

What Kind of Quadrilateral is *THIS*???

Name _____

Part IV

Before completing this activity, go to the following link:

<http://tube.geogebra.org/m/2747645>

- 1) In this applet, points A , C , and B are collinear. In addition, points D , C , and E are collinear. What does it mean for points to be collinear?

- 2) Construct segments \overline{AC} and \overline{BC} . Then measure and display the length of each segment. What do you immediately notice?

- 3) Fill in the blank:
According to your results for (1) and (2) above, we can conclude that C is the _____ of \overline{AB} .

- 4) Construct segments \overline{DC} and \overline{EC} . Then measure and display the length of each segment. What do you immediately notice?

- 5) Fill in the blank:
According to your results for (4) and (1) above, we can conclude that C is the _____ of \overline{DE} .

- 6) Now use the **Polygon** tool to construct quadrilateral $ADBE$.

- 7) Move any one or more of the points A , D , B , and E around. How would you specifically classify quadrilateral $ADBE$?

- 8) Use GeoGebra to measure and display the **slopes of sides** \overline{AD} and \overline{EB} . What do you notice? Does this phenomenon still hold true if you move the red vertices around?

- 9) What does your response for (8) indicate about \overline{AD} and \overline{EB} ?

- 10) Use GeoGebra to measure and display the **slopes of sides** \overline{AE} and \overline{DB} . What do you notice? Does this phenomenon still hold true if you move the red vertices around?
- 11) What does your response for (10) indicate about \overline{AE} and \overline{DB} ?
- 12) According to your results for (9) and (11) above, how would you classify quadrilateral $ADBE$? Why is this?
- 13) Use your observations to complete the following theorem by filling in the blanks. (You'll formally prove this theorem later):

*If one diagonal of a _____ intersects the other _____
 at its _____, (i.e.: if the _____ of a
 _____ each other), then that
 _____ is a _____.*

Now select the **Text** tool, and create another textbox that displays this completed bolded sentence above. Move this text somewhere on the screen so it's not inside the parallelogram. **Save** your file now, and make it **Public**. (You—and the rest of the world—should be able to access it at any time!)