



# Making the Moves

## Lesson 4

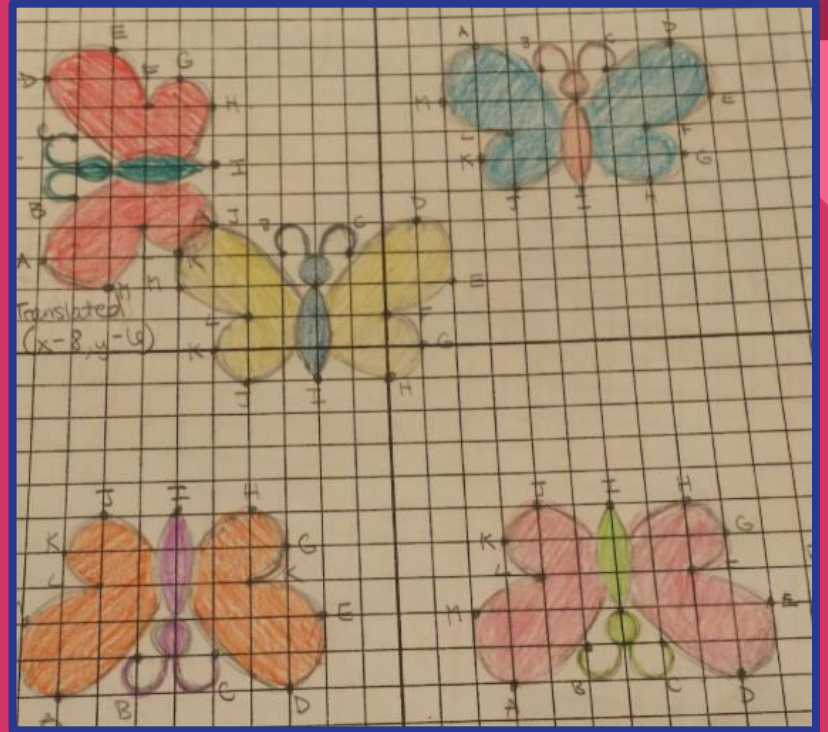
CCSS Standards: Addressing

▪ 8.G.A.1



2019 Open Up Resources | Download for free at [openupresources.org](https://openupresources.org).

Let's draw and describe translations, rotations, and reflections!



# Today's Goal

- I can use the terms translation, rotation, and reflection to precisely describe transformations.



