### Lesson 2 Practice Problems

1. Match each coordinate rule to a description of its resulting transformation.
	1. $(x,y)\rightarrow (x+3,y)$
	2. $(x,y)\rightarrow (2x,2y)$
	3. $(x,y)\rightarrow (x,y+4)$
	4. $(x,y)\rightarrow (x,y−4)$
	5. $(x,y)\rightarrow (x−3,y+4)$
	6. Translate by the directed line segment from $(0,0)$ to $(0,4)$.
	7. Translate by the directed line segment from $(0,0)$ to $(3,0)$.
	8. Dilate using the origin as the center and a scale factor of 2.
	9. Translate by the directed line segment from $(0,0)$ to $(0,-4)$.
	10. Translate by the directed line segment from $(0,0)$ to $(-3,4)$.
	11. Draw the image of triangle $ABC$ under the transformation $(x,y)\rightarrow (x−4,y+1)$. Label the result $T$.
	12. Draw the image of triangle $ABC$ under the transformation $(x,y)\rightarrow (-x,y)$. Label the result $R$.
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1. Here are some transformation rules. For each rule, describe whether the transformation is a rigid motion, a dilation, or neither.
	1. $(x,y)\rightarrow (x−2,y−3)$
	2. $(x,y)\rightarrow (2x,3y)$
	3. $(x,y)\rightarrow (3x,3y)$
	4. $(x,y)\rightarrow (2−x,y)$
2. Reflect triangle $ABC$ over the line $x=0$. Call this new triangle $A^{′}B^{′}C^{′}$. Then reflect triangle $A^{′}B^{′}C^{′}$ over the line $y=0$. Call the resulting triangle $A^{″}B^{″}C^{″}$.
* Which single transformation takes $ABC$ to $A^{″}B^{″}C^{″}$?
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	1. Translate triangle $ABC$ by the directed line segment from $(1,1)$ to $(-2,1)$.
	2. Reflect triangle $ABC$ across the line $y=-x$.
	3. Rotate triangle $ABC$ counterclockwise using the origin as the center by 180 degrees.
	4. Dilate triangle $ABC$ using the origin as the center and a scale factor of 2.
* (From Unit 6, Lesson 1.)
1. Reflect triangle $ABC$ over the line $y=2$.
* Translate the image by the directed line segment from $(0,0)$ to $(3,2)$.
* What are the coordinates of the vertices in the final image?
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* (From Unit 6, Lesson 1.)
1. The density of water is 1 gram per cm3. An object floats in water if its density is less than water’s density, and it sinks if its density is greater than water’s. Will a cylindrical log with radius 0.4 meters, height 5 meters, and mass 1,950 kilograms sink or float? Explain your reasoning.
* (From Unit 5, Lesson 17.)
1. These 3 congruent square pyramids can be assembled into a cube with side length 3 feet. What is the volume of each pyramid?
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	1. 1 cubic foot
	2. 3 cubic feet
	3. 9 cubic feet
	4. 27 cubic feet
* (From Unit 5, Lesson 12.)
1. Reflect square $ABCD$ across line $CD$. What is the ratio of the length of segment $AA^{′}$ to the length of segment $AD$? Explain or show your reasoning.
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* (From Unit 2, Lesson 1.)



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