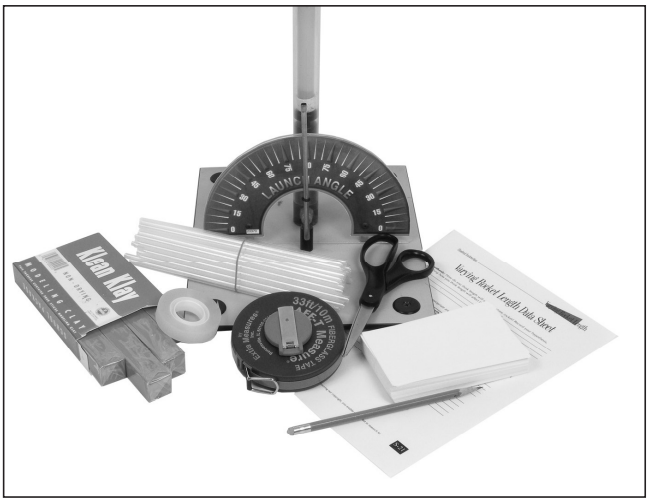
QuickView

Vary the length of a straw rocket to investigate the effect length has on the rocket's range.

Materials

- Pitsco Straw Rocket Launcher
- Precision Straws
- Index cards
- Modeling clay
- Ruler or measuring tape
- Scissors
- Transparent tape
- Pencil
- "Varying Rocket Length Data Sheet"



Procedure

1 Locate the "Varying Rocket Length Data Sheet" and write a hypothesis stating how you think variations in the length of the rocket's body will affect the rocket's range.

2 Construct two straw rockets of different lengths. The difference in lengths should be a minimum of five centimeters and a maximum of 10 centimeters. The other main components should be the same for both rockets (for example, same number of fins, same fin size and shape, same nose cone size and shape) and should stay within the design constraints (see the Construction QuickView for design constraints).

3 Label one rocket "Rocket A" and the other rocket "Rocket B."

4 Slip the first rocket over the launch tube.

5 Adjust the launch tube and rocket to the trajectory angle of 45 degrees.

6 Raise the launch rod to the fifth calibration line (calibration lines are the black lines on the launch rod).

7 To launch, release the launch rod so that it falls to the bottom of the cylinder.

8 Measure the rocket's range using the measuring tape.

9 Record the rocket's range on the "Varying Rocket Length Data Sheet."

10 Repeat Steps 4-9 twice more for "Rocket A" and three times for "Rocket B."

11 Analyze the data generated from the launches and write a conclusion explaining how the differences in rocket body length affect the rocket's range. Compare your hypothesis to your conclusion.

Varying Rocket Length Data Sheet

Hypothesis: How do you think length will affect the straw rocket? Record your hypothesis, describing how you think length will affect the rocket's range. _____

_____

_____

_____

Data

Record your data in the appropriate area of the table below.

		Distance (cm)		
	Body Length	**Launch 1**	**Launch 2**	**Launch 3**
Rocket A				
Rocket B				

Conclusion

What conclusion can you make about the relationship between the straw rocket's body length and the rocket's range? _____

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_____

Comparison

How does your conclusion compare to your original hypothesis? _____

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