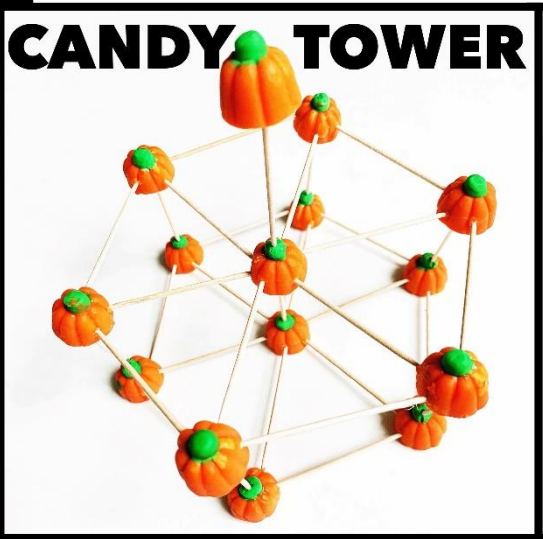
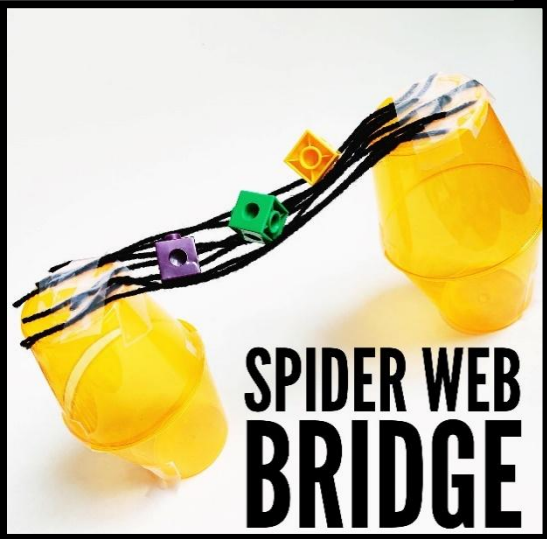
October STEM

