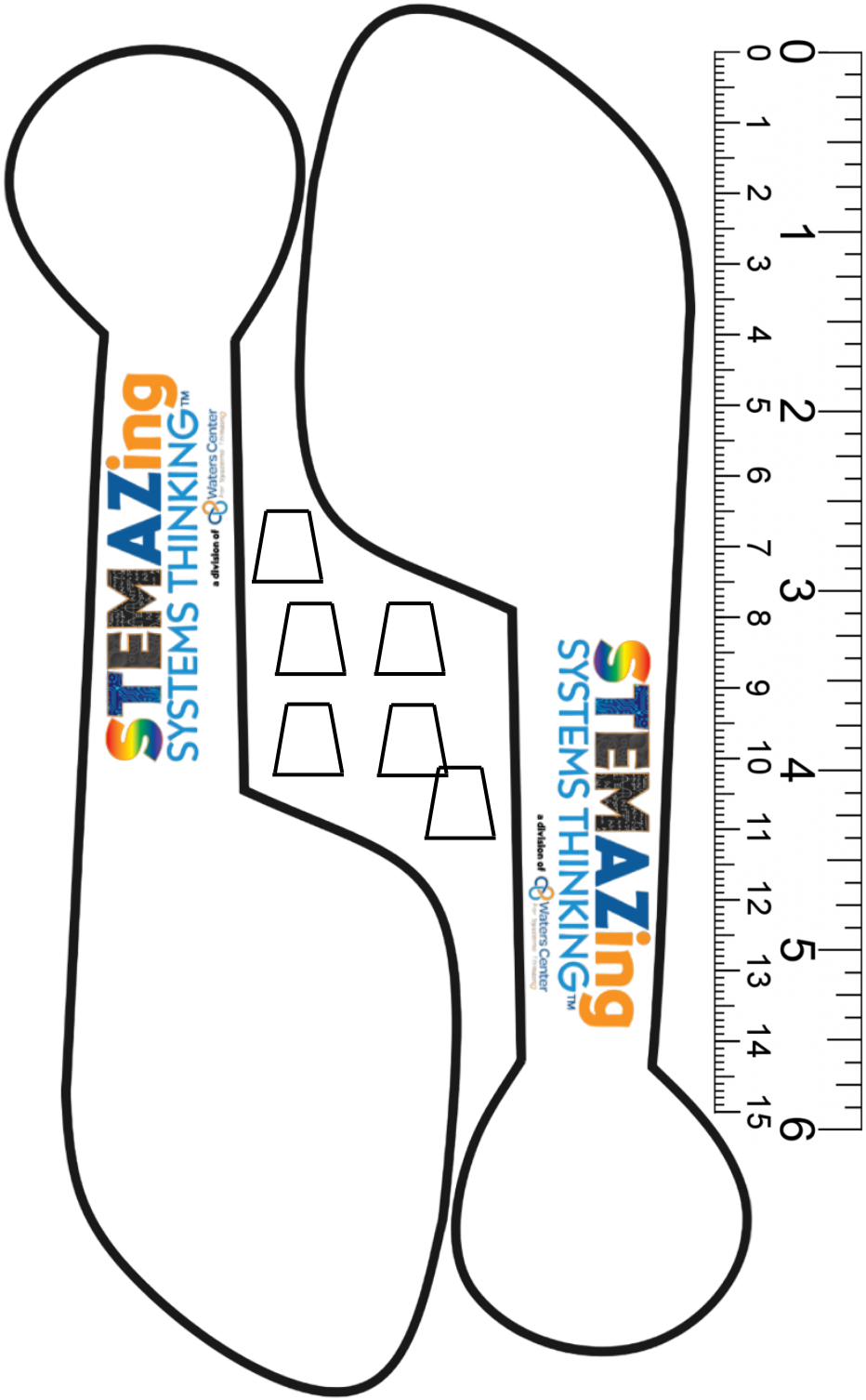


STEMAZing SYSTEMS THINKING™

a division of Waters Center For Systems Thinking

Better than Bought Helicopter Prop

Engineer: _____

Additional Engineering Team Member(s)