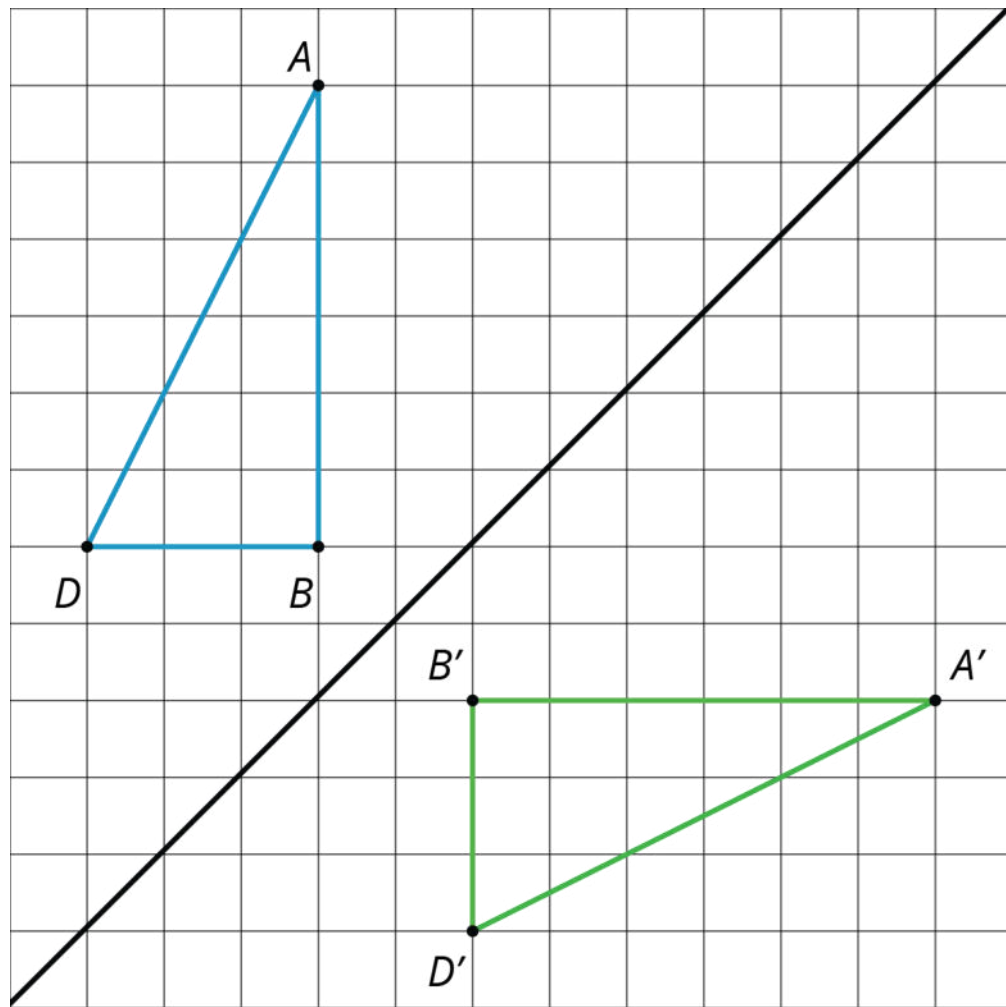
# Reflection Quick Image

Warm Up 4.1



I will show you an image  
of a reflection of triangle  $ABD$   
for 3 seconds.