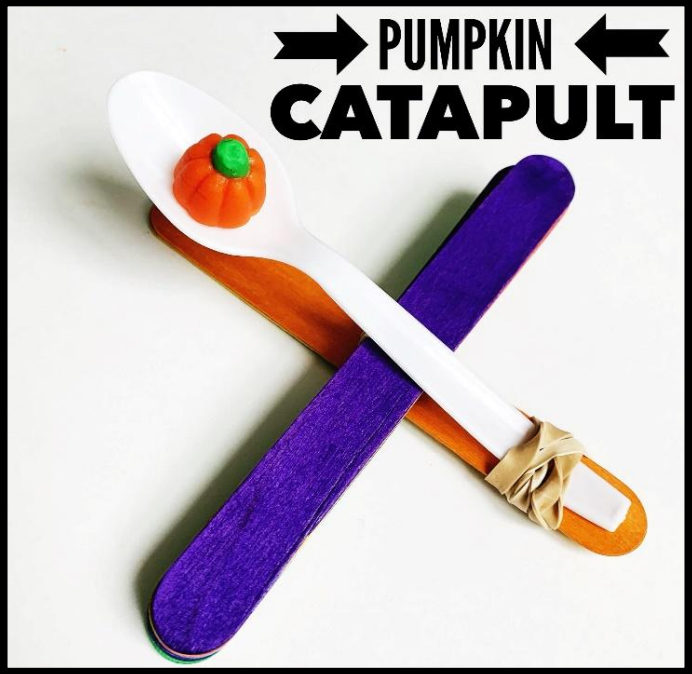
Low Prep Halloween Challenges

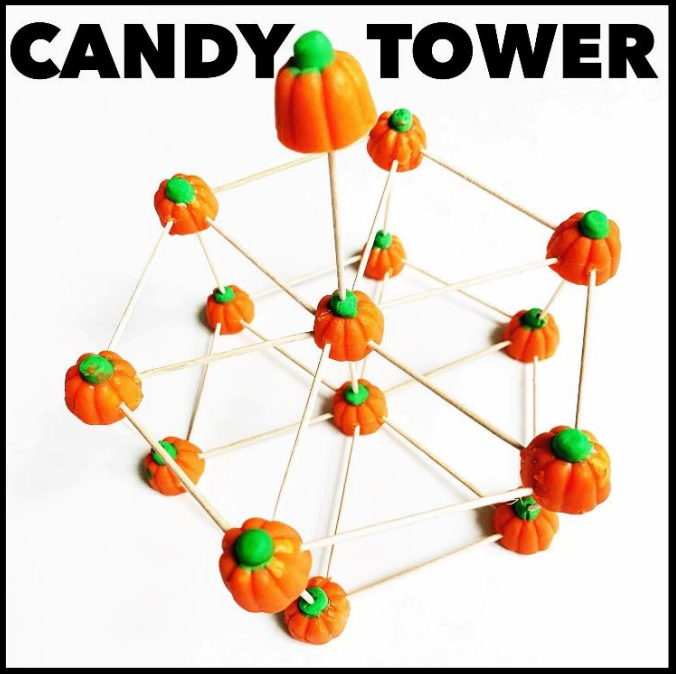


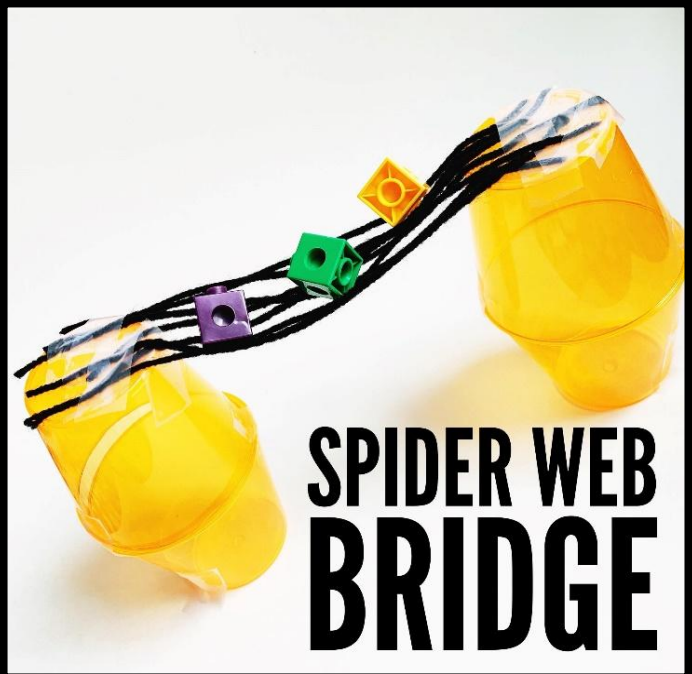


CREATED BY BROOKE BROWN

3 LOW PREP STEM CHALLENGES + BONUS BRAINBUILDER ACTIVITY



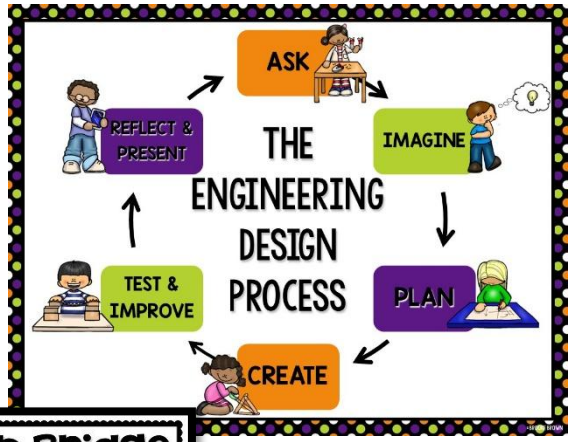


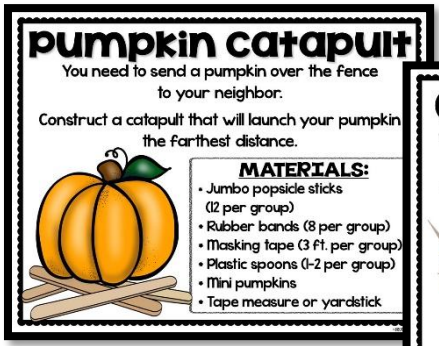


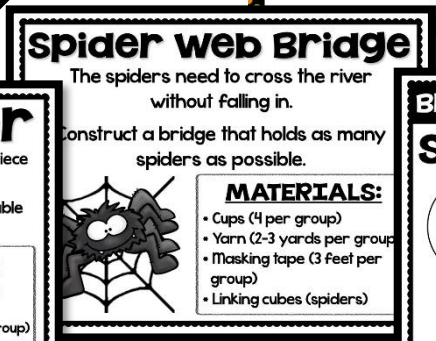
pumpkin catapult GAME STATIONS

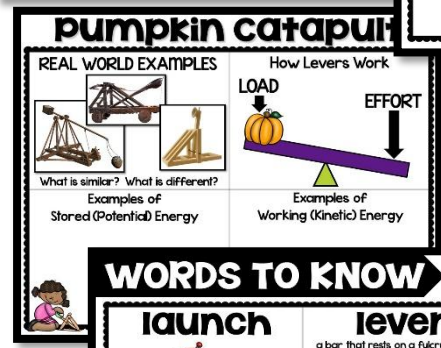

HOOP SHOOT
MATERIALS
CHALLENGE
HIT THE TARGET
MATERIALS
CHALLENGE
HIT THE TARGET
25
50
100
GREAT HEIGHTS
MATERIALS
