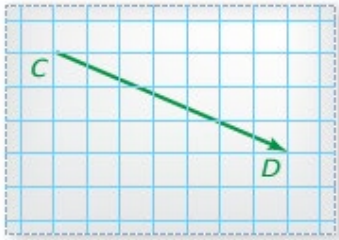
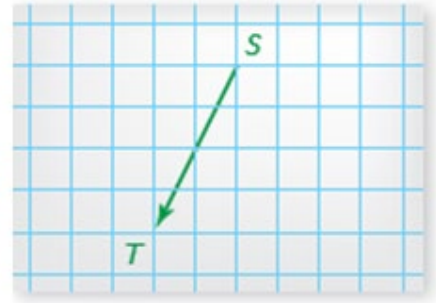


In Exercises 1 and 2, describe the vector (e.g. right 2 units, down 3 units) and write its component form (e.g. $\langle 2, -3 \rangle$).

1.



2.



In Exercises 3 - 6, the vertices of $\triangle DEF$ are $D(2, 5)$, $E(6, 3)$, and $F(4, 0)$. For each vector:

a) Find the coordinates of the image of $\triangle DEF$ under a translation along the vector.

b) Graph $\triangle DEF$ and its image.

3. $\langle 6, 0 \rangle$

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

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

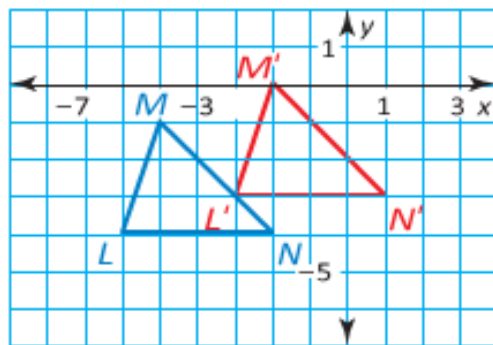
6. $\langle -2, -4 \rangle$

In Exercises 7 and 8, find the component form of the vector that translates $P(-3, 6)$ to P' .

7. $P'(0, 1)$

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

9. Write the component form for the translation of $\triangle LMN$ to $\triangle L'M'N'$.



In Exercises 11–14, use the translation. $(x, y) \rightarrow (x - 8, y + 4)$

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

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

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

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

In Exercises 15 - 18, $\triangle PQR$ has vertices $P(-2, 3)$, $Q(1, 2)$, and $R(3, -1)$. For each translation:

a) Find the coordinates for the image of $\triangle PQR$.

b) Graph $\triangle PQR$ and its image.

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

16. $(x, y) \rightarrow (x + 9, y - 2)$

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

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