

STEAM FORWARD: *Take Flight*



LET'S GET FLYING!

MISSION GOAL

Can you use engineering principles to design a paper plane for both accuracy and distance that can successfully fly ten feet in the air and hit the bull's eye of target?

Engineers may work individually, in pairs, or groups of three.

Problem Conditions

1. Only paper can be used.
2. Paper folding will be used to create the design
3. No adhesive of any kind is allowed.

Procedure

1. Research!
2. Generate at least TWO different ideas.
3. Select the best idea.
4. Gather materials.
5. Construct and field test the airplane. (Place the target 15 feet away from the launching zone.)
6. Modify the design for better results and retest. Complete 3 trials.
7. Track your results and complete the data table.
8. Then, name the wheel and make an advertisement.
9. Complete a reflection that explains your plan, results, and changes you might make.

Supplies

Target Art Supplies Paper

RESEARCH

SPORTS SCIENCE VIDEO



AERODYNAMICS EXPLAINED





LABEL YOUR DESIGNS

NAME OF YOUR FIRST DESIGN:

NAME OF YOUR SECOND DESIGN:

Research and Data

Trial	Number of Folds	Name of Airplane	Target Score 0,1, 3, or 5
1			
2			
3			
Totals (Total Feet Covered on All Three Trials)			

Research and Data: Average

Mean

Mean is the sum divided by the count. Total distance divided by 3-the total trials.

Mode

The mode is the number that appears the most.

Median

The median is the middle number of the data set.

Learn About, Mean, Mode, and Median



Show Your Work:

Find the Median:

The Median is _____ ft

Show Your Work:

Find the Mode:

The Mode is _____ ft

Show Your Work:

Find the Mean:

The Mean is _____ ft

ADVERTISE YOUR Airplane!

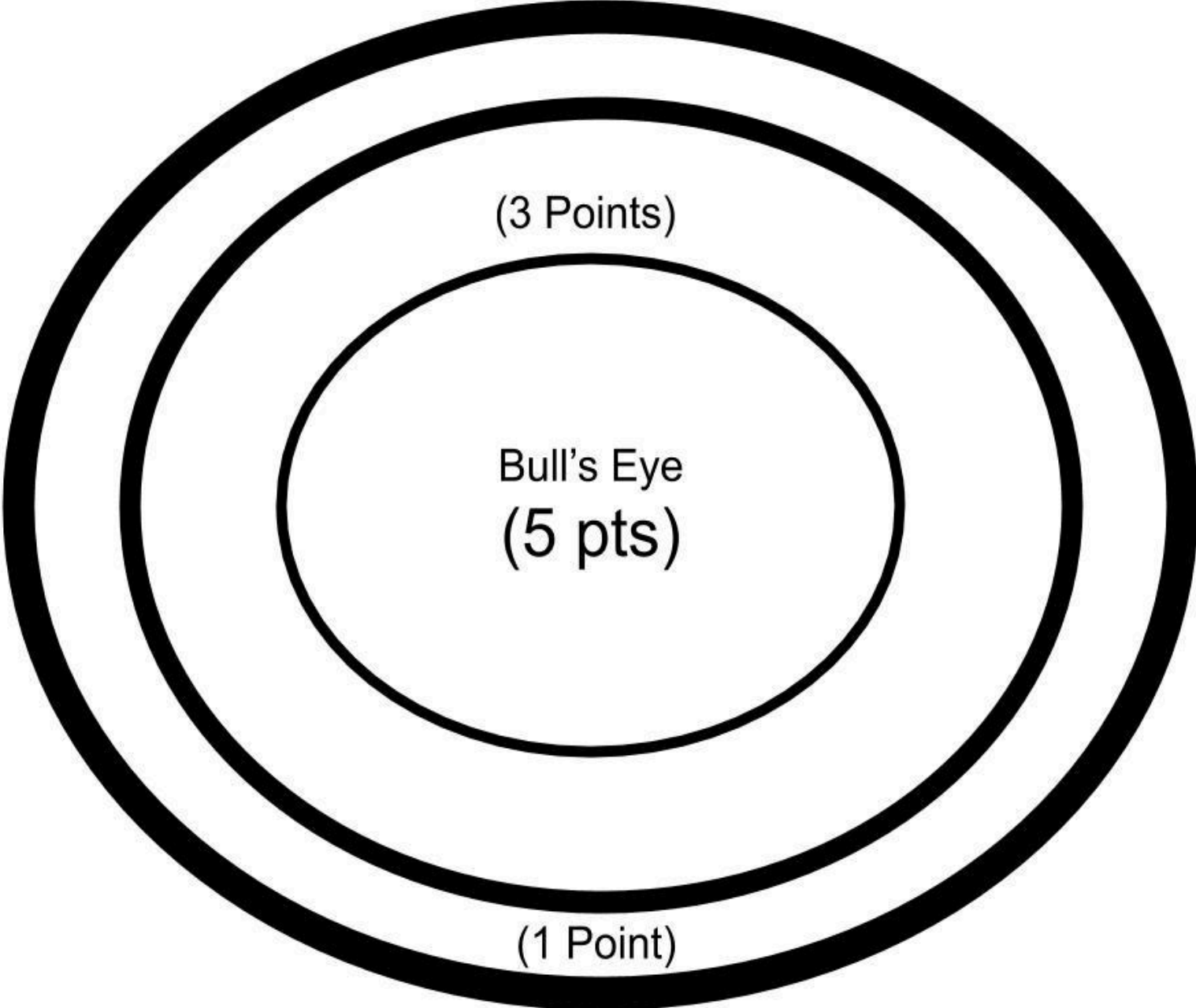
MAKE AN AD TO MARKET YOUR AIRPLANE! INCLUDE NAME AND POSITIVE QUALITIES ABOUT YOUR AIRPLANE.

The Target

(3 Points)

Bull's Eye
(5 pts)

(1 Point)



Project REFLECTION Rubric
TAKE FLIGHT! SCORE YOUR WORK!

Trial	1	2	3	4
Designs	At least 1 design following project criteria	At least 2 designs following project criteria	At least 3 designs following project criteria	All 4 designs following project criteria
Material	Used some of the required materials	Used most of the required materials	Used all of the required materials	Creative use of all the required materials
Form and Function	Flew	Flew 15 Feet	Flew 15 feet and hit the target.	Flew 15 feet and hit the bull's eye on the target.
Reflection	Reflection explains little of the plan and conclusions made by the data	Reflection explains some of the plan and conclusions made by the data	Reflection explains most of the plan and conclusions made by the data	Reflection explains all of the plan and conclusions made by the data in great detail
Work Ethic / Spirit of the Problem	-Did not manage time -Worked respectfully at times -Helpful to others at times	-Managed time -Worked respectfully most of the time -Helpful to others most of the time	-Managed Time Well - Worked respectfully all of the time -Helpful to others all of the time	-Used time creatively and wisely --Worked respectfully all of the time -Helpful to others all of the time Overall - engaged and demonstration of high character
Total Scores				

Reflect on Your Learning: