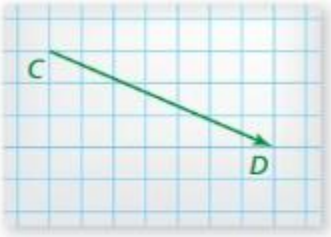
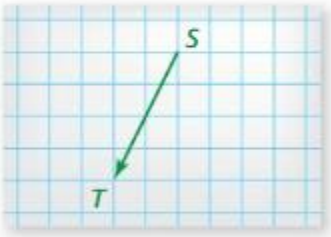
Name _____ Date _____

In Exercises 3 and 4, name the vector and write its component form. *(See Example 1.)*

3.



4.



In Exercises 5–8, the vertices of $\triangle DEF$ are $D(2, 5)$, $E(6, 3)$, and $F(4, 0)$. Translate $\triangle DEF$ using the given vector. Graph $\triangle DEF$ and its image. *(See Example 2.)*

5. $\langle 6, 0 \rangle$

6. $\langle 5, -1 \rangle$

7. $\langle -3, -7 \rangle$

8. $\langle -2, -4 \rangle$

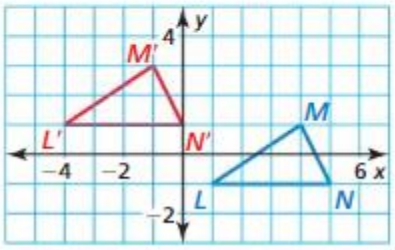
In Exercises 9 and 10, find the component form of the vector that translates $P(-3, 6)$ to P'.

9. $P'(0, 1)$

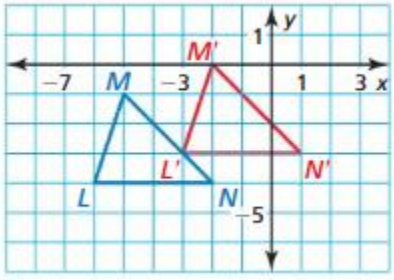
10. $P'(-4, 8)$

In Exercises 11 and 12, write a rule for the translation of $\triangle LMN$ to $\triangle L'M'N'$. *(See Example 3.)*

11.



12.



In Exercises 13–16, use the translation.

$(x, y) \rightarrow (x - 8, y + 4)$

13. What is the image of $A(2, 6)$?

14. What is the image of $B(-1, 5)$?

15. What is the preimage of $C'(-3, -10)$?

16. What is the preimage of $D'(4, -3)$?

In Exercises 17–20, graph $\triangle PQR$ with vertices $P(-2, 3)$, $Q(1, 2)$, and $R(3, -1)$ and its image after the translation. *(See Example 4.)*

17. $(x, y) \rightarrow (x + 4, y + 6)$

18. $(x, y) \rightarrow$ (x + 9, y – 2)

19. $(x, y) \rightarrow (x - 2, y - 5)$

20. $(x, y) \rightarrow (x - 1, y + 3)$

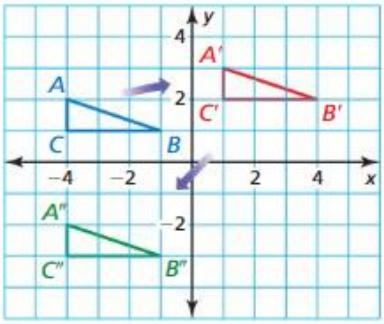
In Exercises 21 and 22, graph $\triangle XYZ$ with vertices $X(2, 4)$, $Y(6, 0)$, and $Z(7, 2)$ and its image after the composition. *(See Example 5.)*

21. **Translation:** $(x, y) \rightarrow (x + 12, y + 4)$
Translation: $(x, y) \rightarrow (x - 5, y - 9)$

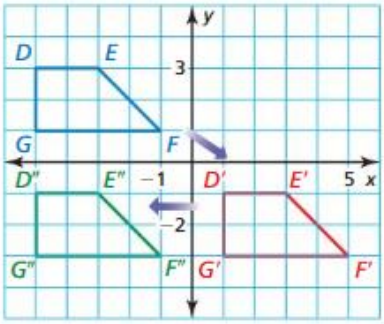
22. **Translation:** $(x, y) \rightarrow (x - 6, y)$
Translation: $(x, y) \rightarrow (x + 2, y + 7)$

In Exercises 23 and 24, describe the composition of translations.

23.

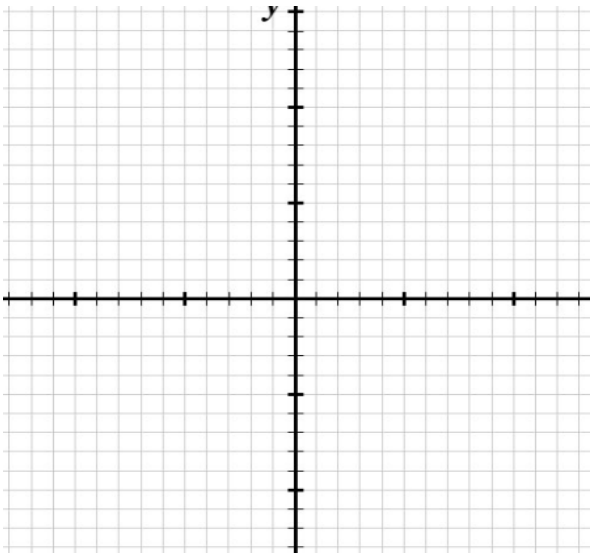


24.

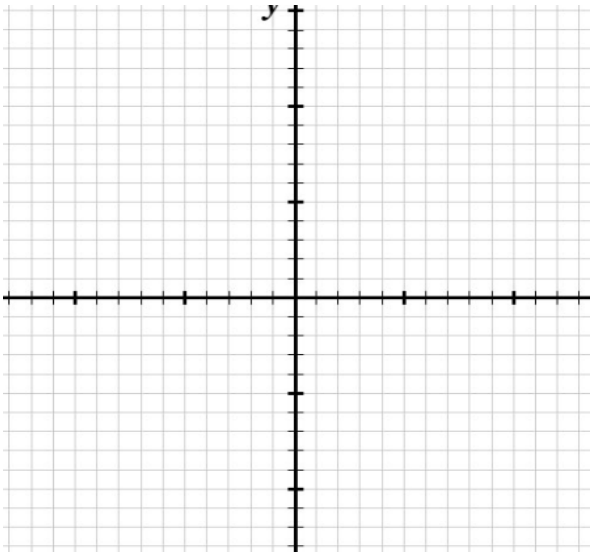


Determine the translation from graph 1 to graph 2. Write the translations as a map and in vector form.

1. Graph 1: y = 3x + 2
   Graph 2: y = 3x – 1



2. Graph 1: $y = x^2$
   Graph 2: $y = x^2 + 4$



3. Graph 1: $y = (x - 2)^2 - 2$
   Graph 2: $y = (x + 3)^2 + 2$