CHALLENGE
• Pumpkin Catapult
• Pumpkin Candy
• Stack of 20 books
6
PUMPKIN CATAPULT GAME STATIONS
SCORE A BUCKET
MATERIALS
CHALLENGE
4
TOWER TOPPLE
MATERIALS
CHALLENGE
• Pumpkin Catapult
• Pumpkin Candy
• Stack of 10 cups in a pyramid
Use your catapult to launch the pumpkin and knock over as many cups as possible. Record your results for 3 tests
1
GO THE DISTANCE
MATERIALS
• Pumpkin Catapult
• Pumpkin Candy
• Meterstick or

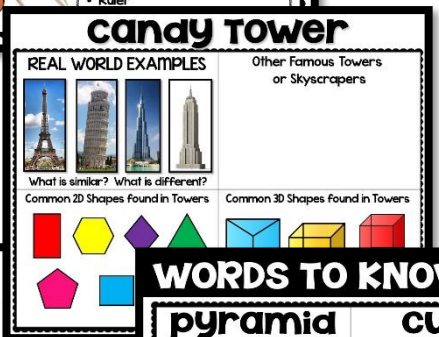
- ✓ SIMPLE SUPPLIES
- ✓ INTERACTIVE ANCHOR CHARTS
- ✓ VISUAL VOCABULARY
- ✓ QR CODE RESEARCH

