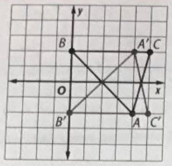
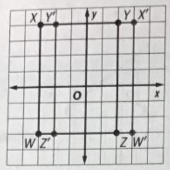
#104

Page 523 Lesson 11-4 Got It?

2a.



2b.



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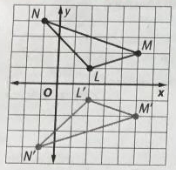
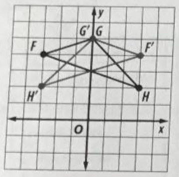
2a

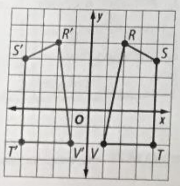


Pages 524–525 Lesson 11-4 Independent Practice

5.



6.



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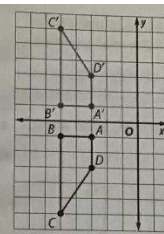
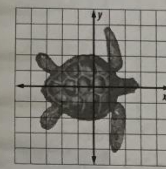
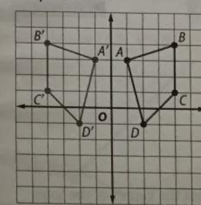


8.



a turtle

18. Sample answer:



19. No; for example, the vertices of $\triangle ABC$ are A
After a reflection over the x-axis and a reflec
image's vertices are $A'(-1, -3)$, $B'(-7, -3)$,
reflection or translation maps $\triangle ABC$ to $\triangle A$

20. The pair $G(-3, -4)$ and $G'(-3, 4)$ is a reflect
over the y-axis, multiply the x-coordinate by

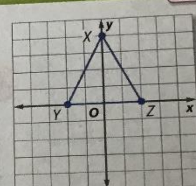
---

2. The vertices of $\triangle LMN$ are $L(2, 1)$, $M(5, 2)$, and $N(-1, 4)$. Graph the triangle and its image after a reflection over the x-axis. (Example 2) **See Answer Appendix.**

Independent Practice

Go online for Step-by-Step Solutions eHelp

For Exercises 3 and 4, use the coordinate plane at the right. Triangle XYZ is shown.



3 Find the coordinates of the vertices of the image of $\triangle XYZ$ translated 4 units to the right and 5 units down. (Example 1) **$X'(4, -1)$, $Y'(2, -5)$, $Z'(6, -5)$**

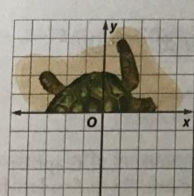
4. Find the coordinates of the vertices of the image of $\triangle XYZ$ translated 2 units to the left and 3 units up. (Example 1) **$X'(-2, 7)$, $Y'(-4, 3)$, $Z'(0, 3)$**

5. The vertices of $\triangle FGH$ are $F(-3, 4)$, $G(0, 5)$, and $H(3, 2)$. Graph the triangle and its image after a reflection over the y-axis. (Example 2) **5–7. See Answer Appendix.**

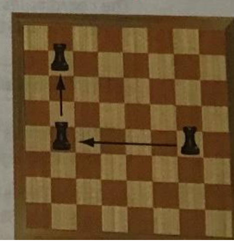
6. The vertices of figure RSTV are $R(2, 4)$, $S(4, 3)$, $T(4, -2)$, and $V(1, -2)$. Graph the figure and its image after a reflection over the y-axis. (Example 2)

7. The vertices of figure ABCD are $A(-3, -1)$, $B(-5, -1)$, $C(-5, -6)$, and $D(-3, -3)$. Graph the figure and its image after a reflection over the x-axis. (Example 2)

8. Reflect the figure below over the x-axis. Sketch the figure and its image on grid paper. What is the animal? (Example 2) **See Answer Appendix.**



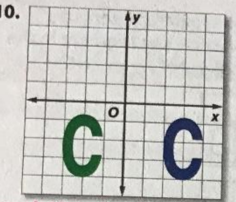
9 In chess, the rook can only move vertically or horizontally across the board. The chessboard below shows the movement of a rook after two turns. Describe this translation in words. (Example 1) **5 units left and 3 units up**



B For Exercises 10–14, identify each transformation as a *translation* or a *reflection* and describe the transformation. For Exercises10–12, the green image is the original.

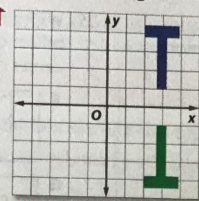
12. translation; 5 units to the left and 4 units down

10.



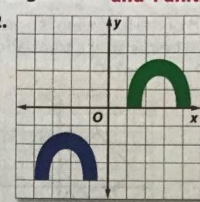
translation; 5 units to the right

11



reflection over the *x*-axis

12.

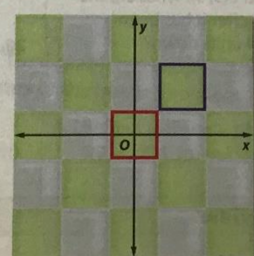


13. A figure has vertices $H(1, -1)$, $J(1, 5)$, $K(3, -1)$, and $L(3, 5)$. The image's vertices are $H'(-4, -5)$, $J'(-4, 1)$, $K'(-2, -5)$, and $L'(-2, 1)$. **It is a translation 5 units left and 4 units down.**

14. Triangle *QRS* has vertices $Q(1, -1)$, $R(5, -3)$, and $S(3, 2)$. The vertices of the image are $Q'(1, 1)$, $R'(5, 3)$, and $S'(3, -2)$. **It is a reflection over the *x*-axis.**

15. Triangle *RST* has vertices $R(4, 2)$, $S(-8, 0)$, and $T(6, 7)$. When translated, R' has coordinates $(-2, 4)$. Find the coordinates of S' and T'. Then describe the translation of triangle *RST* onto triangle $R'S'T'$. **$S'(-14, 2)$, $T'(0, 9)$; The translation is 6 units left and 2 units up.**

16. A mosaic is a type of art created using glass, stone, tile, or other materials. Describe the transformation that maps the red outlined tile to the purple outlined tile.



16. a translation 1 unit right and 1 unit up.

17. CCSS **Model with Mathematics** When using a rubber stamp, the image the ink makes on a page is a reflection of the stamp. Suppose you create a stamp that would print the word MATH. Draw the stamp. Is the image a reflection over the *x*-axis or *y*-axis?

17.

; ***y*-axis**

H.O.T. Problems Higher Order Thinking

18. CCSS ... Draw a figure on the coordinate plane. Then reflect