

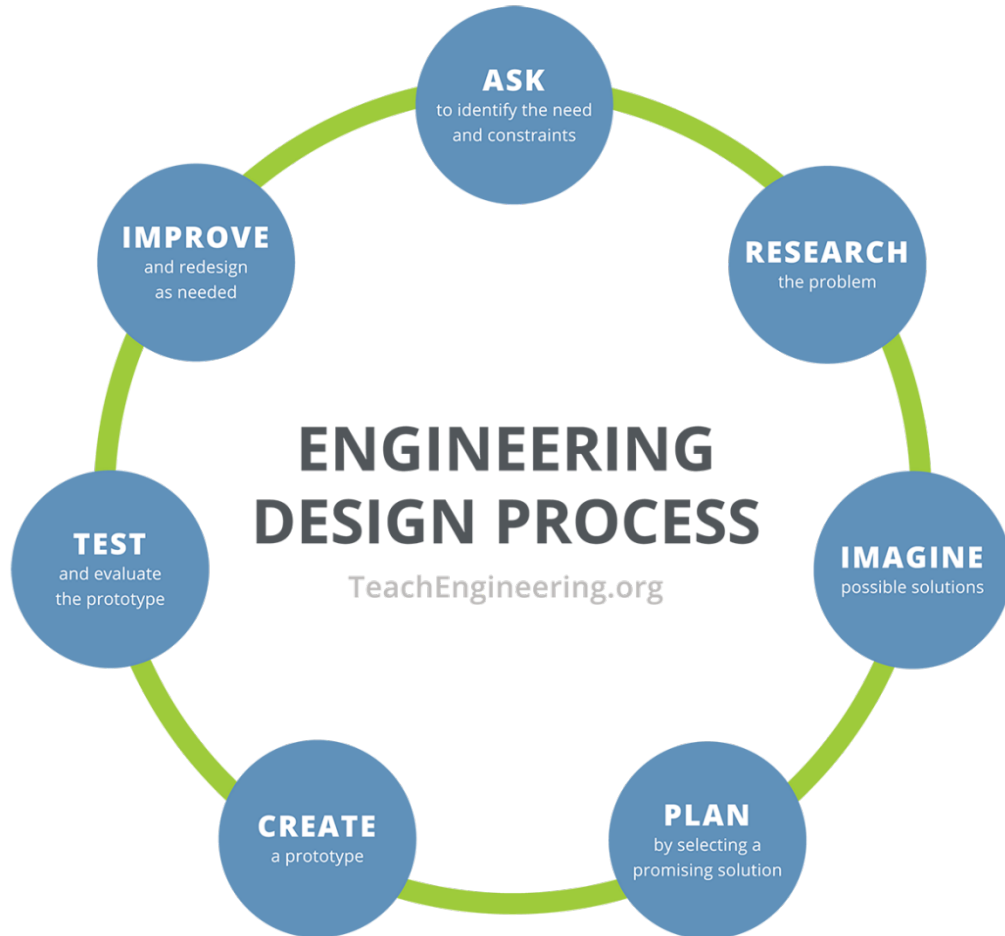
Name:

Date:

Class:

Paper Football Physics – Worksheet

Instructions: Using the engineering design process, design, create, and test three different paper football shapes to see which one flies the farthest.



1. **Ask** – Identify the need and constraints of this problem.

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2. **Research** – Research and learn about concussions and how to reduce them by changing the football.

3. **Imagine** – Individually sketch out four possible solutions.

a.	b.
c.	d.

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4. **Plan** – Have each team member share their sketches. As a team, select THREE different solutions. These can be specific solutions or a mixture of ideas. Draw your team’s solutions in the boxes below. Make sure to identify the dimensions of your solutions. (After everyone in the group has drawn the group’s chosen designs, get the teacher’s approval.)

Design #1

Design #2

Design #3

5. **Create** – Build your prototypes exactly as shown in your group’s drawings.

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6. Test – Using the testing area, test your designs.

Design	Airtime (s)	Distance traveled (cm)	Calculated Velocity (cm/s)	Observations of Performance
#1				
#2				
#3				

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Instructions: Based on your tests, answer the following questions.

a. What worked in your designs, and why?

b. What did not work in your designs, and why?

c. How would you improve your designs?

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7. **Improve** – Make changes and retest your updated prototype.

Redesign	Airtime (s)	Distance traveled (cm)	Calculated Velocity (m/s)	Observations of Performance
#1				
#2				
#3				

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a. Did your changes improve your prototype? How?

b. What worked in your updated design, and why?

c. What did not work in your updated design, and why?

d. How would you improve your redesign?
