### Lesson 1 Practice Problems

1. Reflect triangle $ABC$ over the line $x=-3$.
* Translate the image by the directed line segment from $\left(0,0\right)$ to $\left(4,1\right)$.
* What are the coordinates of the vertices in the final image?
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1. Three line segments form the letter N. Rotate the letter N counterclockwise around the midpoint of segment $BC$ by 180 degrees. Describe the result.
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* (From Unit 1, Lesson 14.)
1. Triangle $ABC$ has coordinates $A=\left(1,3\right),B=\left(2,0\right),$ and $C=\left(4,1\right).$ The image of this triangle after a sequence of transformations is triangle $A^{′}B^{′}C^{′}$ where $A^{′}=\left(-5,-3\right),B^{′}=\left(-4,0\right),$ and $C^{′}=\left(-2,-1\right).$
* Write a sequence of transformations that takes triangle $ABC$ to triangle $A^{′}B^{′}C^{′}$.
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1. Prove triangle $ABC$ is congruent to triangle $DEF$.
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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 1.17 gram diamond in the shape of a pyramid whose base has area 2 cm2 and whose height is 0.5 centimeters sink or float? Explain your reasoning.
* (From Unit 5, Lesson 17.)
1. *Technology required*. An oblique cylinder with a base of radius 2 units is shown. The top of the cylinder can be obtained by translating the base by the directed line segment $AB$ which has length 16 units. The segment $AB$ forms a $30^{∘}$ angle with the plane of the base. What is the volume of the cylinder?
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* (From Unit 5, Lesson 11.)
1. This design began from the construction of an equilateral triangle. Record at least 3 rigid transformations (rotation, reflection, translation) you see in the design.
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* (From Unit 1, Lesson 22.)



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