_____

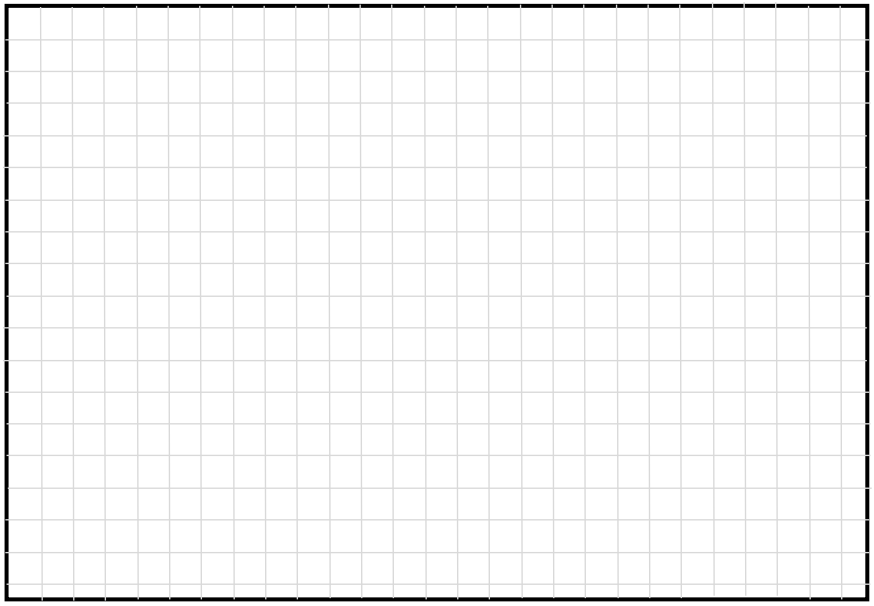
Development of this STEM Challenge support by:

Raytheon Missiles & Defense

Designed by DaNel Hogan and Sherrie Dennis
with special thanks to Slater Harrison – the SciencetoyMaker

More STEMAZing Sciencing and Engineering Journals, like this one, can be found here: https://stemazing.org/stemazing-sciencing-and-engineering-journals/

Original Purchased Propeller Design



Peak Performance for Rubber Band

Record trials of various rubber bands under various conditions to determine which one gets the best performance out of the helicopter.

Best performance = highest height

Width	Length	# of Revs
Notes		
Width	**Length**	**# of Revs**
Notes		

Engineering Never Ends!

If you were going to keep making your propeller prototype better, what modifications would you make next and why? _____

_____

_____

_____

_____

_____

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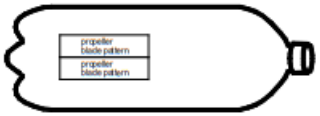
_____

propeller blade pattern

19 mm X 70 mm (3/4" X 2 3/4")

propeller blade pattern

19 mm X 70 mm (3/4" X 2 3/4")



propeller patterns go on 2 liter bottle the long way

Width	Length	# of Revs
Notes		

Width	Length	# of Revs
Notes		

Width	Length	# of Revs
Notes		

Width	Length	# of Revs
Notes		

Width	Length	# of Revs
Notes		

Width	Length	# of Revs
Notes		

Width	Length	# of Revs
Notes		

Prediction: Which propeller do you think will perform the best, reach the highest height, when twisted up the same number of revolutions?

Manufactured Prop or #STEMontheCheap Prop

#STEMontheCheap Propeller Design

Was #STEMontheCheap propeller **Design 1** better than **purchased propeller**? (circle one) **YES NO**

Explain evidence to support your claim above.

_____

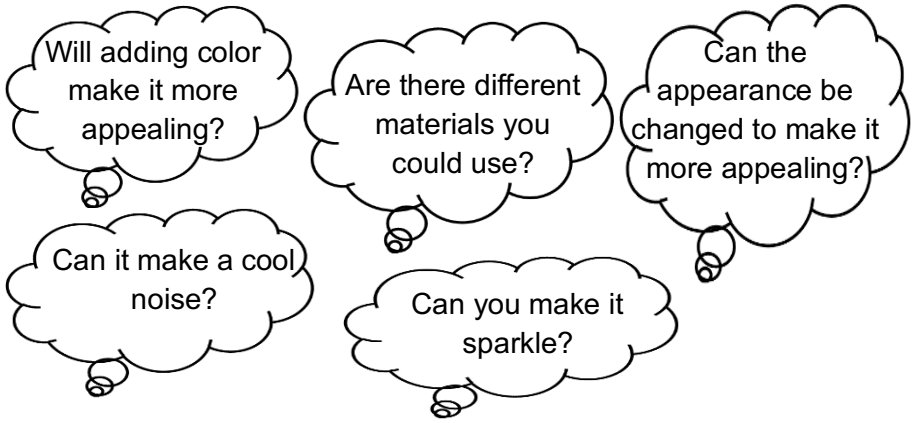
_____

_____

_____

_____

IDEAS for Form Modifications



Using the questions above, explain modifications you could make to your helicopter design to make it look fancy and fun!

