

Dilations Lesson 0: Tour

Student Activity

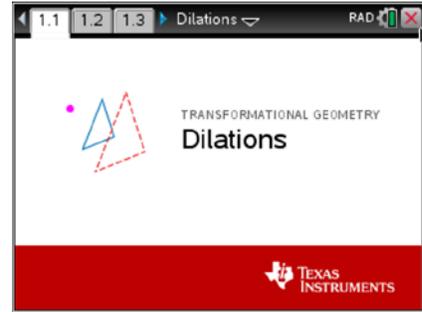
Name _____

Class _____

In this activity, you will investigate the defining properties of the transformation known as a dilation. You will also learn how to easily and quickly maneuver within all the Dilations activities – using shortcut keys or the tab key.

Open the document: *Dilations.tns*.

[PLAY](#) [INVESTIGATE](#) [EXPLORE](#) [DISCOVER](#)



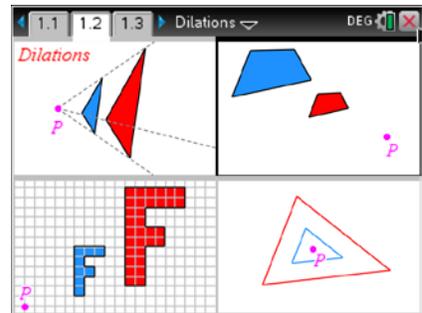
Move to page 1.2.

On the handheld, press **ctrl** **▶** and **ctrl** **◀** to navigate through the pages of the lesson.

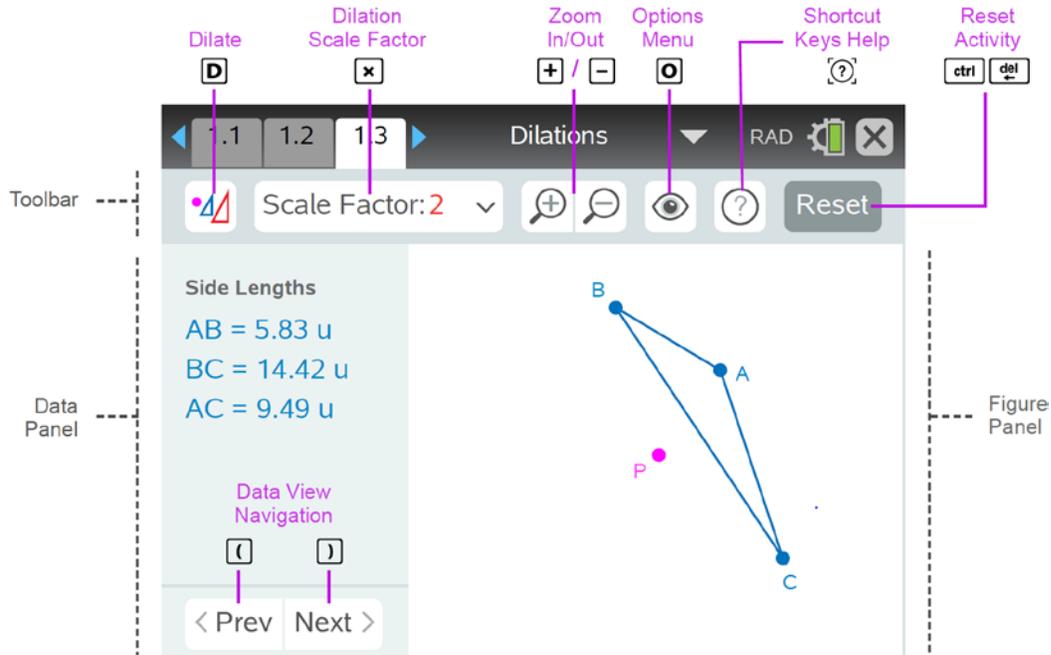
On the iPad®, select the page thumbnail in the page sorter panel.

1. What do the 4 parts of the screen have in common?
Make two conjectures.

A **conjecture** is an opinion or conclusion based upon what is observed. Quickly discuss with your group.



Move to page 1.3. Look at the figure below of an overview of the main dilations page and shortcut keys.



