

Stanley at Sea: Engineering Design Process

Your team of engineers will design a flotation device that will keep Max, the puppy, afloat.

			
Balloons	String	Cup	Paper Clips
\$0.50 per balloon	\$0.75 for 2 ft.	\$1.00 per cup	\$0.50 per paper clip
			
Rubber Bands	Glue	Bags	Foam
\$0.25 per rubber band	\$0.25 per bottle of glue	\$0.75 per bag	\$1.00 per piece of foam

- 1) Notice that the word Ask is in one of the circles in Figure 1. Ask yourself: What materials would I like to use to design a flotation device that will keep Max, the puppy, afloat? Write these materials on your STEM Challenge handout.
- 2) Notice that the word Imagine is in one of the circles in Figure 1. Imagine what your flotation device will look like. Draw a picture of your flotation device on your STEM Challenge handout.

Figure 1: Engineering Design Process



- 3) It is time to share your ideas with your team! Put on your listening ears and, one at a time, share your ideas!
- 4) Notice that the word Plan is in one of the circles in Figure 1. Plan what your flotation device will look like. You can use one of your teammates' ideas or a combination of the teams' ideas. But remember, you must create your flotation device together as a team!
- 5) Draw a picture of your flotation device on your STEM Challenge handout.

Stanley at Sea: Buying Time!

You will buy items to make a flotation device that will keep Max, the puppy, afloat. You have \$4.00 to spend. The items and their prices are shown below.

Material	Cost per one item	Number of items your team would like to purchase	Total cost of the items your team would like to purchase
Balloon	\$0.25		
Two feet of string	\$0.75		
Cup	\$0.25		
Paper clip	\$0.15		
Rubber band	\$0.15		
Glue	\$0.50		
Bag	\$0.25		
Foam	\$1.00		
Total Cost:			

Show your work here or on the back of this handout:

Stanley at Sea: Test and Improve Your Device

It is finally time to test your device.

- 1) Did your flotation device keep Max, the puppy, afloat? Write a sentence or two about why your flotation device did or did not keep Max afloat.

- 2) Write a sentence or two about how you will improve your flotation device.

Stanley at Sea: Investigation!

1) After the dogs were rescued, the people brought them steak and sausage three different times. Each time the dogs were fed, they were given two platters of food with seven steaks and 14 sausages on each platter. How many steaks and sausages were they given altogether?

2) Stanley's owners first noticed that Stanley was gone at 12:30pm. The owner was reunited with Stanley at 6:45pm. How long was Stanley gone?

- 3) The gentleman who rescued the dogs traveled 55 feet down to the dog's boat. It took the gentleman three minutes to travel down, two minutes to safely secure the dog, four minutes to travel back up to the top of the ship, and one minute to safely place the dog on the deck of the ship. How long did it take him to rescue all four dogs? How many feet did the gentleman travel to rescue all four dogs?