**Draw the image on the grid and  
explain the strategies you used.**



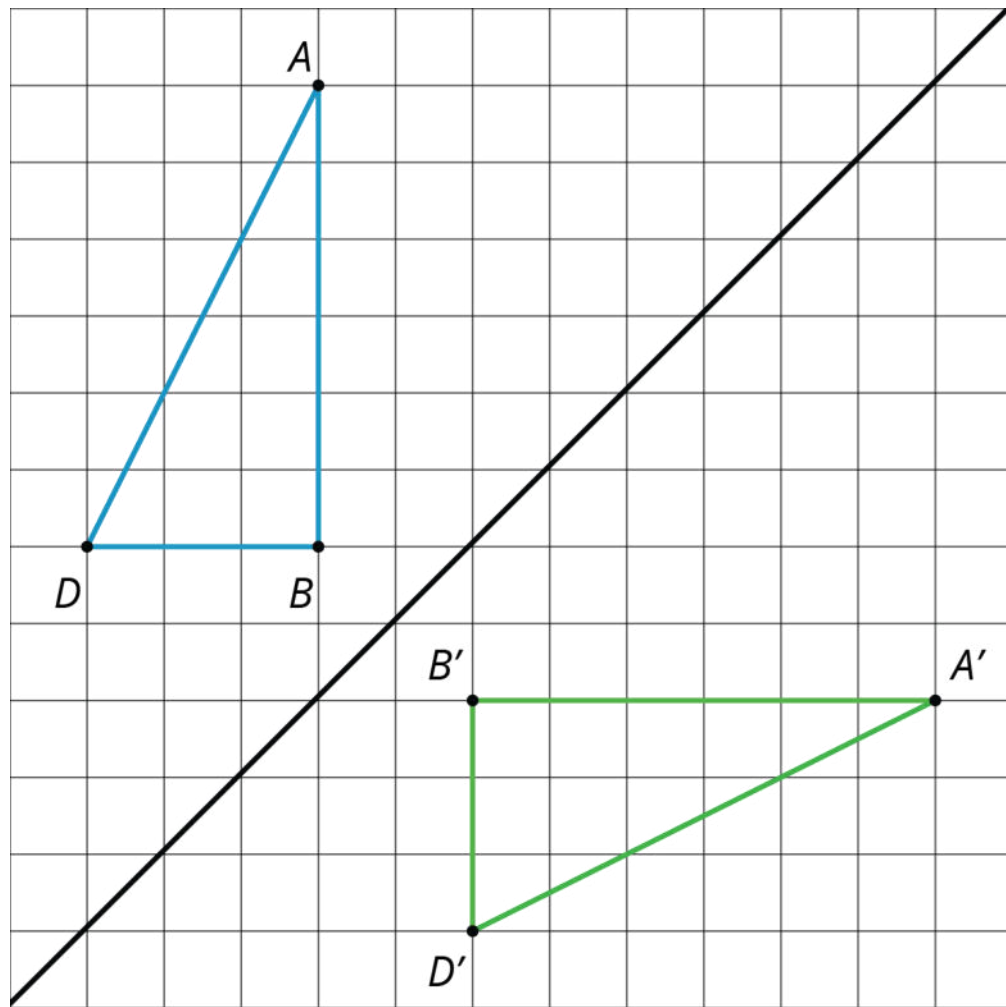
**Draw the image on  
the grid.**

**Be prepared to explain the  
strategies you used.**

**Let's take another  
quick peek.**

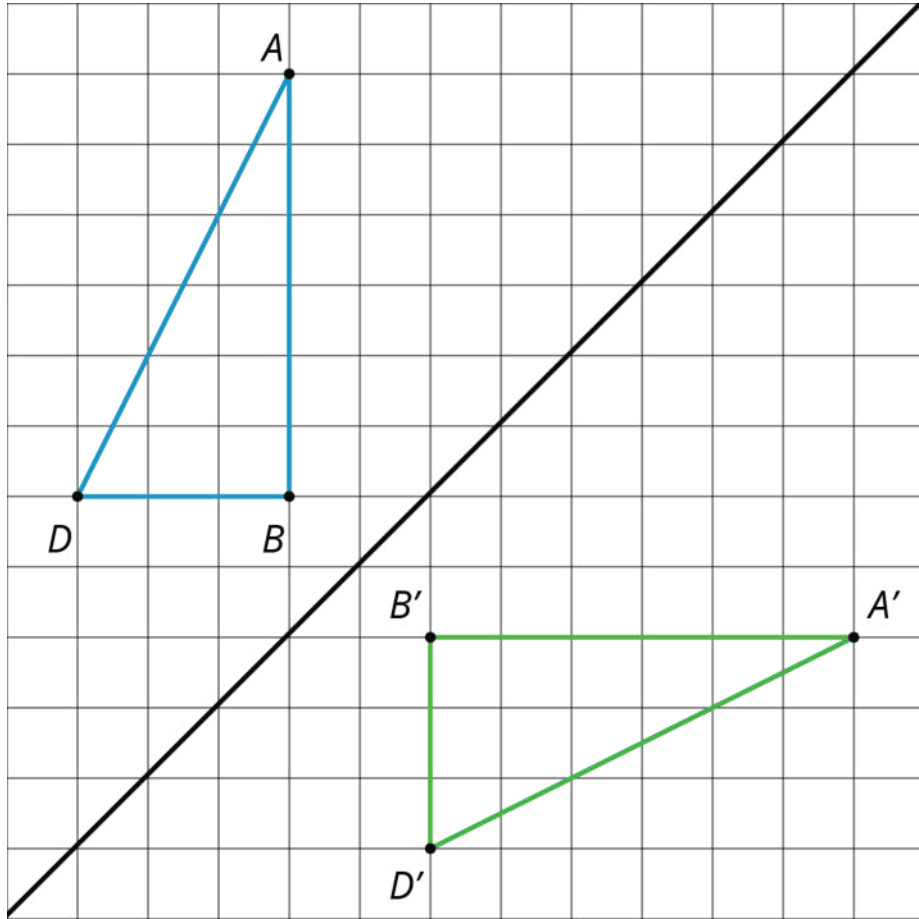
**Then revise your work!**





The background is a solid pink color. In the top right corner, there are several overlapping geometric shapes: a dark pink square, a medium pink square, and a light pink square, all partially cut off by the edge of the frame.

