9.1 Translation Homework
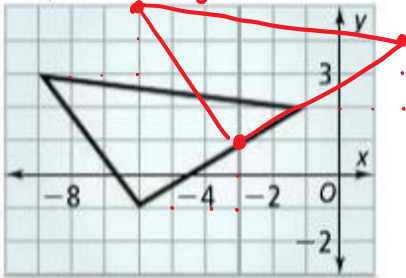## P.550 #13-19, 22, 36
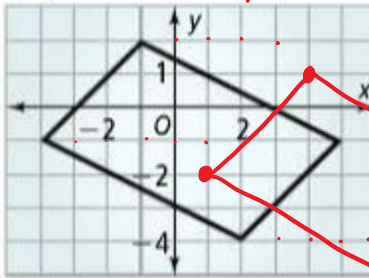
Copy each graph. Graph the image of each figure under the given translation.   ◀ **See Problem 3.**
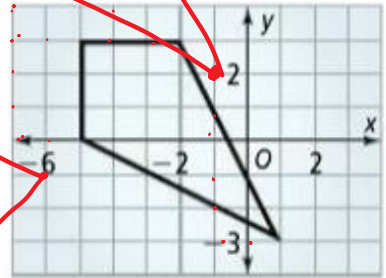
13. $T_{<3,\,2>}(x, y)$ Right 3, up 2

14. $T_{<5,\,-1>}(x, y)$ R 5, D 1

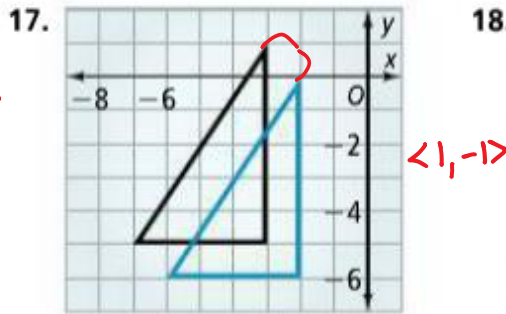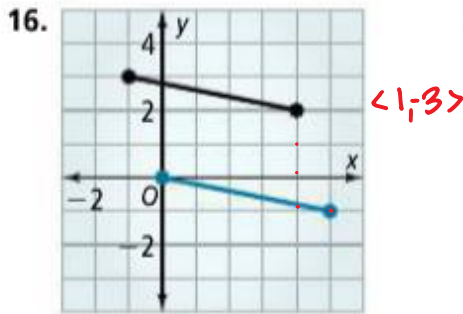**15.** $T_{<-2,\,5>}(x, y)$ L 2, ↑ 5

The blue figure is a translation image of the black figure. Write a rule to describe each translation.   ◀ **See Problem 4.**

16. $<1,-3>$

17. $<1,-1>$ -3

18. -4 $<4,-3>$
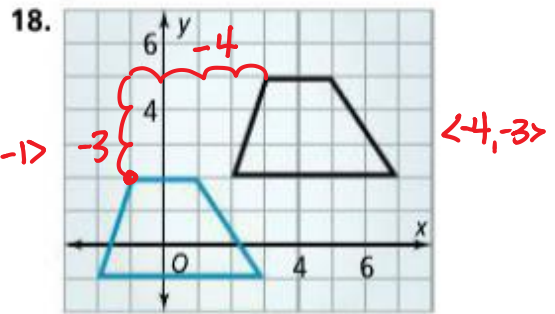
19. Travel You are visiting San Francisco. From your hotel near Union Square, you walk 4 blocks east and 4 blocks north to the Wells Fargo History Museum. Then you walk 5 blocks west and 3 blocks north to the Cable Car Barn Museum. Where is the Cable Car Barn Museum in relation to your hotel?   ◀ **See Problem 5.**

3 E
5 W
4 N
4 E
★ Hotel
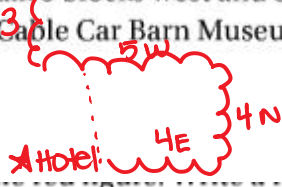
$<-1, 7>$ 1 block west, 7 blocks North

© **22. Think About a Plan** $\triangle MUG$ has coordinates $M(2, -4)$, $U(6, 6)$, and $G(7, 2)$. A translation maps point M to $M'(-3, 6)$. What are the coordinates of U' and G' for this translation?
- How can you use a graph to help you visualize the problem?
- How can you find a rule that describes the translation?

$<-5, 10>$

Translation vector:
$<-5, 10>$

$U'(6-5, 6+10) \Rightarrow \boxed{U'(1, 16)}$

$G'(7-5, 2+10) \Rightarrow \boxed{G'(2, 12)}$

36. $\triangle ABC$ has vertices $A(-5, 2)$, $B(0, -4)$, and $C(3, 3)$. What are the vertices of the image of $\triangle ABC$ after the translation $T_{<7,\,-5>}(\triangle ABC)$? $A'(2, -3)$ $B'(7, -9)$

   Ⓐ $A'(2, -3)$, $B'(7, -9)$, $C'(10, -2)$　　Ⓒ $A'(-12, 7)$, $B'(-7, 1)$, $C'(-4, 8)$

   Ⓑ $A'(-12, -3)$, $B'(-7, -9)$, $C'(-4, -2)$　　Ⓓ $A'(2, -3)$, $B'(10, -2)$, $C'(7, -9)$