**Unit 6 - Transformations**

Lesson 1: Review Graphing
Objective: Today we will review graphing points.

**The Quadrants**

A coordinate plane is broken up into four sections called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



Plot the following points and identify the quadrant in which they lie:

$A(2, -6)$ $B(-7, -3)$ $C(-5, 5)$
$D(-4, -1)$ $E(1, -1)$ $F(6, 4)$



Write the coordinate points from the given graph:

$A(\\_\\_\\_,\\_\\_\\_)$ $B(\\_\\_\\_,\\_\\_\\_)$ $C(\\_\\_\\_,\\_\\_\\_)$ $D(\\_\\_\\_,\\_\\_\\_)$ $E(\\_\\_\\_,\\_\\_\\_)$ $F(\\_\\_\\_,\\_\\_\\_)$



Plot the following points and identify the geometric shapes formed by joining the points:



Lesson 2: Reflections
Objective: Today we will draw the reflection of a figure over a given axis.
Standard: 8.G. 1, 8.G.3

A **\_\_\_\_\_\_\_\_\_\_\_\_** is a mirror image of the original figure. Each point of the preimage and its image are the same distance from the line of reflection.

Reflections create **\_\_\_\_\_\_\_\_\_\_** figures.

You can reflect figures over the **\_\_\_\_\_\_\_** and over the **\_\_\_\_\_\_\_\_**.

**To reflect a figure over the x-axis:**

Change the sign of the **\_\_\_\_\_\_\_\_\_\_**.

**M**

**Triangle MAD** is plotted on the grid.

**Draw** the **image** of **MAD**
**reflected in the *x*-axis.**

**A**

**D**

**M (3, 6) M’ (\_\_\_ , \_\_\_)**

**A (8, 1) A’ (\_\_\_ , \_\_\_)**

**D (\_\_\_ , \_\_\_) D’ (\_\_\_ , \_\_\_)**



**To reflect a figure over the y-axis:**

Change the sign of the **\_\_\_\_\_\_\_\_\_**.

**Trapezoid DOGS** is plotted on the grid.
**Draw** the **image** of **DOGS**
**reflected in the *y*-axis.**

**D (-6 , -2) D’ (\_\_\_ , \_\_\_)**

**S**

**GZZZZ**

**OZZ**

**D**

**O (-2 , -5) O’ (\_\_\_ , \_\_\_)**

**G (\_\_\_ , \_\_\_) G’ (\_\_\_ , \_\_\_)**

**S (\_\_\_ , \_\_\_) S’ (\_\_\_ , \_\_\_)**

Lesson 3: Dilations
Objective: Today we will complete dilations of figures on a coordinate grid.
Standard: 8.G. 1, 8.G.3

A **\_\_\_\_\_\_\_\_\_** uses a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, *k*, to enlarge or reduce a figure.

* If $k>1$ the image will be an enlargement of the original figure.
* If $0<k<1$ the image will be a reduction of the original figure.
* If $k=1$ the image will be the same as the original figure.

To dilate a figure by a given scale factor, **\_\_\_\_\_\_\_\_\_\_** the coordinates by the scale factor.

Dilations create an image that is **\_\_\_\_\_\_\_\_\_** to the original figure. The image is the same shape but not necessarily the same size.

***Parallelogram*** ***FBI*** has the coordinates:

|  |  |  |
| --- | --- | --- |
| **F = (–2, 3)** | **B = (3, –1)** | **I = (–3, –3)** |

**Draw** & **Label** a **Dilation** of **3: (*x*, *y*) → (3*x*, 3*y*)**

|  |  |  |
| --- | --- | --- |
| **Fʹ = \_\_\_\_\_\_** | **Bʹ = \_\_\_\_\_\_** | **Iʹ = \_\_\_\_\_\_** |

**Draw** & **Label** this ***image*** ***F’B’I’***.

**BN**

**I**

**F**

Lesson 4: Translations
Objective: Today we will translate figures on a coordinate grid.
Standard: 8.G. 1, 8.G.3

A **\_\_\_\_\_\_\_\_\_\_** slides a figure from one position to another position without turning it.

Translations create **\_\_\_\_\_\_\_\_** figures.

***Triangle*** **BAD** has coordinates:

|  |  |  |
| --- | --- | --- |
| **B = (–7, 9)** | **A = (–2, 5)** | **D = (–9, 2)** |

**Draw** & **Label** the **image** of **B’A’D’** under the **transformation:**

**(*x*, *y*) → (*x* + 7, *y* – 5)**

|  |  |  |
| --- | --- | --- |
| **B’ = \_\_\_\_\_\_\_\_** | **A’ = \_\_\_\_\_\_\_\_** | **D’ = \_\_\_\_\_\_\_\_** |



**D**

**A**

**B**

Lesson 3: Rotations
Objective: Today we will rotate figures around the origin.
Standard: 8.G. 1, 8.G.3

A **\_\_\_\_\_\_\_\_\_** is a transformation in which a figure is rotated, or turned, about a fixed point. The fixed point is called the center of rotation.

Rotations create **\_\_\_\_\_\_\_\_\_** figures. Each point and its image are the same distance from the center of rotation.

**Rules for Rotations**



 **Symbols**

 $\left(x, y\right)\rightarrow \left(\\_\\_\\_\\_\\_\\_\\_\\_\\_\right)$ $\left(x, y\right)\rightarrow \left(\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\right)$

 Switch x- and y- values Change the sign of
 Change the sign of $x$ both x- and y-values

 $(3, 4)\rightarrow $ $(-2, 1)\rightarrow $

**Draw and Label the figure under a** $90°$ **clockwise rotation.**

|  |  |
| --- | --- |
| **Parallelogram** **NOSE** | **Image** **NʹOʹSʹEʹ****(*x*, *y*) → (*y*, –*x*)** |
| **N = (–6, –5)** | **Nʹ = \_\_\_\_\_\_\_\_** |
| **O = (–4, –5)** | **Oʹ = \_\_\_\_\_\_\_\_** |
| **S = (–4, –2)** | **Sʹ = \_\_\_\_\_\_\_\_** |
| **E = (–6, –2)** | **Eʹ = \_\_\_\_\_\_\_\_****O****S****E****N** |

**Draw** the **Rotation** of **Rectangle I** **180º clockwise** about the **origin**.

**Label** **Point** **I** as: **I’** on the **rotated** figure.

**Find** the **Coordinates** of: **I’\_\_\_\_\_\_\_**



**I**

Lesson 5: Sequences of Transformations
Objective: Today we will identify the sequence of transformations.
Standard: 8.G. 1, 8.G.3

If you have two congruent figures, you can determine the transformation, or **\_\_\_\_\_\_** of transformations, that maps one figure onto the other by analyzing the **\_\_\_\_\_\_\_\_\_\_\_\_** or relative **\_\_\_\_\_\_\_\_\_\_** of the figures.



**Identify** a **sequence** of **transformations** that will **transform** **figure**into **figure**



**T**

**R**

**E**

**A**

**H**

**S**

**Hʹ**

**Aʹ**

**Eʹ**

**Rʹ**

**Tʹ**

|  |
| --- |
| **A. Reflection (over *x*-axis) & Translation (right & up)** |
| **B. Rotation (90° clockwise) & Reflection (over *x*-axis)** |
| **C. Rotation (90° counterclockwise) & Reflection (over *y*-axis)****Sʹ** |
| **D. Rotation (90° counterclockwise) & Translation (up & right)** |