TRANSFORMATIONS

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Math 8- Transformations Lesson
EDTC 613 - Digital Image Acquisition

Transformations

- Target Audience:
  - 8th grade math students
- CCSS:
  - 8.G.1, 8.G.1a, 8.G.1b, 8.G.1c, 8.G.3

Prior Knowledge:

- Graphing on the coordinate plane
- Similar & congruent figures

BIG Ideas:

Objects in space can be transformed in an infinite amount of ways and these transformations can be described and analyzed mathematically.

Essential Question:

How can we best show or describe the change in position of a figure?

Lesson Description

- Introductory lesson to Transformation Unit
- Through the use of pictures students will be able to recognize the four transformation types: translation, rotation, reflection & dilation.
- Helps students make connections with the world around them, their math classroom and future career possibilities.
- **Students will identify the four transformations given a picture.**

4 Types of Transformations

Seeing Transformations in the world around you....

original

adjusted

These tiles represent a **TRANSLATION** which slides a figure (left, right, up or down) without turning or flipping.

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

The triangles on the hubcap show a **ROTATION** which turns a figure around a fixed point.

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

The diamonds on the window crossbars represent a **REFLECTION** which flips a figure over a line of reflection (mirror).

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

The circles around the eye and pupil represent a **DILATION** which enlarges or shrinks a figure using a scale factor.

Picture Source: Ms. Wiederholz's Sony Camera

Common Jobs that use Transformations

- Besides the math classroom, transformations are used in various career paths such as:
  - Animation
  - Graphic Design
  - Engineering
  - Architecture

original

adjusted

In animation, a **TRANSLATION** is used to move the same-sized figure around, as shown by Rafael moving up to the right..

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

In animation, a **ROTATION** turns an object, such as Leonardo's sword in the picture above.

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

In animation, a **REFLECTION** is used to flip a shape as shown by having Raphael fight in the other direction.

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

In animation, a **DILATION** changes the size of the shape in order to show distance as shown with Leonardo getting smaller.

Picture Source: Ms. Wiederholz's Sony Camera

Can you Identify the Transformation?

- Look at the following pictures and see if you can determine whether it is a:
  - Translation
  - Rotation
  - Reflection
  - Dilation

original

adjusted

DILATION

(to be revealed during presentation)

The minion has increased and decreased in size from the original one.

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

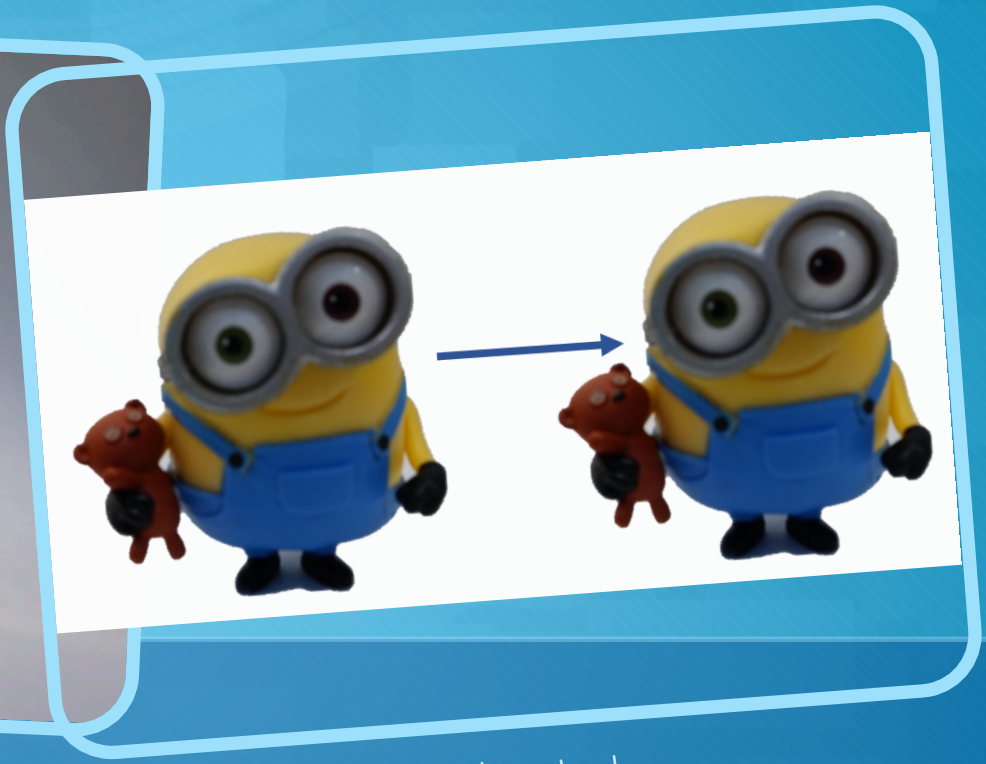
ROTATION

(to be revealed during presentation)

The minion has rotated his arms from the original one.

Picture Source: Ms. Wiederholz's Sony Camera

original



adjusted

TRANSLATION

(to be revealed during presentation)

The minion has moved to the side from the original one.

Picture Source: Ms. Wiederholz's Sony Camera

original

adjusted

REFLECTION

(to be revealed during presentation)

The minion has flipped over the line of reflection from the original one.

Picture Source: Ms. Wiederholz's Sony Camera

Now let's go practice on the coordinate plane.