

# 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.



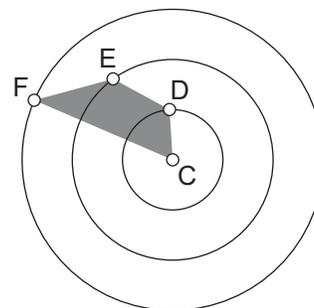
2. Construct a point on each circle.



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  $90^\circ$  using point C as the center of rotation.



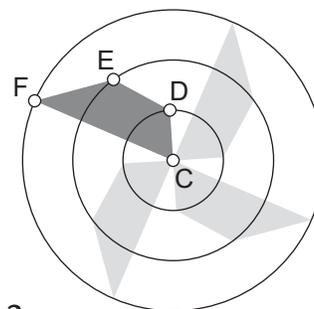
- Select point C and choose **Transform | Mark Center**.  
Select the quadrilateral interior and choose **Transform | Rotate**.  
In the window that pops up, enter 90 for the angle and click **Rotate**.

6. With the new quadrilateral still selected, rotate it by  $90^\circ$ .

7. Rotate one more time by  $90^\circ$ . 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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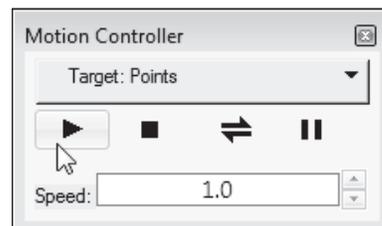
continued



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  $60^\circ$ ? Tell how you know.

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14. Construct the kaleidoscope. Keep rotating by  $60^\circ$ .

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

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

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