

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

- 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 type of transformation is  $(x,y) \rightarrow (x+2,y-2)$ ?
- 1) dilation
  - 2) reflection
  - 3) rotation
  - 4) translation
- 12 The transformation  $(x,y) \rightarrow (3x,3y)$  represents
- 1) a dilation
  - 2) an isometry
  - 3) a reflection
  - 4) a translation
- 13 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)  $(x,y) \rightarrow (x+2,y-5)$
- 14 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)  $(x,y) \rightarrow (-y,-x)$
- 15 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)  $(x,y) \rightarrow (y,-x)$
- 16 Which transformation represents a dilation?
- 1)  $(8,4) \rightarrow (11,7)$
  - 2)  $(8,4) \rightarrow (-8,4)$
  - 3)  $(8,4) \rightarrow (-4,-8)$
  - 4)  $(8,4) \rightarrow (4,2)$
- 17 Under the transformation  $(x,y) \rightarrow (2x,2y)$ , which property is not preserved?
- 1) distance
  - 2) orientation
  - 3) parallelism
  - 4) angle measure
- 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  $90^\circ$  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 Translation  $T$  is defined by  $(x,y) \rightarrow (x+2,y-1)$ . Find the image of  $(-1,5)$  under translation  $T$ .
- 20 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: 4 REF: 080908b  
12 ANS: 1 REF: 088518siii  
13 ANS: 3 REF: 011605geo  
14 ANS: 3 REF: 089031siii  
15 ANS: 3 REF: 010507b  
16 ANS: 4 REF: 010719b  
17 ANS: 1 REF: 080810b  
18 ANS: 3 REF: 061501ge  
19 ANS:  
(1,4)

REF: 018601siii

- 20 ANS:  
(3,4)

REF: 018709siii