Museum of the Southwest

Spacecraft Design Competition

Do you dream of exploring outer space? Do you have a great idea for a spacecraft? Design your own spacecraft, test out some of its features, have your work on display at the Museum, and enter to win a special award at Astronomy Day at the Museum of the Southwest!

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Spacecraft Design Competition

1. What problem, issue, or need will your spacecraft help with in outer space?

2. What requirements will your spacecraft need in order to solve this problem?

Size:

Material:

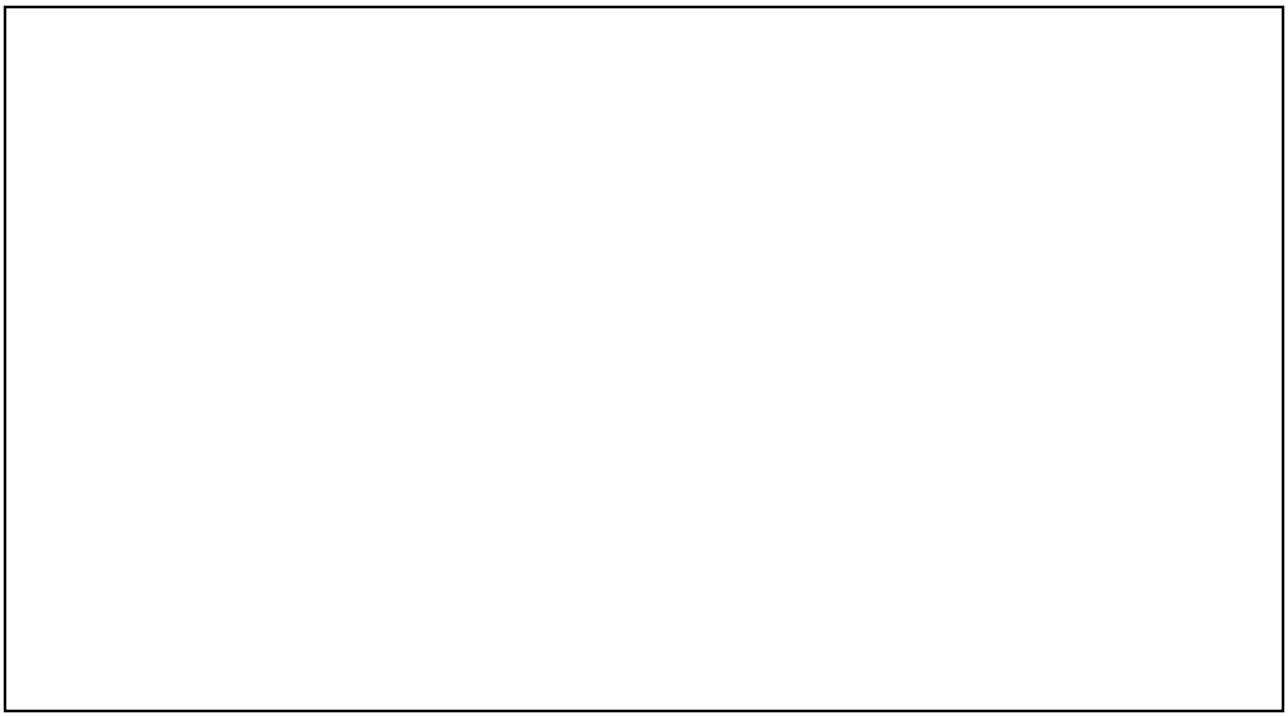
How will it move around?

How will it be controlled?

