Quadrilateral Exploratory Activity

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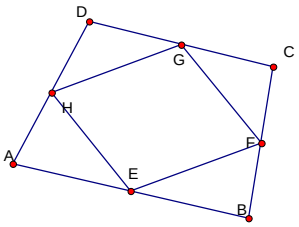
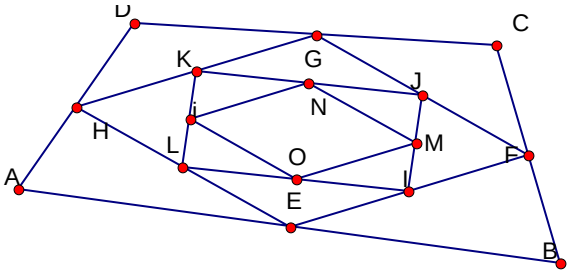
Overview: Students will use The Geometer's Sketchpad to construct a quadrilateral, and then students will construct midpoints on each of the sides of the quadrilateral. After students connect these four midpoints they will have to classify the inscribed quadrilateral by making a series of measurements of the inscribed angles, of the sides' lengths and slopes. The inscribed quadrilateral (EFGH in picture) is a parallelogram.





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Activity is on next page

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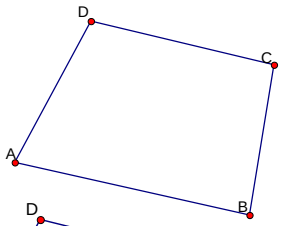
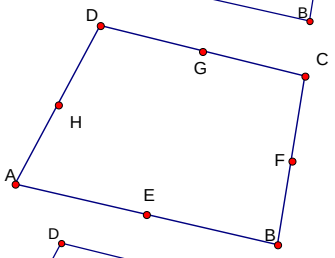


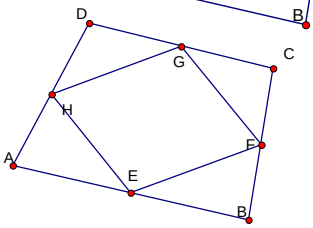
Task #1) Create the Shape
→ Make quadrilateral ABCD

(no parallel or perpendicular lines, just use the line segment tool to create a four sided shape ABCD –a plain, old quadrilateral)

→ Select line segment $\overline{AB}$, click on "Construct" choose "midpoint". You should see a midpoint added. Label the point "E". Do this to all four sides until each side has a midpoint (points F, G and H). Picture→



→Construct Line segments from E to F, F to G, G to H, and H to E. Picture →



Task #2) Determine what kind of shape EFGH is by finding the measure of

1) The following angles

∠EFG:_____ ∠FGH:_____
∠HEF:_____ ∠GHE:_____

2) Length of the sides

$\overline{EF}$ _____ $\overline{FG}$ _____
$\overline{GH}$ _____ $\overline{HE}$ _____

3) Slope of the sides

$\overline{EF}$ _____ $\overline{FG}$ _____
$\overline{GH}$ _____ $\overline{HE}$ _____

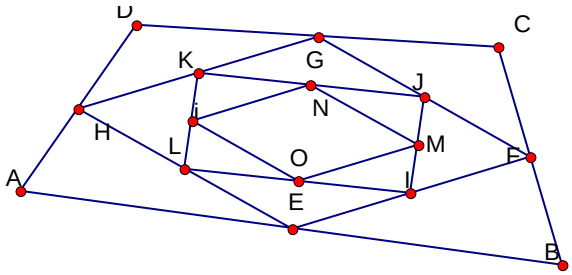
Task #3) CLASSIFY EFGH .
Use your measurements from task #2 and the properties that we have studied to explain your classification.

_____

_____

_____

Extend:
Continue to make quadrilaterals by constructing four midpoints until you have the following picture



Are all of these new inner quadrilaterals the same kind of shape? (i.e. Would each inner shape receive the same classification that you came up with in task #3?)

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