PS – Activity #15

Hoopsters & Spinning Blimps

QUESTION: How can paper be designed to fly?

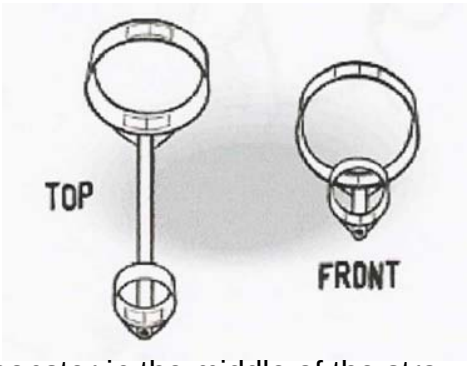
MATERIALS:

index cards
plastic straw
ruler
scissors
transparent tape

PROCEDURE:

Hoopster

1. Cut an index card into three 1" by 5" strips.
2. Put a piece of tape on the end of one strip. Curl the paper into a little loop and tape the ends together.
3. Put the other two strips end to end so they overlap about 1 cm and tape them together to make one long strip.
4. Curl this long strip into a larger loop and tape the ends together.
5. Put one end of a straw onto the middle of a strip of tape. Put the big hoop on top of the straw and fold the tape up the sides of the hoop.
6. Put another strip of tape at the other end of the straw. Press the small hoop very gently onto the tape. Move it around until it lines up with the big hoop, then press down firmly. See below.

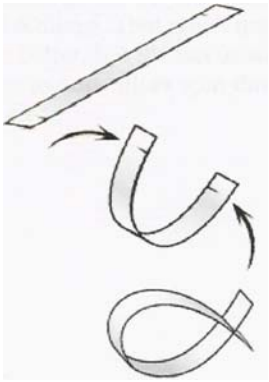


7. Now hold the Hoopster in the middle of the straw, with the little hoop in front. Throw it like a spear. It may take a few throws to get the hang of it.
8. Once you have the hang of flying your Hoopster, throw it and record the distance it flew. Record this in the Data section.
9. Repeat step 8 two more times.
10. Now modify your Hoopster as described below and see how each modification affects the distance that it flies. Record your findings in the Data section.
    - Put a paper clip at the bottom of the small hoop.
    - Make a Hoopster that is half as long.
    - Make a Hoopster that is twice as long.
    - Make a double Hoopster.

PS – Activity #15

Spinning Blimps

11. Cut a strip of paper about 6 to 8 inches long and ½ inch wide.
12. Cut halfway across the strip about ½ inch from one end. Turn the strip around and do the same thing on the other end. Now slip the slot at one end into the slot at the other end. See below.



13. Hold the blimp over your head and drop it. Time how long it takes for it to fall to the ground. Record the time.
14. Repeat this 2 more times and record the time.
15. Now alter your Blimp design and see how each modification affects the time it takes the blimp to hit the ground. Compare each new modification to the original you made in relation to the time it takes to hit the ground. The list below is just a sample of modifications you can make.
    - Make the paper strip longer and then shorter.
    - Make the tails longer and then shorter.
    - Cut the ends of the tails so they are pointy.

DATA:

HOOPSTER

	TRIAL 1	TRIAL 2	TRIAL 3	AVERAGE
Hoopster #1				
Hoopster #2 with paper clip				
Hoopster #3 ½-straw length				
Hoopster #4 2-straw length				
Hoopster #5 double hoops				

PS – Activity #15

SPINNING BLIMP

	TRIAL 1	TRIAL 2	TRIAL 3	AVERAGE
Blimp #1				
Blimp #2 longer paper				
Blimp #3 shorter paper				
Blimp #4 longer tail				
Blimp #5 shorter tail				
Blimp #6 pointy tails				

QUESTIONS:

1. What force is pulling these flying machines down?

2. What force is keeping these flying machines flying?

3. Which of the Hoopsters had the best average distance?

4. Which of the Hoopsters had the worst average distance?

5. What do you think is the most important thing to consider when designing a Hoopster for flight?

6. Which of the Spinning Blimps had the longest average flight?

7. Which of the Spinning Blimps had the shortest average flight?

8. What do you think is the most important thing to consider when designing a Spinning Blimp for flight?