_____

_____

_____

_____

_____

#STEMontheCheap Best Propeller Design

Why do you think this propeller design produced better results than the other designs you tested? _____

_____

_____

_____

_____

How did you work as a team to develop your best propeller design? _____

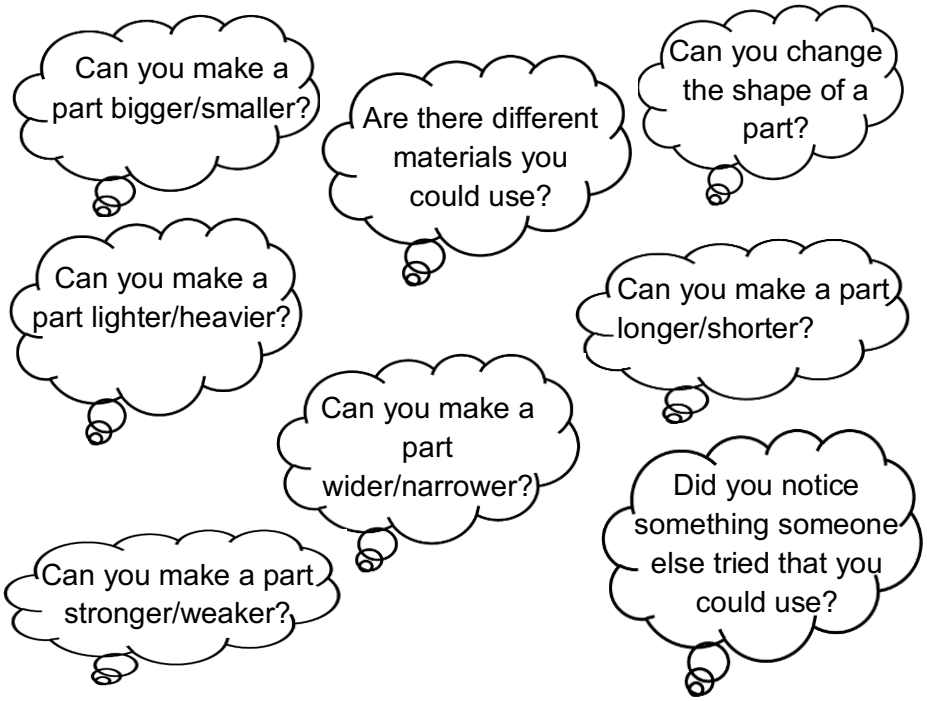
_____

_____

_____

_____

IDEAS for Function Modifications



What modification did you make to #STEMontheCheap propeller **Design 2**? _____

_____

_____

Was #STEMontheCheap propeller **Design 2** better than **purchased propeller**? (circle one) **YES** **NO**

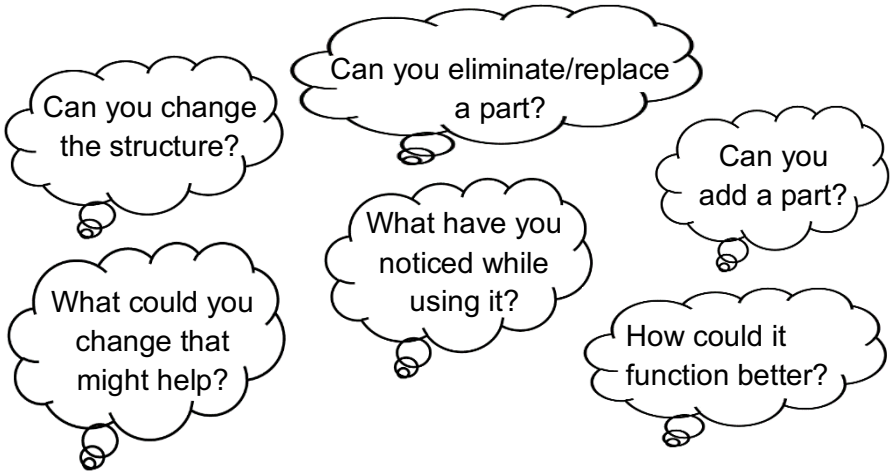
Explain evidence to support your claim above.

_____

_____

_____

IDEAS for Function Modifications



What modification did you make to #STEMontheCheap propeller **Design 3**? _____

_____

_____

_____

Was #STEMontheCheap propeller **Design 3** better than **purchased propeller**? (circle one) **YES** **NO**

Explain evidence to support your claim above.

_____

_____

_____

_____

What modification did you make to #STEMontheCheap propeller **Design 4**? _____

_____

_____

Was #STEMontheCheap propeller **Design 4** better than **purchased propeller**? (circle one) **YES** **NO**

Explain evidence to support your claim above.

_____

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_____

_____

What modification did you make to #STEMontheCheap propeller **Design 5**? _____

_____

_____

Was #STEMontheCheap propeller **Design 5** better than **purchased propeller**? (circle one) **YES** **NO**

Explain evidence to support your claim above.

_____

_____

_____

_____