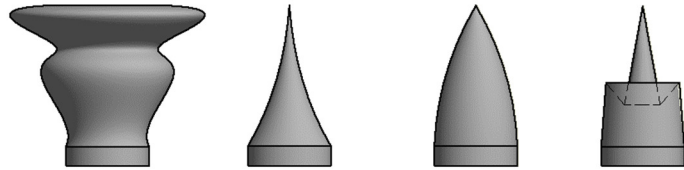


Name	<b>Rocket Nose Cones</b>	Per.
A. Woodbridge 3D Modeling	<b>3D Design Challenge 2</b>	Grover Cleveland HS Denise Vittor, Principal

### Objectives

1. Create a nose cone for a paper/tape rocket
2. Hypothesize about how your nosecone will make your rocket fly
3. Modify your design, as necessary meet manufacturing needs

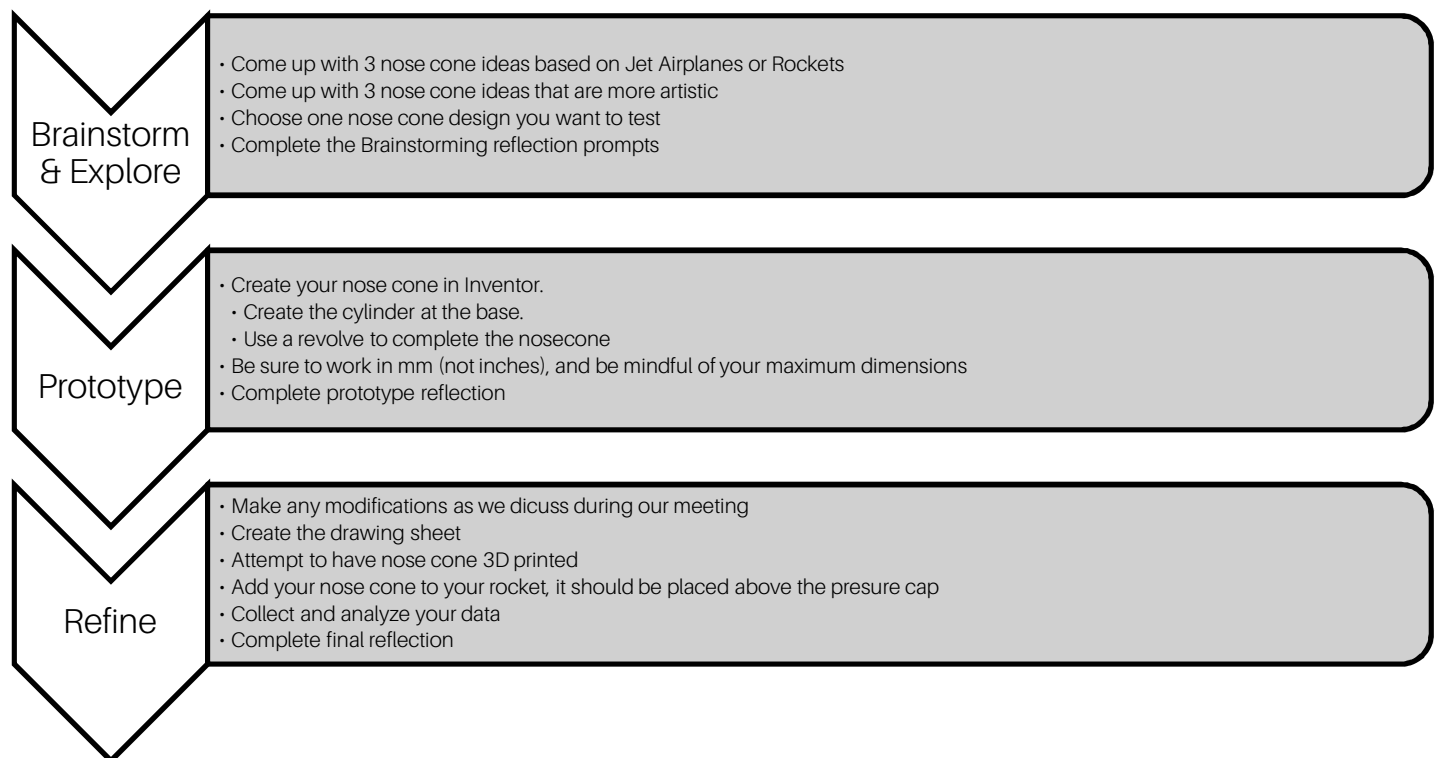


### Deliverables:

1. (6) Brainstormed designs
2. (1) Inventor .ipt file
3. (1) .stl 3D Mesh File
4. (1) "A" sized drawing sheets showing the three sides and isometric views of the nosecone.
5. (1) paper and tape rocket with your nose cone attached
6. (1) altitude testing worksheet
7. (3) reflections one for each section

### Constraints:

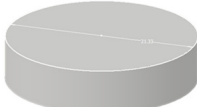
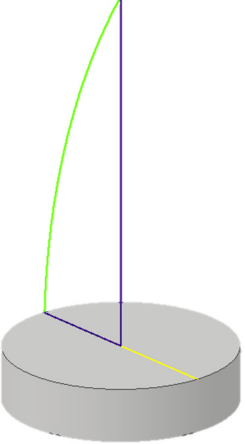

1. Base of the nosecone should be a cylinder  $\varnothing 21.33\text{mm} \times 5\text{mm}$  tall
2. Maximum bounding cylinder is  $\varnothing 25\text{mm} \times 60\text{mm}$  tall
3. Minimum wall thickness is 1mm



Brainstorming Designs:

Jet/Rocket Based Designs			
Artistic Designs			

Steps of nose cone creation Inventor:

		
Create the Ø21.33mm circle and extrude it 5mm	Create a sketch of the profile of your nose cone	Revolve Profile to complete shape

Consider the following and respond accordingly, you may hand write this or type it on separate sheet:

**Brainstorming & Exploring Reflection Prompts**

1. What types of jets/rockets did you look at, how did they influence your design?
2. What is the story of one of your artistic ideas, where did it come from or what did you try and mimic?
3. Please describe your rockets first flight/what is your prediction for how it fly?

**Prototyping Reflection Prompts**

1. What were 2 challenges you had in creating your nose cone?