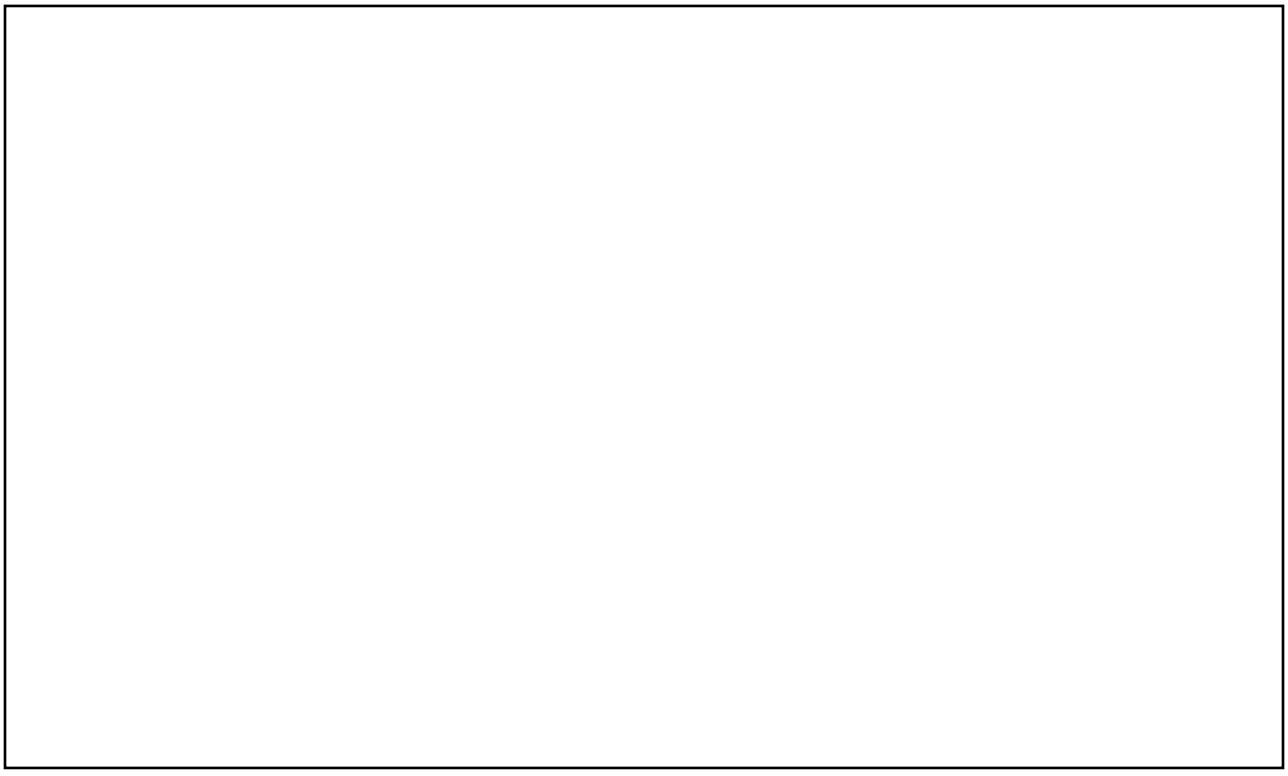
Special features (wings, arms, heat shield, special storage, etc.):

3. Try out two different designs for your spacecraft:

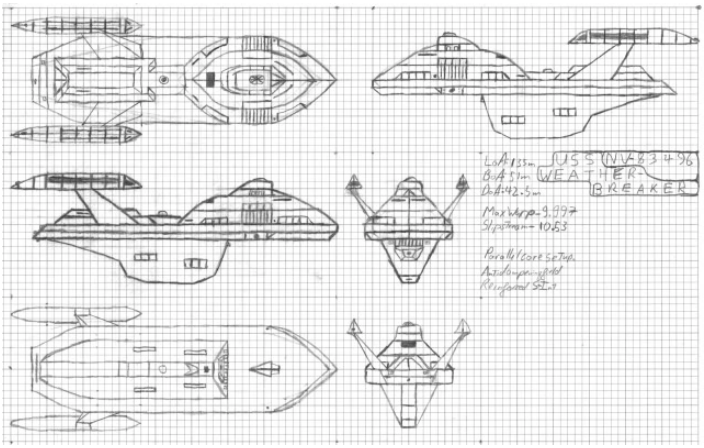
a.



b.



4. Talk about your design with other people- share it with friends, teachers, and parents to get feedback on your ideas.
5. Then use the Design Matrix worksheet to help you to evaluate your design.
6. Draw the final design (Technical Drawing) on graph paper. Include as much detail as possible. If you can, draw the design to scale.



