-3,y+2)$?
 - 1) $(0,6)$
 - 2) $(6,6)$
 - 3) $(-6,8)$
 - 4) $(-6,6)$
- 6 What are the coordinates of the image of point $A(2,-7)$ under the translation $(x,y) \rightarrow (x-3,y+5)$?
 - 1) $(-1,-2)$
 - 2) $(-1,2)$
 - 3) $(5,-12)$
 - 4) $(5,12)$
- 7 Given the transformations:
 $R(x,y) \rightarrow (-x,y)$
 $S(x,y) \rightarrow (y,x)$
What is $(R \circ S)(5,-1)$?
 - 1) $(1,5)$
 - 2) $(1,-5)$
 - 3) $(-1,5)$
 - 4) $(-1,-5)$
- 8 What is the image of (x,y) after a translation of 3 units right and 7 units down?
 - 1) $(x+3,y-7)$
 - 2) $(x+3,y+7)$
 - 3) $(x-3,y-7)$
 - 4) $(x-3,y+7)$
- 9 What are the coordinates of P' , the image of point $P(x,y)$ after translation $T_{4,4}$?
 - 1) $(x-4,y-4)$
 - 2) $(x+4,y+4)$
 - 3) $(4x,4y)$
 - 4) $(4,4)$
- 10 The coordinates of any point (x,y) after a reflection in the x -axis can *always* be represented by
 - 1) (x,y)
 - 2) $(-x,y)$
 - 3) $(x,-y)$
 - 4) $(-x,-y)$

- 11 Which transformation would result in the perimeter of a triangle being different from the perimeter of its image?
- 1) $(x,y) \rightarrow (y,x)$
 - 2) $(x,y) \rightarrow (x,-y)$
 - 3) $(x,y) \rightarrow (4x,4y)$
 - 4) $(x,y) \rightarrow (x+2,y-5)$
- 12 Which transformation is *not* an isometry?
- 1) $(x,y) \rightarrow (x+6,y-2)$
 - 2) $(x,y) \rightarrow (y,-x)$
 - 3) $(x,y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$
 - 4) $(x,y) \rightarrow (-y,-x)$
- 13 Which transformation is an example of an opposite isometry?
- 1) $(x,y) \rightarrow (x+3,y-6)$
 - 2) $(x,y) \rightarrow (3x,3y)$
 - 3) $(x,y) \rightarrow (y,x)$
 - 4) $(x,y) \rightarrow (y,-x)$
- 14 The vertices of $\triangle PQR$ have coordinates $P(2,3)$, $Q(3,8)$, and $R(7,3)$. Under which transformation of $\triangle PQR$ are distance and angle measure preserved?
- 1) $(x,y) \rightarrow (2x,3y)$
 - 2) $(x,y) \rightarrow (x+2,3y)$
 - 3) $(x,y) \rightarrow (2x,y+3)$
 - 4) $(x,y) \rightarrow (x+2,y+3)$
- 15 Which transformation represents a dilation?
- 1) $(8,4) \rightarrow (11,7)$
 - 2) $(8,4) \rightarrow (-8,4)$
 - 3) $(8,4) \rightarrow (-4,-8)$
 - 4) $(8,4) \rightarrow (4,2)$
- 16 Which type of transformation is $(x,y) \rightarrow (x+2,y-2)$?
- 1) dilation
 - 2) reflection
 - 3) rotation
 - 4) translation
- 17 The transformation $(x,y) \rightarrow (3x,3y)$ represents
- 1) a dilation
 - 2) an isometry
 - 3) a reflection
 - 4) a translation
- 18 Quadrilateral $ABCD$ undergoes a transformation, producing quadrilateral $A'B'C'D'$. For which transformation would the area of $A'B'C'D'$ *not* be equal to the area of $ABCD$?
- 1) a rotation of 90° about the origin
 - 2) a reflection over the y -axis
 - 3) a dilation by a scale factor of 2
 - 4) a translation defined by $(x,y) \rightarrow (x+4,y-1)$
- 19 Under the transformation $(x,y) \rightarrow (2x,2y)$, which property is not preserved?
- 1) distance
 - 2) orientation
 - 3) parallelism
 - 4) angle measure
- 20 Which transformation does *not* always preserve distance?
- 1) $(x,y) \rightarrow (x+2,y)$
 - 2) $(x,y) \rightarrow (-y,-x)$
 - 3) $(x,y) \rightarrow (2x,y-1)$
 - 4) $(x,y) \rightarrow (3-x,2-y)$
- 21 Translation T is defined by $(x,y) \rightarrow (x+2,y-1)$. Find the image of $(-1,5)$ under translation T .
- 22 A translation maps $P(x,y)$ onto $P'(x+3,y-2)$. Find the coordinates of Q , whose image under the same transformation is $Q'(6,2)$.

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Answer Section

- 1 ANS: 4 REF: fall0818ge
2 ANS: 3 REF: 069903a
3 ANS: 1 REF: 080409a
4 ANS: 4 REF: 010509a
5 ANS: 4 REF: 080609a
6 ANS: 1
(2,-7) \rightarrow (2-3, -7+5) = (-1,-2)

REF: 061504ge

- 7 ANS: 1 REF: 088724siii
8 ANS: 1 REF: 060402a
9 ANS: 2 REF: 081504ge
10 ANS: 3 REF: 088722siii
11 ANS: 3 REF: 011605geo
12 ANS: 3 REF: 089031siii
13 ANS: 3 REF: 010507b
14 ANS: 4 REF: 011808ai
15 ANS: 4 REF: 010719b
16 ANS: 4 REF: 080908b
17 ANS: 1 REF: 088518siii
18 ANS: 3 REF: 061501ge
19 ANS: 1 REF: 080810b
20 ANS: 3

A dilation does not preserve distance.

REF: 062210geo

- 21 ANS:
(1,4)

REF: 018601siii

- 22 ANS:
(3,4)

REF: 018709siii