



**Translations:**

1. Open the Geometer’s Sketchpad file *Transformations.gsp*. Access the second section on Translations (or choose the tab “Translate” at the bottom of the page).

2. Click on “**Show Horizontal Translation**”. What happens to the coordinates of the vertices of the triangle after a horizontal translation? \_\_\_\_\_

3. Grab any point and drag it around the screen. Does your hypothesis regarding the coordinates still hold true when a new figure is formed? \_\_\_\_\_

4. Click on “**Animate Horizontal Translation**”. Does your hypothesis still hold? \_\_\_\_\_

5. Generalize your hypothesis into a rule that will illustrate the changes in the coordinates?

Horizontal Translation:  $(x, y) \rightarrow ( \quad , \quad )$

6. Click on “Hide Horizontal Translation” and click on “Animate Horizontal Translation” to stop the animation. Click on “**Show Vertical Translation**”. What happens to the coordinates of the vertices of the triangle after a vertical translation? \_\_\_\_\_

7. Grab any point and drag it around the screen. Does your hypothesis regarding the coordinates still hold true when a new figure is formed? \_\_\_\_\_

8. Click on “**Animate Vertical Translation**”. Does your hypothesis still hold? \_\_\_\_\_

9. Generalize your hypothesis into a rule that will illustrate the changes in the coordinates?

Vertical Translation:  $(x, y) \rightarrow ( \quad , \quad )$

10. Click on “Hide Vertical Translation” and click on “Animate Vertical Translation” to stop the animation. Click on “**Show Diagonal Translation**”. What happens to the coordinates of the vertices of the triangle after a diagonal translation? \_\_\_\_\_

11. Grab any point and drag it around the screen. Does your hypothesis regarding the coordinates still hold true when a new figure is formed? \_\_\_\_\_

12. Click on “**Animate Diagonal Translation**”. Does your hypothesis still hold? \_\_\_\_\_

13. Generalize your hypothesis into a rule that will illustrate the changes in the coordinates?

Diagonal Translation:  $T_{a,b}(x, y) \rightarrow ( \quad , \quad )$

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14. Click on “Hide Diagonal Translation” and click on “Animate Diagonal Translation” to stop the animation. Click on “**Show Horizontal Translation**”.

15. Highlight one of the sides of the original triangle. Choose **MEASURE** from the toolbar at the top of the page. Choose **Length**. The length of the segment will appear on the page. Record this length. \_\_\_\_\_

16. Highlight the corresponding side of the image triangle. Choose **MEASURE, Length**. Record this length. \_\_\_\_\_

17. Do the sides of a triangle maintain their lengths through a translation? \_\_\_\_\_

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18. Access the last section on Composition of Reflections (or choose the tab “Compose” at the bottom of the page).

19. Click on “**Show 1st Reflection Over Line K**”. Click on “**Show 2<sup>nd</sup> Reflection Over Line J**”.

20. Click on “**Hide 1<sup>st</sup> Reflection Over Line K**”. Observe the result. Based upon your observations, what occurs when two reflections occur over parallel lines? \_\_\_\_\_

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When you close the program,  
do **NOT** save the changes.  
By **NOT** saving the changes, the program will remain in its  
original state with the original settings.

