

## Extension 8.2.3

# Marble Run Engineering Challenge

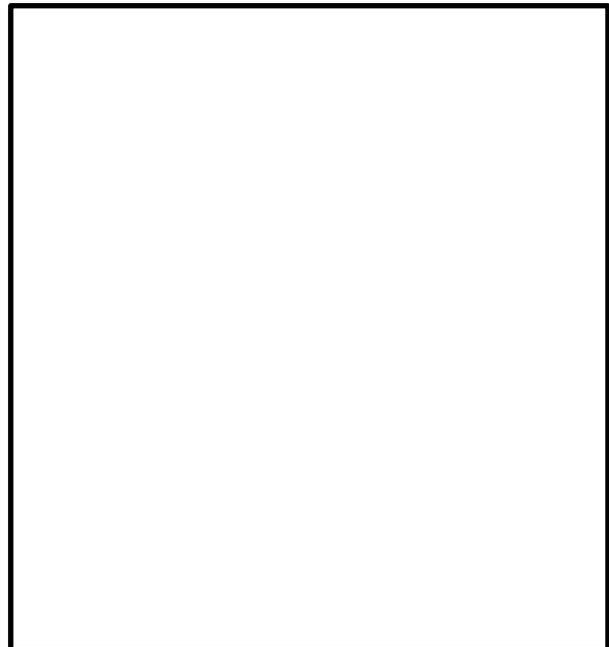
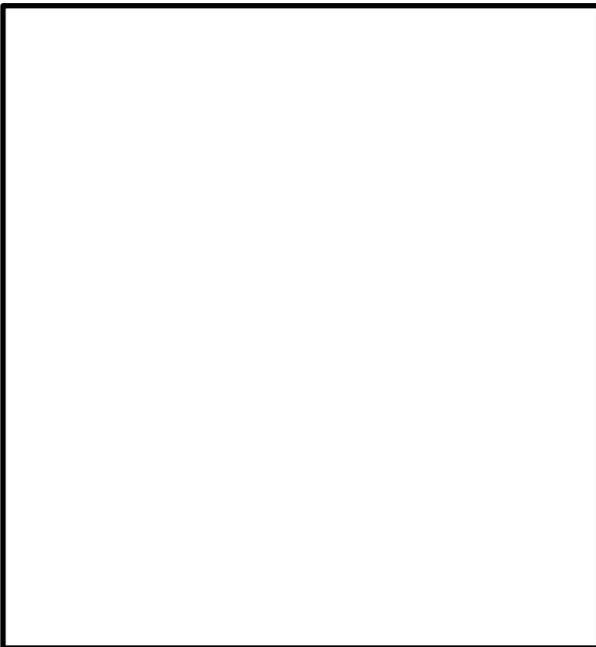
**Problem:** Create a track that keeps a marble rolling longer than any other team's does.

**Constraints:** Each group is allotted \$50. You will be given the following supplies: Pegboard, Pegboard Stand, Rubber Mallet, Marble. You may purchase items from the list below.

**Materials:**

Material	Cost
Pegs	\$1.00 each
Large Rubber Band	\$2.00 each
Small Rubber Band	\$1.00 each

**Imagine:** Brainstorm several ideas you have for how to use the above materials in your marble run. Draw pictures of different designs.



**Design and Build:** List how much of each material you will need to build your marble run. Make sure to not go over your budget! **Once your design and materials list are complete, you may collect materials from your teacher and build your design.**

Item	# needed	Cost of each	Total
Pegs		\$1.00	
Large Rubber Band		\$2.00	
Small Rubber Band		\$1.00	
<b>Grand Total</b>			

**Test:** As a class, we will test all of the marble runs at \_\_\_\_\_ and record each group's time in the table below. To test, you will place your pegboard in the pegboard stand. Place your marble at the top and time how long it takes your marble to reach the bottom. Circle your table number and time in the chart below.

Table #	1	2	3	4	5	6	7	8	9
Time									

**Redesign and Re-Test:** Compare your results to other students in the class. Does your design take the longest to reach the bottom? If not, redesign and improve on your design until you run out of time or you have completed your BEST design. There will be a prize for the marble run that takes the longest time to get to the bottom.

**Final Design:**

Draw your final design in the box to the right.



**Questions:**

1. After redesigning and re-testing were you able to improve your time?
2. What was your BEST time?
3. If you were to keep working on your design, what would you improve?
4. What was the BEST (slowest) time in the class?