**Revise your work!**

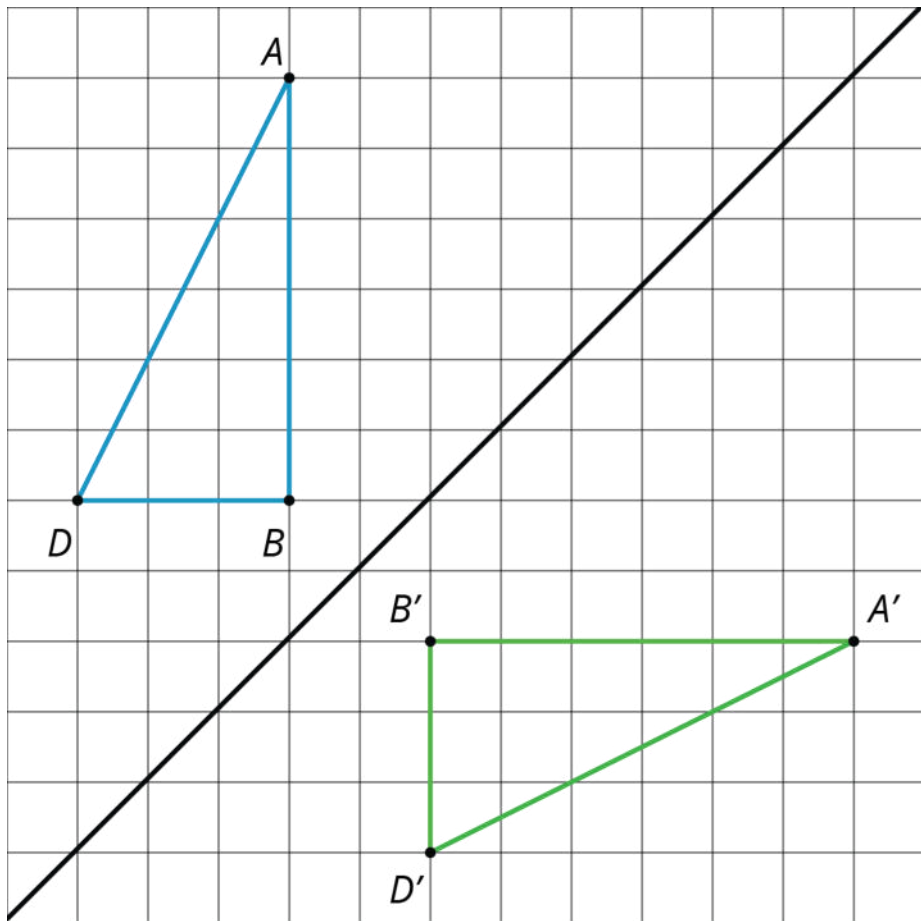


What was important in creating your sketch?

What did you need?

What did you look for in the first flash? the second?

—



What stayed the same and what is different in the shape and its image?

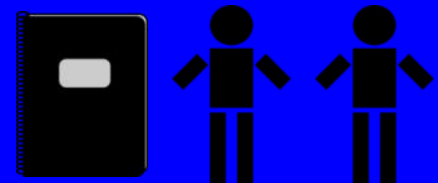
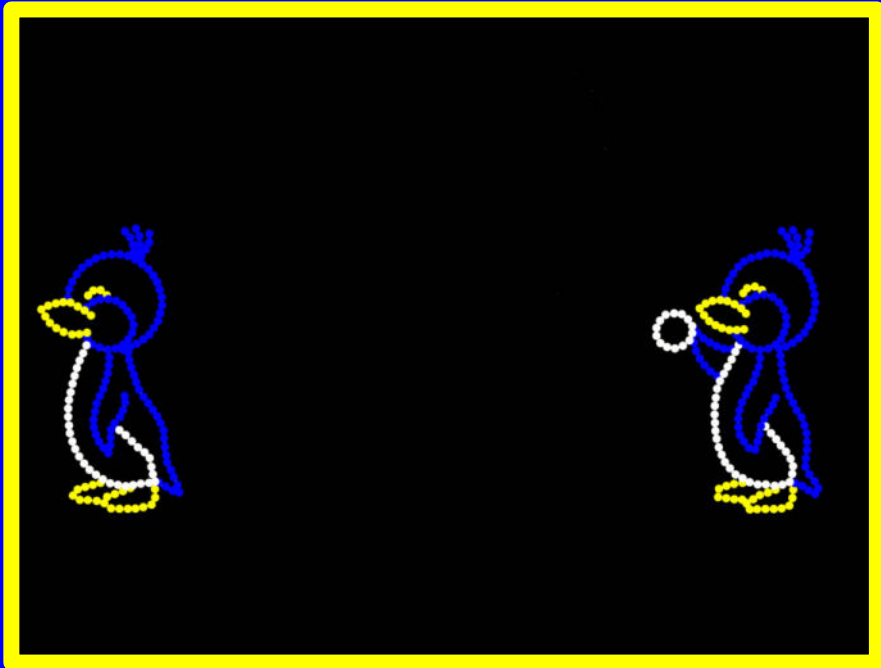
How did you decide where to place the vertices of the image?

