

UNIT 5 • TRANSFORMATIONS IN THE COORDINATE PLANE**Lesson 1: Introducing Transformations****Practice 5.1.2: Transformations As Functions**

Use what you know about transformations to answer the questions.

1. When described as functions, can transformations be combined?
2. Given the expression $f(g(k(x)))$, where f , g , and k are functions, what operation should be performed first? Does the order matter? Why or why not?
3. What does it mean for a transformation to be isometric?
4. A figure is transformed by $T_{3,-1}$ and then transformed by $T_{-3,1}$. How does the preimage relate to the final image?
5. If the transformation T is isometric and $d(PQ)=2$, what is $d(T(PQ))$?
6. Given $T_{h,k}(x,y)=(x+h,y+k)$ and the point $P(2,3)$, what is $T_{5,4}(P)$?
7. Using the form $T_{h,k}(x,y)=(x+h,y+k)$, how can we describe a translation S that moves a point left 5 units and down 1 unit in the coordinate plane?
8. Given $R_{90}(x,y)=(-y,x)$ and the point $Q(1,0)$, what is $R_{90}(Q)$?
9. Find $T(S(x,y))$ if $T(x,y)=(x+2,y+2)$ and $S(x,y)=(x-5,y+1)$. Label your answer P . What values of h and k would prove the equation $T_{h,k}(P)=(x,y)$ true?
10. Given $T_{2,5}(x,y)=(x+2,y+5)$, state the translation that would yield the identity transformation, $I = T_{h,k}(T_{2,5}(x,y))$.