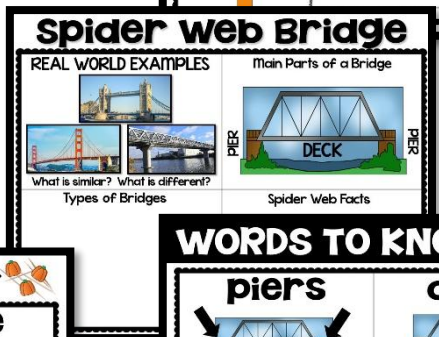


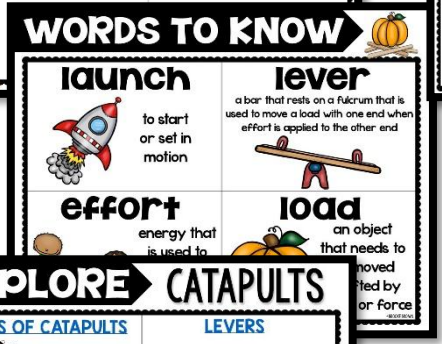


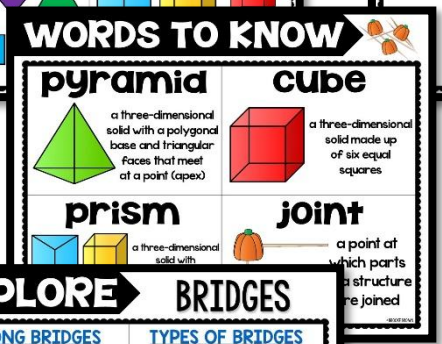


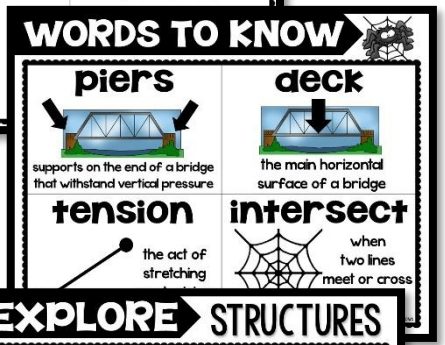


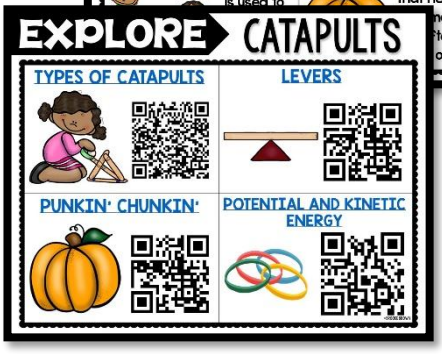


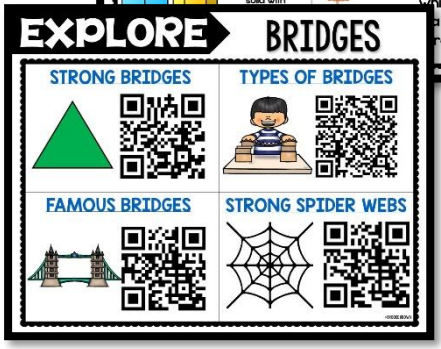


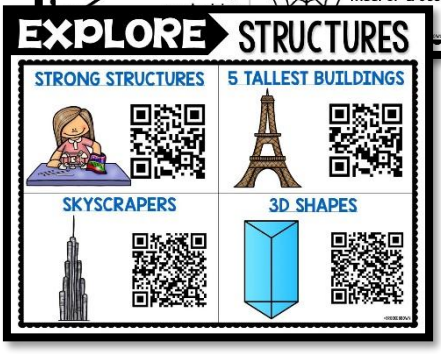




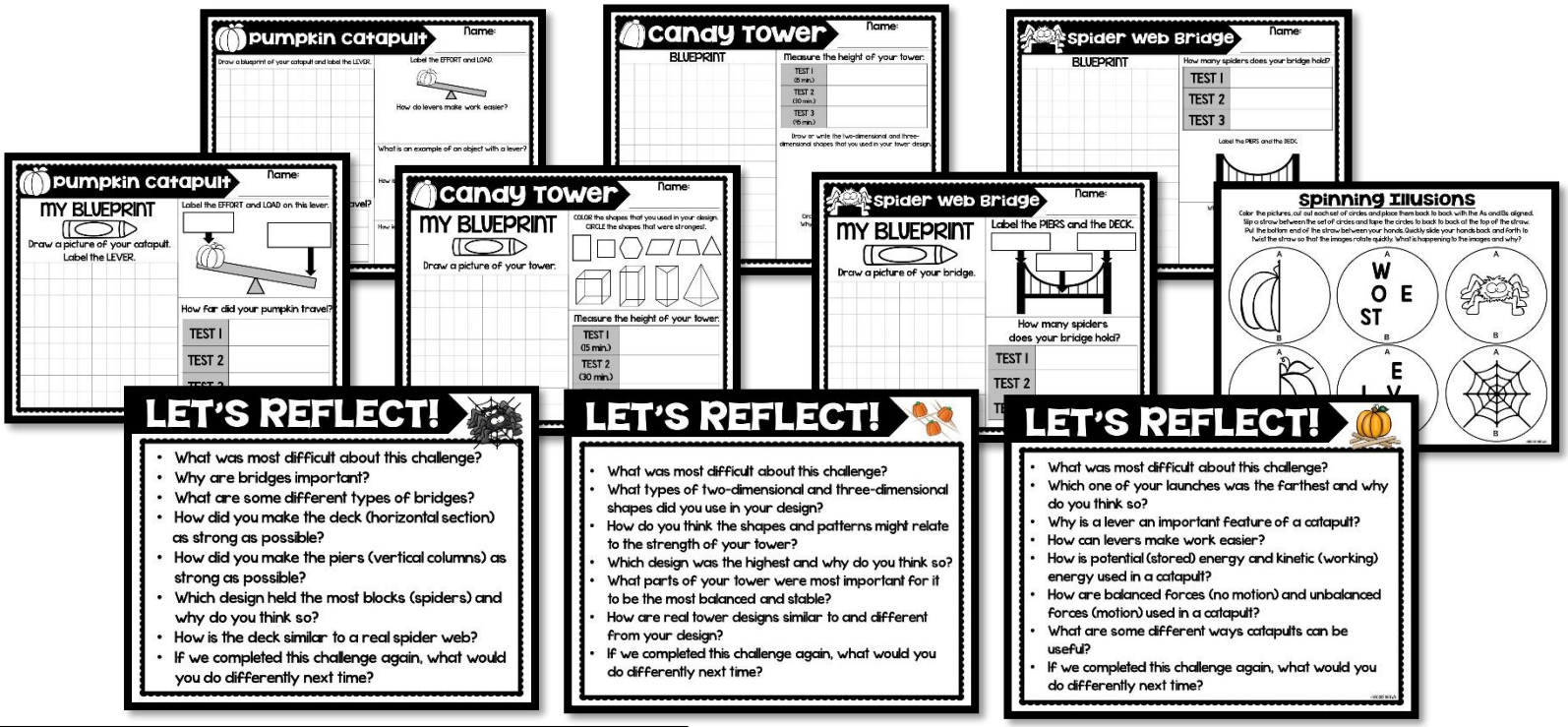




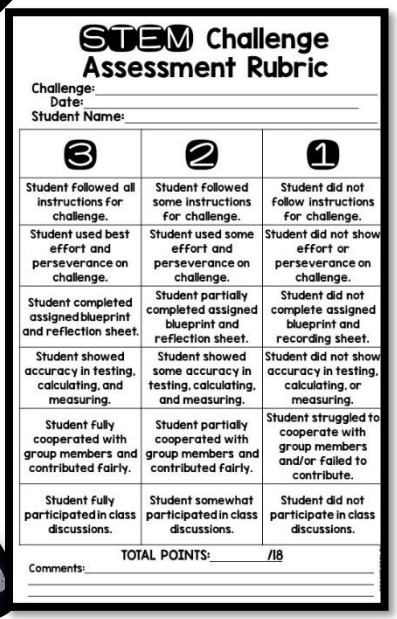


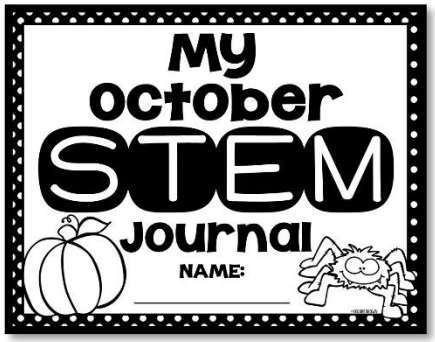


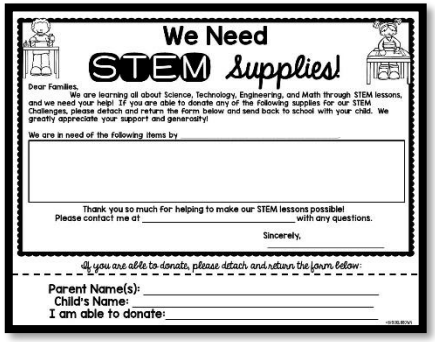
DIFFERENTIATED RECORDING SHEETS FOR K-5TH GRADE



DIGITAL GOOGLE SLIDES NOTEBOOK







SAY *Hello* TO STRESS-FREE STEM!

SUPPLIES CHECKLIST

OCTOBER SUPPLIES CHECKLIST

CHALLENGE	ITEM	NUMBER PER GROUP	I HAVE IT
Pumpkin Catapult	mini pumpkins (small candy or decorative)	1	
	plastic spoons	2	
	rubber bands	8	
	masking tape	3 feet	
	jumbo popsicle sticks	12	
	tape measures or yardsticks	1	
Candy Tower	candy such as candy pumpkins, gummy candy, or pumpkin shaped marshmallows	24	
	toothpicks	20	
	rulers	1	
Spider Web Bridge	yarn	2-3 yards	
	plastic cups	4	
	masking tape	3 feet	
	linking cubes	12	
BONUS BRAINBUILDER: Spooky Illusions	Spooky Illusions templates	1 set	
	Plastic straws	5	
	Scotch tape	1 roll	

