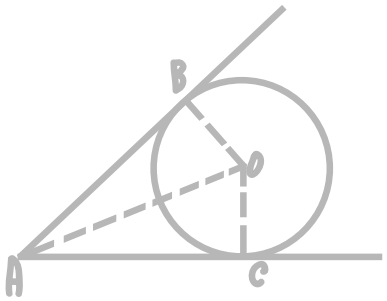
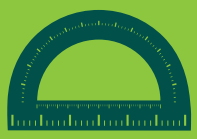
TAKE IT FURTHER



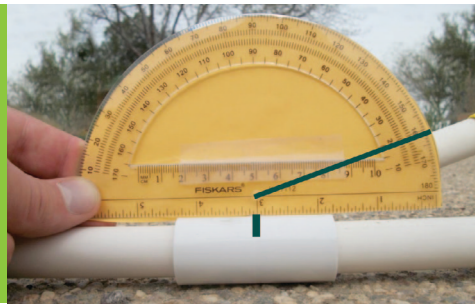
Activity Plus #1:
PREDICTING DISTANCE USING ANGLES
OPTIONAL ACTIVITY

OBJECTIVE
Take the first activity even further by recording data and creating a prediction graph.

MATERIALS
- FTD
- Launcher
- Protractor
- Tape measure
- Pencil



Protract-Tips: Tips to Get the Right Angle
- When setting the angle, it helps to put a mark on the launcher to center the protractor.
- Always look straight down the launcher or the reading of the protractor will be off.



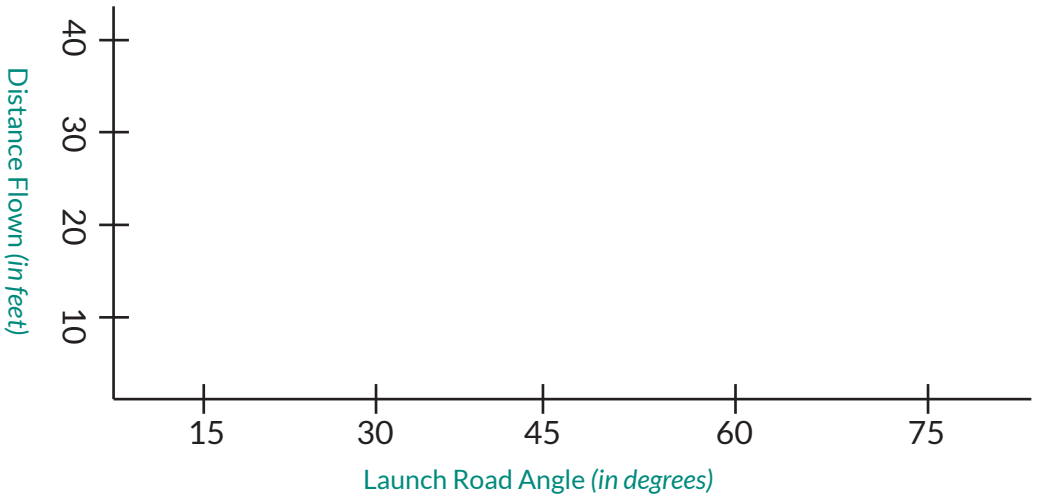
By making a few simple launches and graphing the results, you can predict the distance your rocket will travel when the launcher is set to a specific angle.

- Build an FTD as described in the original activity.
- Head out to the launch pad.
- Using a protractor set the launch rod so that it is angled to 60 degrees.
- Put FTD on launch rod and launch it. Make certain to keep all other variables contant!
- Measure distance between the launcher and where the FTD first hit the ground. Record the distance in the table on the right.

Launch Rod Angle *(in degrees)*	Distance Flown *(in Feet)*
15	
30	
45	
60	
75	

LAUNCH DATA

- Set the launch rod at 45 degrees. Repeat the launch and record the distance.
- Set the launch rod at 30 degrees. Repeat the launch and record the distance.
- If time allows, you can repeat the launch using a variety of other angles.
- Using the data you have collected, mark the distance traveled for each launch angle in the graph below:



- Draw a line between the dots representing each launch degree/distance. This is the prediction line.
- Pick an angle and look on the graph where the angle line intersects the prediction line. Note the predicted distance.
- Launch using that launch angle and then record the distance.

THINK ABOUT IT

- How close was the predicted distance to the actual distance?
- If the actual distance was different from the predicted distance, what do you think might have caused the difference?
- Did weather play a factor in your actual results?
- If you had more data points from actual launches do you think that the prediction distance will be more accurate? Why or why not?
- How might you apply this information to other rocket designs or types?