ACTIVITY 5.3

Using Technology

Geometry Software Activity for use with Lessons 5.2 and 5.3

Investigating Concurrent Lines

You can use geometry software to explore concurrent lines.

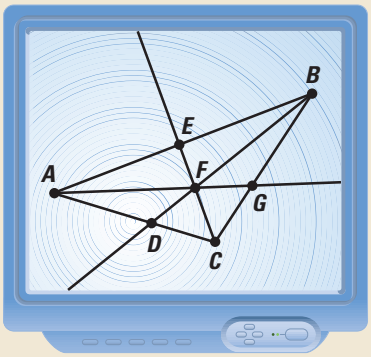
STUDENT HELP

INTERNET SOFTWARE HELP

Visit our Web site www.mcdougallittell.com to see instructions for several software applications.

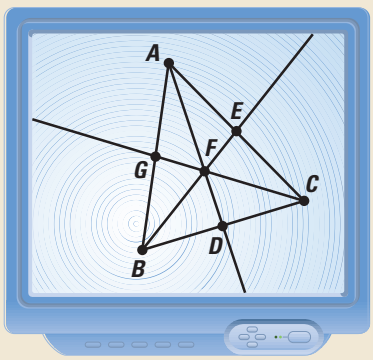
CONSTRUCT Construct the angle bisectors of a triangle.

1. Draw any triangle ABC.
2. Draw the bisector $\overrightarrow{BD}$ of $\angle ABC$. Then draw the bisector $\overrightarrow{CE}$ of $\angle BCA$.
3. Label the intersection point of the two angle bisectors as F.
4. Draw the ray from A that passes through F.



INVESTIGATE

1. Measure $\angle BAF$ and $\angle CAF$ to show that $\overrightarrow{AF}$ is an angle bisector.
2. Explain how the results of Exercise 1 can be used to verify that the angle bisectors of a triangle are concurrent.



CONSTRUCT Construct the medians of a triangle.

5. Draw any triangle ABC.
6. Locate the midpoint of $\overline{BC}$ and label it D. Locate the midpoint of $\overline{AC}$ and label it E.
7. Draw the medians $\overline{AD}$ and $\overline{BE}$.
8. Label the intersection of the two medians as F.
9. Draw the ray from C that passes through F. Label the intersection of $\overrightarrow{CF}$ and $\overline{AB}$ as G.

INVESTIGATE

3. Measure $\overline{AG}$ and $\overline{BG}$. What do you notice? Is $\overline{CG}$ a median?
4. Explain how the results of Exercise 3 can be used to verify that the medians of a triangle are concurrent.
5. Measure $\overline{AD}$ and $\overline{AF}$. Calculate $\frac{AD}{AF}$. Is $AF = \frac{2}{3}AD$?
6. Drag point A to change the triangle. Does the quotient $\frac{AD}{AF}$ change?

EXTENSION

CRITICAL THINKING Find examples of triangles in which an angle bisector is contained in the same line as a median. Do the lines also contain an *altitude* and a *perpendicular bisector* of the triangle as well? Explain.