TRANSLATIONS USING THE GOEMETER'S SKETCHPAD

Name _____

Using the Geometer's Sketchpad, complete the following steps and answer the questions to discover properties of translations.

1. Draw a convex polygon and label it.

   Give the name the polygon. _____

2. Draw a line that does not intersect your polygon.

3. Reflect your polygon over the line.

   Give the name of the reflection image of your polygon. _____

4. Draw a second line that does not intersect either of the polygons. Select this second line as the reflecting line.

5. Reflect your second polygon (the reflection image) over this line.

   Give the name of this polygon. _____
   (the reflection image of the first reflection image)

6. Calculate the slope of the two lines. _____

7. Select the second line and rotate it until the two lines have the same slope.

8. What do you notice about the relationship between the your polygon from question number 1 and question number 5?

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9. Start a new sketch and draw a line.

10. Draw a point not on the line and ***construct*** a line parallel to the first line.

11. Construct a polygon so that it does **not** intersect either of the parallel lines.

12. Reflect the polygon over the first line.

13. Reflect the image of your polygon over the second line.

14. Slide the two parallel lines closer together. What happens to your polygon from question number 11 and question number 13? What happen to these two polygons when one parallel line is on top of the other?

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15. Find the distance between three pairs of corresponding points on the two figures referred to in question number 14.

_____ _____ _____

16. Select one of the parallel lines and slide it. Write down your observations to the distances in question 15 as you slide the line.

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17. Find the distance between the two parallel lines. _____
(The shortest distance is the perpendicular distance.)

18. Again, slide one of the two parallel lines and write down any observations you notice about the distance between the parallel lines and the distances between the corresponding points from question number 15.

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19. Draw segments between the corresponding points you chose in number 15. Do these segments appear to be parallel? How would you verify this? (Hint: Think about slopes!)

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20. Look and the segments you drew in question 19 and the parallel lines. What relationship is there between the segments and the parallel lines? How would you verify this? (Hint: Think about slopes or angles.)

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