How did you decide how long to make the sides?

# Make that Move

## Activity 4.2

- Collect and Display



# transformation

- translation
- rotation
- reflection

a move

(like the reflection in the Warm-Up)

or a sequence  
of moves

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Your partner will describe the image of this triangle after a certain **transformation**. Sketch it.

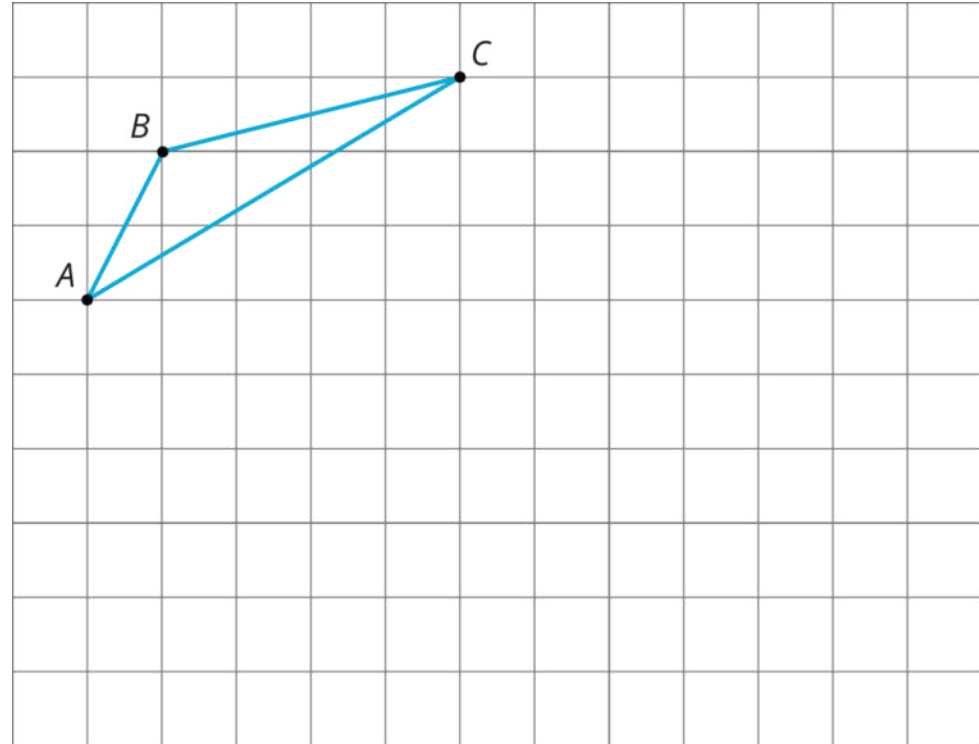
You **may** repeat, revise, or add any important info. as your partner works.

You **may not** tell them to fix anything until they finish!

Try to use **geometric language** in your descriptions!

The partner sketching **cannot** speak!

(Shhh! Your card is a secret!  
Please do not show your partner!)



# Partner Talk: (2 min)

- What pieces of your partner's description were helpful when you were sketching?
- What pieces did you find challenging to explain to your partner? Point to specific examples on your cards.
- When you were sketching, what questions would have been helpful to be able to ask the describer?



# How did you describe these in words?

- the direction and distance of a translation
- the center and the measure of a rotation
- the line of a reflection

Did you use tracing paper  
as you worked?

- **What was that process?**
- **If not, what was your process?**

# transformation

- translation
- rotation
- reflection

**Note:** There are other types of transformations, but for now, we will focus on these three types.

a move

(like the reflection in the Warm-Up)

or a sequence  
of moves

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# A to B to C

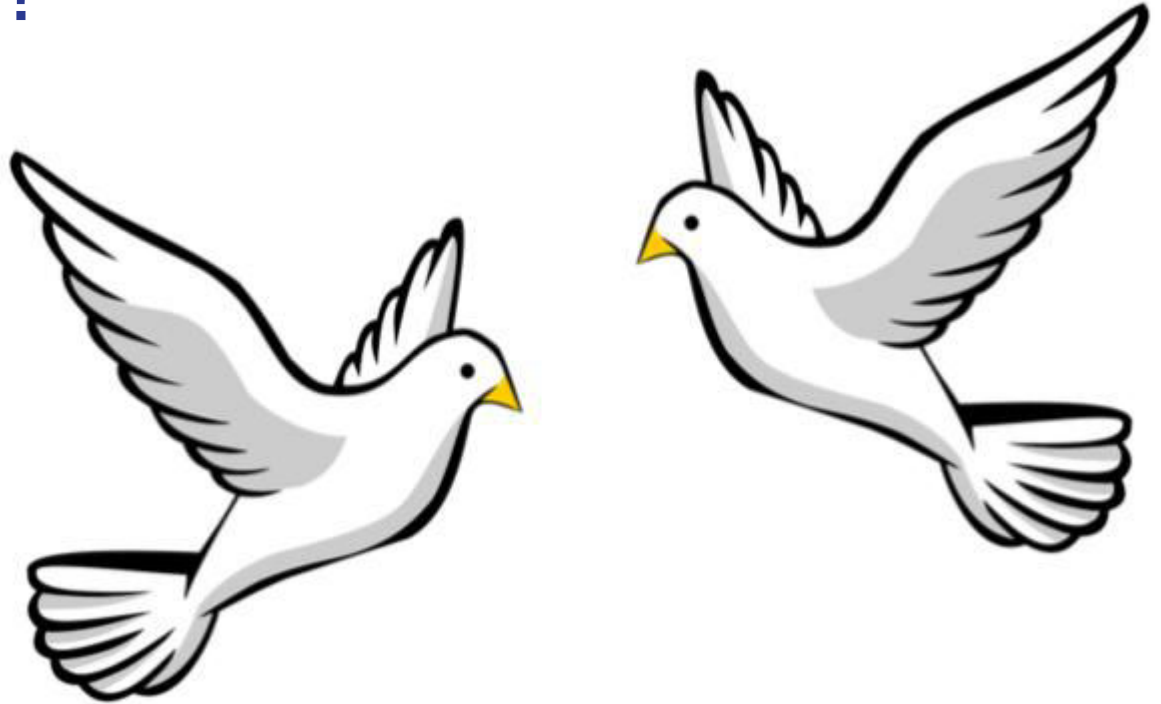
The background of the slide is filled with numerous colorful arrows of various sizes and orientations, pointing in different directions. The colors include green, yellow, orange, red, purple, and blue. The arrows are scattered across the white background, with some larger and more prominent than others. In the top right corner, there is a blue geometric pattern consisting of squares and triangles.

## Activity 4.3

- 5 Practices
- Collect and Display



Can you imagine a **single** translation, rotation, or reflection that would take one bird to another?



Describe how we could use translations, rotations, and reflections to take one bird to another.



When we do one or more transformations in a row to take one figure to another, it is called a **sequence of transformations**.



Please begin working on the task  
using Quiet Work Time. (2 min)

**Discuss your ideas with your  
team. Then finish up!** (3 min)




**Let's check out  
your solutions!**

# “Are you ready for more?”

Experiment with some other ways to take Figure *A* to Figure *C*. For example... can you with it with...

- no rotations?
- no reflections?
- no translations?





**If you want to describe a translation, what important information do you need to include?**

A translation is determined by two points that specify the distance and direction of the translation.



**If you want to describe a rotation, what important information do you need to include?**

A rotation is determined by a center point and an angle with a direction.




**If you want to describe a reflection, what important information do you need to include?**

A reflection is determined by a line.

# What does the word transformation mean?

A transformation is translations, rotations, and reflections, or any combination of these.



# What does sequence of transformations mean?

More than one transformation applied one after the other.

# Today's Goal

- I can use the terms translation, rotation, and reflection to precisely describe transformations.





The background features a collage of colorful, stylized arrows pointing upwards and to the right. The colors include blue, yellow, orange, red, green, and teal. Some arrows are solid, while others are outlined in black. In the top right corner, there are several overlapping triangles in shades of blue and white.

# What Does It Take?

Cool Down 4.4