**Hurricane Alert! Pre-mission math practice**Student pages

**Overview**This lesson reviews the math skills you will need for your Hurricane Alert! simulation. You will practice all the math skills because you may be called upon to help a team member during the mission. If your teacher has already assigned your specialty, pay particular attention to the math calculations you will do during your mission.

**Materials**Hurricane Tracking practice data sheet  
pencil  
calculator (optional)

**Procedure**Finish the practice problems below for each type of calculation needed in your Hurricane Alert! mission.

**1. Converting wind speeds from knots to miles per hour.** Knots x 1.15 = miles per hour.

Example:

27 knots (kts) = ? miles per hour (mph)  
27 x 1.15 = 40.25 miles per hour

For your mission, you can round to the ones place. Example: 40.25 would round to 40 miles/hr.

Practice problems  
a. 45 knots = \_\_\_\_\_\_\_\_ miles per hour

b. 67 kts = \_\_\_\_\_\_\_\_\_mph

c. 100 kts = \_\_\_\_\_\_\_\_mph

d. 135 kts = \_\_\_\_\_\_\_mph

**2. Finding the directional speed of the hurricane.**

Speed = Distance ÷ Time

Speed = number of miles (from one point to another—provided on your practice data worksheet) ÷ number of hours from one advisory to the next (from your worksheet).

Round your answer to the nearest tenth place.

Example:  
If the hurricane traveled 100 miles in 4 hours (from 8 am to 12 pm), then

100 ÷ 4 = 25 miles per hour

Practice problems  
 A hurricane traveled 200 miles in 6 hours. Speed = \_\_\_\_\_\_\_\_ miles per hour (mph)

A hurricane traveled 158 miles in 4 hours. Speed = \_\_\_\_\_\_\_\_ mph

A hurricane traveled 105 miles in 3 hours. Speed = \_\_\_\_\_\_\_\_\_mph

A hurricane traveled 120 miles in 2.5 hours. Speed = \_\_\_\_\_\_\_ mph

**3. Calculate the Estimated Time of Arrival (ETA) to breakpoint cities.**

A breakpoint city is an official location identified by the National Weather Service to be used when predicting hurricane impacts. (For your Hurricane Alert! mission, breakpoint cities are identified on your Hurricane Tracking Map.)

To find a hurricane’s ETA to a location, divide the number of miles from the hurricane to the location by how fast the hurricane is moving.   
 Miles ÷ miles per hour = number of hours

Example:  
If a hurricane is 300 miles away from Miami and is traveling 60 miles an hour, it will reach Miami in (300 ÷ 60) 5 hours.

If it was traveling 100 miles an hour, it would reach Miami in (300 ÷ 100) 3 hours.

**Practice Problems**a. A breakpoint city is 555 miles away from Hurricane Lucille traveling 68 miles per hour (mph). ETA = \_\_\_\_\_\_\_\_\_\_\_\_.

**b.** A breakpoint city is 124 miles away from Hurricane Bob traveling 54 miles per hour (mph). ETA = \_\_\_\_\_\_\_\_\_\_\_\_.

c. A breakpoint city is 379 miles away from Hurricane Edna traveling 75 miles per hour (mph). ETA = \_\_\_\_\_\_\_\_\_\_\_\_.

d. A breakpoint city is 283 miles away from Hurricane Frank traveling 78 miles per hour (mph). ETA = \_\_\_\_\_\_\_\_\_\_\_\_.

**Now, practice the calculations to track hurricane conditions.**1. Use the data provided on the Hurricane Tracking data sheet to calculate the missing values for advisories #1—4.   
2. Enter the values into the data sheet.