

Making a Kaleidoscope



Name: _____

Make a kaleidoscope by rotating a quadrilateral.

1. Open **Making a Kaleidoscope.gsp**. Go to page "Kaleidoscope."
You will see three circles, all with center at point C.



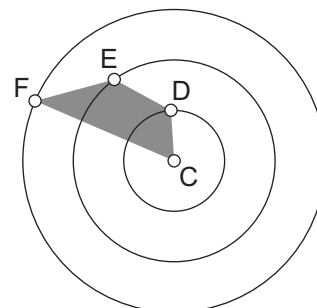
2. Construct a point on each circle.



3. Click points *D*, *E*, and *F*, in that order, to show their labels.



4. Construct a quadrilateral. Select points *C*, *D*, *E*, and *F*, in order, and choose **Construct | Quadrilateral Interior**.



5. Follow these steps to rotate the quadrilateral by 90° using point C as the center of rotation.

Select point C and choose **Transform | Mark Center**.

Select the quadrilateral interior and choose **Transform | Rotate**.

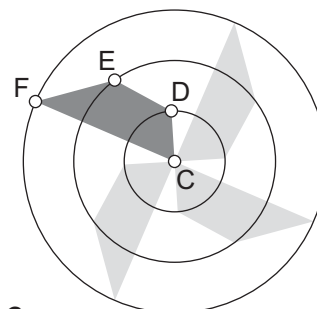
In the window that pops up, enter 90 for the angle and click **Rotate**.

6. With the new quadrilateral still selected, rotate it by 90° .

7. Rotate one more time by 90° . You should now have four quadrilaterals.



8. Make the quadrilaterals different colors. Select the interior of each quadrilateral one at a time. Choose **Display | Color** and pick a new color.



9. Compare the four quadrilaterals. How are they similar?
How are they different?

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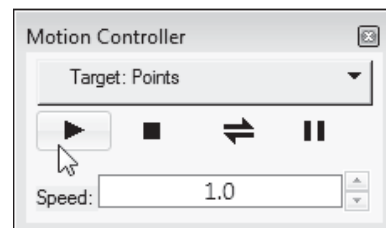
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10. Now you will animate your kaleidoscope.

Select only points *D*, *E*, and *F*. Choose **Display | Animate Points**. Watch what happens.

11. Click the arrow buttons to change the speed of your kaleidoscope. Press the Stop button to stop the motion.



EXPLORE MORE

12. Go to page “Explore More.” Follow steps 2–5 to make a quadrilateral *CDEF* on the circles.

13. How many shapes will you get if you keep rotating *CDEF* by 60° ? Tell how you know.

14. Construct the kaleidoscope. Keep rotating by 60° .

15. Give two other examples of the number of degrees to rotate a shape and the number of shapes that you will get.

16. Go to page “Make Your Own.” Make your own kaleidoscope. Choose the number of degrees to rotate the shape. Describe your kaleidoscope.
