

## 8<sup>th</sup> Grade:

Materials: Math book, technology (laptop, phone), pen/pencil, paper

### Day 1: Translations Review (Lesson 9.1)

- Learning Target: Today I can review translations.
- We talked about one of the four transformations called translations on Thursday. A translation (p. 279) is a transformation that slides a figure along a straight line.
- Translations keep the same size and same shape. All you are doing is taking your shape and moving it based on what directions it tells you to do.
- For more practice of translations, go to this website: <https://www.khanacademy.org/math/cc-eighth-grade-math/geometric-transformations#translations-8th>
  - o Watch the videos and complete the practices that goes with “Translations”

### Day 2: Reflections (Lesson 9.2)

- Learning Target: Today I can learn about properties of reflections
- A rotation is a transformation that flips a figure across a line. (p. 285)
  - o Line of reflection is that line (pretend you are looking into a mirror, this is the line of reflection)
- Turn to page 285 in your textbook and look at Explore Activity 1
  - o Skipping to D, the line of reflection is the x-axis (bold black line). You are going to count how many steps it takes to get from Point A to the black line (answer: 5). However many steps it takes to get to that line, you do to the other side of the line. Point A's (blue) coordinates (2, 5); new coordinates for Point A (2, -5). You are going to do the same thing with Point B and Point C. Answers: old Point B (6, 2); new Point B (6, -2); old Point C (2, 2); new point C (2, -2). If I reflect on the x-axis, I am changing the y-coordinates to make them the opposite of what they are. If I reflect on the y-axis, I will be changing the x-coordinates to make them the opposite of what they are. For example, blue Point A (2, 5); new point A after reflection on y-axis (-2, 5). Blue Point B (6, 2); new point B after reflection on y-axis (-6, 2) Blue Point C (2, 2); new point C after reflection on y-axis (-2,2).
- For more practice of reflections, go to this website and watch the videos and complete the practices: <https://www.khanacademy.org/math/cc-eighth-grade-math/geometric-transformations#reflections-8th>

### Day 3: Rotations (Lesson 9.3)

- Learning Target: Today I can learn about properties of rotations.
- A rotation is a transformation that turns a figure around a given point called the center of rotation (p. 291).

- Rotations have rules that go with them.
  - 90 degrees clockwise (rotate to the right) – multiply each x-coordinate by -1, then switch the x and y-coordinates:  $(x,y) \rightarrow (y,-x)$  For example, if you rotated the point  $(-1,3)$  90 degrees clockwise, it would be  $(3,1)$ .
  - 90 degrees counterclockwise (ccw)(rotate to the left) – multiply each y-coordinate by -1, then switch the x and y-coordinates:  $(x,y) \rightarrow (-y,x)$  For example, if you rotated the point  $(-1,3)$  90 degrees counterclockwise (ccw), it would be  $(-3,-1)$ .
  - 180 degrees clockwise (counterclockwise (ccw)): multiply both coordinates by -1:  $(x,y) \rightarrow (-x, -y)$  For example, If you rotated the point  $(-1,3)$  180 degrees, it would be  $(1, -3)$ .
- Turn to page 294 “Your Turn” #6-8
  - Step 1: write down the coordinates of A, B, C, and D.
  - Step 2: #6 says to rotate 180 degrees.
    - $A(0,0) \rightarrow A'(0,0)$
    - $B(1,3) \rightarrow B'(-1,-3)$
    - $C(4,2) \rightarrow C'(-4,-2)$
    - $D(3,0) \rightarrow D'(-3,0)$
  - Follow the same steps for #7-8; keep in mind 270 degrees clockwise is the same as 90 degrees counterclockwise (ccw)
  - Complete problems p. 294 #4-5, p. 296 #14-15

#### Day 4: Congruent Figures

- Learning Target: Today I can learn about congruent figures.
- Explore Activity: p. 303
  - Before doing any of the problem, we need to find the coordinate of the triangle
    - $(5,2), (5,4), (3,4)$
  - A)  $(5,2) \rightarrow (5,-2); (5,4) \rightarrow (5,-4); (3,4) \rightarrow (3,-4)$  plot these points and connect the dots to make your new triangle and label it A
  - B) you are going to take your new triangle and translate each point 3 units to the left and 0 units to the right ( $x - 3$  means move to the left, y means do not go anywhere)
    - $(5,-2) \rightarrow (2,-2); (5,-4) \rightarrow (2,-4); (3,-4) \rightarrow (0,-4)$
    - Plot these points to make your new triangle and label it B

- C) You are going to take your new triangle and reflect across the y-axis meaning you are making your x coordinates negative and keeping the y coordinates the same
  - $(2,-2) \rightarrow (-2,-2)$
  - $(2,-4) \rightarrow (-2,-4)$
  - $(0,-4) \rightarrow (0,-4)$
  - Plot these points to make your new triangle and label it C
- D) This means that you are going to translate your triangle  $(x, y+4)$  meaning x stays the same and add 4 to your y-coordinates
  - $(-2,-2) \rightarrow (-2,2)$
  - $(-2,-4) \rightarrow (-2,0)$
  - $(0,-4) \rightarrow (0,0)$
  - Plot these points to make your new triangle and label it D
- E) We are going to use the 90 degrees clockwise rule:  $(x,y) \rightarrow (y,-x)$ 
  - $(-2,2) \rightarrow (2,2)$
  - $(-2,0) \rightarrow (0,2)$
  - $(0,0) \rightarrow (0,0)$
  - Plot these points to make your new triangle and label it E
- Complete p. 306 #1-3

#### Day 5: Review of Module 9

- Learning Target: Today I can review transformations and congruences.
- Students are to complete p. 309 the whole page except #7
  - This involves translations, rotations, reflections using the rules if necessary