2. Why is it important to follow the constraints? If you don't follow them, what can happen when your design is printed/flown?

**Refine Reflection Prompts**

1. What changes did you need to make to your design before/due to manufacturing (3D printing)?
2. Was your hypotheses about your flight correct? If not please describe how it was different.
3. What changes would you make to your design if you were to repeat this exercise?

Name	<b>Rocket Nose Cone</b>	Per.
A. Woodbridge Introduction to Design	<b>3D Design Challenge 2</b>	Grover Cleveland HS Denise Vittor, Principal

Rocket Flight Data Collection:

	Flight 1	Flight 2	Flight 3
Pressure			
Angle			
Calculated Altitude			
Flight Profile			
Conditions or Mishaps			

You will be graded as **Exemplary** (6 pts.), **Met** (5 pts.), **Partially Met** (3pts.) or **Didn't Meet** (0 pts.)

Check List	Description	Score			
<b>Brainstorming</b>					
	At least 6 noticeably different designs have been given	E	M	P	D
<b>Nose Cone Design</b>					
	Base Extrusion is $\varnothing 21.33\text{mm} \times 5\text{mm}$		M		D
	Nose cone is within bounding cylinder $\varnothing 25\text{mm} \times 60\text{mm}$ tall		M		D
	No walls are thinner than 1mm		M		D
<b>Principles of Design</b>					
	Nose cone reflects the chosen brainstorming design	E	M	P	D
	Designs show creativity and intension	E	M	P	D
<b>Manufacturing</b>					
	Nose Cone is manufacturable as designed (or modified)	E	M	P	D
	Rocket has been built to standard	E	M	P	D
<b>Deliverables</b>					
	Inventor .ipt file submitted		M		D
	3D Mesh file in mm submitted (.stl format)		M		D
	Drawing sheet created		M		D
	Flight Data Table		M		D
	Brainstorming Reflection	E	M	P	D
	Prototyping Reflection	E	M	P	D
	Refine Reflection	E	M	P	D

Score = \_\_\_\_\_/75 Points