○ , **D** , **x** (multiply key), **+** , **-** , **?** , **ctrl del** , **(** , **)** (parentheses keys) are all examples of **shortcut keys**.



Navigating to and Selecting Screen Options or Objects



Handheld Tech Tip:

To choose an option or object, use any of the following 3 methods:

- Use the touchpad to move the pointer over the option or object and press the center of the touchpad () to select (**click**) it.
- Use **tab** to move to the next option or object on the screen and use **⇧shift** **tab** to go to the previous option or object.
- Use a **shortcut key** (ex: **A** for vertex A, **D** to Dilate, etc.). Letters **A**, **B**, **C**,... are located at the bottom of the handheld.

Use the method that works best for you: **click**, **tab** or **shortcut key**.



iPad Tech Tip:

To choose a command or object, tap on the icon or the object.

2. On the handheld, press the tab key (**tab**) multiple times and notice each of the icons and points as they are highlighted. To go in the opposite direction, press **⇧shift** then **tab**. Investigate.
3. **Shortcut keys** provide a fast way to perform actions and/or select objects on the screen on the handheld. A list of all shortcuts can be found in the Shortcut Keys Help menu (click on  or press **ctrl** **trig**). **Look at this list now.** Use as needed.
Press **enter** or **esc** to close the Shortcut Keys Help menu.

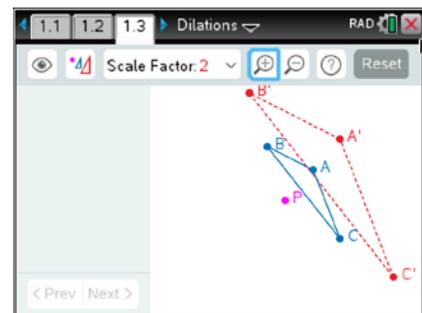
4. To dilate $\triangle ABC$ about point P with a Scale Factor of 2, press the Dilate key. (click on  or press **D**).

Zoom   in (+) or out (-) as needed.

Observe what happens on the screen.

$\triangle ABC$ is called the pre-image and $\triangle A'B'C'$ is called the image.

$\triangle A'B'C'$ is read "triangle A prime, B prime, C prime".



5. To move and grab a vertex, press the letter key that corresponds to the vertex such as A (**A**), and use the directional arrows (**▲ ▼ ◀ ▶**) on the touchpad to move vertex A. Play and explore to discover ideas and investigate patterns. (Note: you can also use the **tab** key or **click** on the vertex that you want.) On the iPad, tap on the desired point and then move it.



Repeat for vertex B (**B**) and vertex C (**C**). Observe.

Discuss with your partner or group: what seems to be true about the pre-image and its image?

6. Grab and drag the entire triangle shape by pressing the **S** key. Use the directional arrows to move the entire shape. On the iPad, tap on a side of the triangle (not a vertex) and slide the triangle. Investigate and observe. What seems to be true about the pre-image and its image?

7. Grab and drag point P (**P**), the point of dilation, in the same way. Investigate and observe.

Move point P so that it **coincides** with one of the vertices (**P and the vertex are at the same place**). Discuss: what do you notice about two of the sides of the triangles?

Move point P so that it **coincides** with another vertex. Discuss: what do you notice about two of the sides of the triangles?

8. Reset the page with the current menu settings. Press **Reset** (**ctrl** **del**).

9. Do a similar investigation to become familiar with the shortcut keys but using a different scale factor. If working with a partner or in a group, each person should choose a different scale factor. If you are working alone, use a scale factor of $\frac{1}{2}$. To change the scale factor, press **Scale Factor: 2** \downarrow (**x**) (multiply key)).

Use the directional arrows (**▲ ▼ ◀ ▶**) on the touchpad to select the scale factor, then press **enter** or **↵**.

Dilate $\triangle ABC$ with the scale factor chosen (**1/2** or **D**).

Zoom **+** **-** in (**+**) or out (**-**) as needed. Observe. Repeat steps 5 – 7.

Then write at least two conjectures about the pre-image triangle and its image.

A **conjecture** is an opinion or conclusion based upon what is observed.