


# ACTIVITY 31

Name \_\_\_\_\_

Date \_\_\_\_\_

## Using a Table to Make Conjectures

As you construct and manipulate the geometric objects, record your observations below.

1. Construct a right triangle  $\triangle RIT$  with right angle at  $R$ . (Activity 30.)
2. Construct a circle with center  $I$  and radius point  $R$ . (F3 1:Circle)
3. Create intersection point  $H$  of this circle and  $\overline{IT}$ . (F2 3:Intersection Point)
4. Construct a circle with center  $T$  and radius point  $R$ . (F3 1:Circle)
5. Create intersection point  $G$  of this circle and  $\overline{IT}$ . (F2 3:Intersection Point)
6. Hide the circles. (F7 1:Hide / Show)
7. Construct the perpendicular through  $H$  to  $\overline{RT}$ . (F4 1:Perpendicular Line)
8. Create intersection point  $A$  of this line and  $\overline{RT}$ . (F2 3:Intersection Point)
9. Construct the perpendicular through  $G$  to  $\overline{RI}$ . (F4 1:Perpendicular Line)
10. Create intersection point  $N$  of this line and  $\overline{RI}$ . (F2 3:Intersection Point)
11. Hide the perpendiculars. (F7 1:Hide / Show)
12. Create segments  $\overline{HA}$  and  $\overline{GN}$ . (F2 5:Segment)
13. Measure  $HG$ ,  $HA$ , and  $GN$ . (F6 1:Distance & Length)
14. Make a table of these values. (F6 7:Collect Data)
15. Drag  $I$  and  $T$  about and collect some data. (F6 7:Collect Data or  D)

*Find a formula relating these three values.*

(continued)

## OBSERVATIONS

## Using a Table to Make Conjectures (Cont.)

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Make a new table. (Make sure you are in Split Screen mode.)
2. Press  $\boxed{2\text{nd}} \boxed{\text{APPS}}$  to toggle to the Data/Matrix Editor.
3. Clear the editor. ( $\boxed{\text{F1}}$  8:Clear Editor)
4. Press  $\boxed{\text{ENTER}}$  to answer “Yes” to the dialog box inquiry “Clear the contents of the editor, are you sure?”
5. Press  $\boxed{2\text{nd}} \boxed{\text{APPS}}$  to toggle back to Geometry.
6. Measure  $IG$  and  $HT$ . ( $\boxed{\text{F6}}$  1:Distance & Length)
7. Make a table using the values  $\overline{IG}$ ,  $\overline{GH}$ , and  $\overline{HT}$ .

***Find a formula relating these three values.***

- 
1. Construct a perpendicular through  $R$  to  $\overline{IT}$ .  
( $\boxed{\text{F4}}$  1:Perpendicular Line)
  2. Create intersection point  $E$  of this line and  $\overline{IT}$ .  
( $\boxed{\text{F2}}$  3:Intersection Point)
  3. Measure  $GE$  and  $EH$ . ( $\boxed{\text{F6}}$  1:Distance & Length)

***What do you observe?***

4. Create segments  $\overline{GR}$  and  $\overline{HR}$ . ( $\boxed{\text{F2}}$  5:Segment)

***Prove  $\triangle REG \cong \triangle RNG$  and  $\triangle REH \cong \triangle RAH$ .***

### OBSERVATIONS