7. Choose just one part of your design to build and test. It could be the wings, a robotic arm, a parachute, a heat reflector, or anything else you want to experiment with in real life. Please use only recycled parts- no kits!

8. Turn in your finished design on graph paper along with the one part from your design that you built and tested to the Museum of the Southwest in early May 2019 to be part of our spacecraft competition for Astronomy Day! (dates and details coming soon).

Awards will be given based on the following criteria:

Technical Drawings:

	1	2	3	4	5
Solution to the problem					
Creativity					
Thoughtfulness in use of universal design criteria in overall design (from Design Matrix worksheet)					

Working Model:

	1	2	3	4	5
Successful completion of designed task					
Use of recycled parts					
Thoughtfulness in use of universal design criteria in specific component design					

Technical Designs will be on display and participants will be invited to demonstrate their working model at Astronomy Day on March 13, 2020 at the Museum of the Southwest. Awards will also be given that day as part of our Astronomy Day celebration.

FAQ:

1. What age groups can participate?
    a. All ages are welcome. There will be an elementary division (k-6) and a secondary division (7-6) for awards.
2. Does my technical drawing need to be to scale?
    a. We would love for it to be to scale! Elementary division drawings to not have to be to scale, but secondary division drawings should be. The scale is up to you, but please indicate the scale on your drawing.
3. How big does my working model need to be?
    a. The working model is just a model of one component of the technical design, so the size is up to you however we respectfully request that it fit into a shoe box or small to medium sized package box for transporting and storage while on our campus.
4. How do I enter my design and model to the competition?
    a. Please bring your technical drawing, working model, and entry form to the Blakemore Planetarium at the Museum of the Southwest 5 pm on Wednesday, March 11, 2020
5. How can I find out more information?
    a. Please visit us at www.museumsw.org and follow us on social media for updates. You can also email Valerie Rodriguez at vrodriguez@museumsw.org with any questions.

Design Matrix Worksheet

Evaluate your design ideas before choosing what you will draw and create for your final Technical Drawing and Working Model. Fill in your specific design requirements for the problem you chose. Then use a numeric score from 0 to 2 to evaluate which design is the best.

0= does not meet the requirements, 1= somewhat meets the requirements, 2= completely meets the requirements.

Design requirements	**Solution #1**	**Solution #2**	**Solution #3**
Your requirement #1			
Your requirement #2			
Your requirement #3			
Your requirement #4			
Other Criteria: Give a rating for each universal design criteria: **Elegance-** Is the solution simple, cleaver, or ingenious? **Robustness-** Is the solution sturdy, resilient, and unlikely to fail? **Aesthetics-** Is the solution tasteful and pleasing to look at? **Cost & Resources-** Do you have or can you get the materials you need? **Time-** Do you have time to make the solution and test it? **Skill-** Do you have the skills to make the solution? **Safety-** Is the solution safe to build, use, store, and dispose of?			

Museum of the Southwest

Spacecraft Design Competition Entry Form

Student Name: _____ Grade: _____

Parent or Guardian's Name: _____

Address: _____

Phone Number: _____

Email address: _____

_____ Parent/Guardian: please initial if you give permission to the Museum of the Southwest to use images of your child's designs along with his or her name on our website and social media.

____ Parent/Guardian: please initial. *I understand that while every effort is made to handle and care for all student submissions, the Museum of the Southwest cannot be responsible for damage or loss.*

1. What problem, issue, or need will your spacecraft help with in outer space?

2. Why did you want to solve this problem, issue, or need?

3. What requirements does your spacecraft have that helps it to solve this problem?

Entry Form Checklist:

- Completed Entry Form with Parent/Guardian initials if applicable
- Final Technical Drawing on graph paper with student's name and grade on the back. *Optional: include the Design Matrix worksheet you used to evaluate your designs.*
- Working Model of one component of the technical drawing labeled with the student's name and grade and placed in a shoe box or small to medium package box for transport and storage. *Optional: include directions on how to work your model.*

Please bring your entries to the front desk of the Blakemore Planetarium at the Museum of the Southwest by 5 pm on Wednesday, March 11, 2020. All designs will be on display during Astronomy Day at the Museum of the Southwest on Friday, March 13.