STANDARDS ALIGNMENT

OCTOBER STANDARDS ALIGNMENT

CHALLENGE	ENGINEERING	SCIENCE	MATH
Pumpkin Catapult	K-2-ETS1 Engineering Design: K-2-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3 3-5-ETS1 Engineering Design: 3-5-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3	K-PS2 Motion and Stability: Forces and Interactions 3-PS2 Motion and Stability: Forces and Interactions 5-PS2 Motion and Stability: Forces and Interactions	MP1: Make sense of problems and persevere in solving them MP2: Reason abstractly and quantitatively MP4: Model with mathematics MP5: Use appropriate tools strategically MP6: Attend to precision.
Candy Tower	K-2-ETS1 Engineering Design: K-2-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3 3-5-ETS1 Engineering Design: 3-5-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3	2.Structure and Properties of Matter •tension and compression forces, weight and balance, stability	MP1: Make sense of problems and persevere in solving them MP2: Reason abstractly and quantitatively MP4: Model with mathematics MP5: Use appropriate tools strategically MP6: Attend to precision MP7: Look For and make use of structure.
Spider Web Bridge	K-2-ETS1 Engineering Design: K-2-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3 3-5-ETS1 Engineering Design: 3-5-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3	•Action/Reaction Forces, tension and compression forces, measuring weight, balance, stability	MP1: Make sense of problems and persevere in solving them MP2: Reason abstractly and quantitatively MP4: Model with mathematics MP5: Use appropriate tools strategically
BONUS Brainbuilder: Spooky Illusions	K-2-ETS1 Engineering Design: K-2-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3 3-5-ETS1 Engineering Design: 3-5-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3	1. Waves: Light and Sound 4-PS4 Waves and their Applications in Technologies for Information Transfer	MP7: Look For and make use of structure.

CHALLENGE OVERVIEW

MATERIALS

STEP BY STEP INSTRUCTIONS

KEY SKILLS

SUGGESTED READ ALOUDS

STEM CHALLENGE: pumpkin catapult

OVERVIEW: Basic catapult designs are shown in the video links and real world example photos, although students will surprise you with their creative designs during this challenge! Through their construction and tests, students will discover that their catapult needs a base, a lever to launch or throw the pumpkin, and a method of lifting up the lever (usually by wedging a stack of sticks in an intersecting design). A basic design may need to be modeled and discussed with younger students before they attempt to make their own. I would suggest taping off a "starting line" for students to launch pumpkins so that measurements are consistent.

KEY SKILLS: Simple Machines (Levers), Pushes and Pulls, Potential and Kinetic Energy, Balanced and Unbalanced Forces, Engineering Catapults

SUGGESTED READ ALOUDS: The Marshmallow Incident by Ron and Judi Barrett, Big Pumpkin by Erica Silverman, Forces Make Things Move by Kimberly Bradley, Scoop, Seesaw, and Raise: A Book About Levers by Michael Dahl

MATERIALS PER GROUP: 1 mini pumpkin (candy or decorative), 2 plastic spoons, 8 rubber bands, 12 jumbo popsicle sticks, 3 ft. of masking tape, 1 tape measure or yardstick

LESSON PLAN

1. Activate students' prior knowledge by asking them to share what they already know about catapults, what they're used for, and what important parts they might have.
2. Share and discuss the videos/websites on "Explore Catapults."
3. Hold a class discussion, using the teacher chart and real world examples to guide student thinking. (You can project the chart on an interactive whiteboard or document camera.) Record their ideas on the teacher chart.
4. Introduce the STEM challenge and permitted materials.
5. Introduce and discuss key vocabulary cards related to the challenge.
6. Have students sketch blueprints of their designs on their recording sheets.
7. Distribute materials and allow students 45-60 minutes with partners or small groups to construct their catapults, test their effectiveness, and measure the distances that their pumpkin travels.
8. Hold a whole class closing discussion and reflection, allowing students to share their catapult designs. Use the "Let's Reflect" poster to guide the discussion.
9. If time permits, allow students to rotate through the "Pumpkin Catapult Games" stations with their catapults.

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I NEED THIS