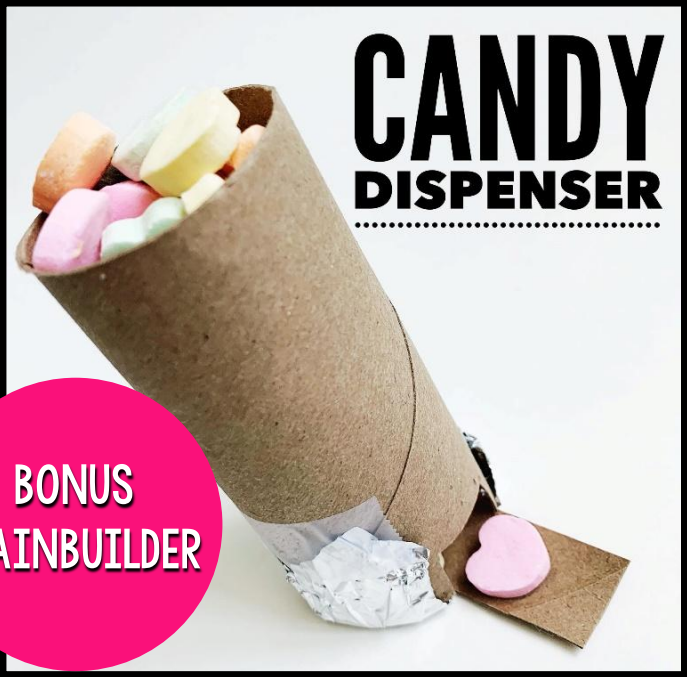
February STEM

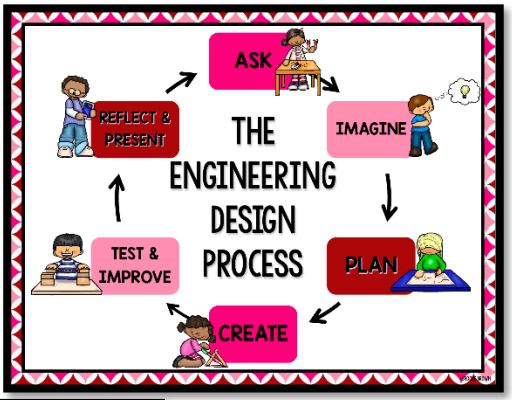
Low Prep Valentine's Challenges

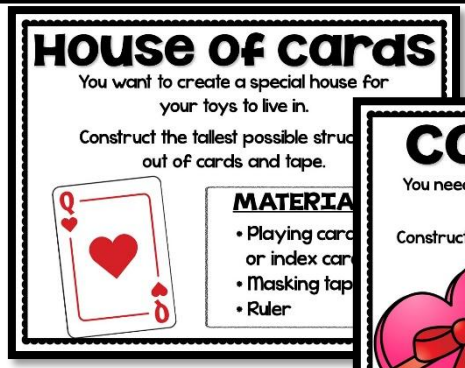
CREATED BY BROOKE BROWN

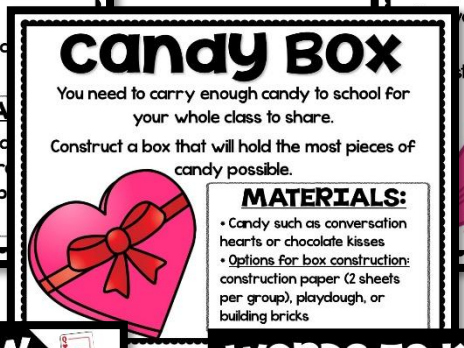
3 LOW PREP STEM CHALLENGES + BONUS BRAINBUILDER ACTIVITY

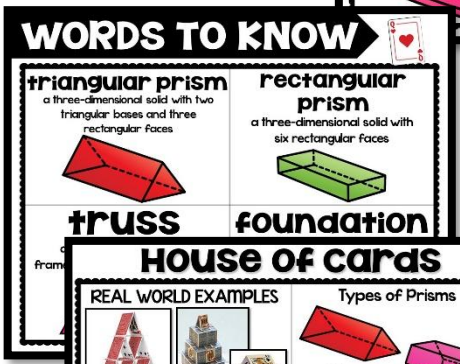


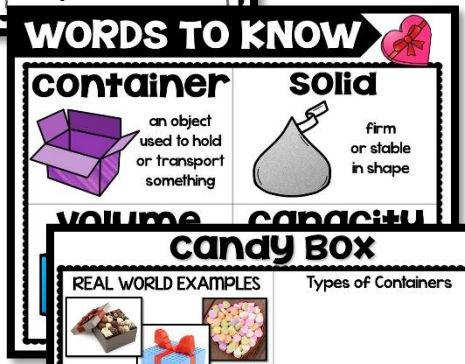
- ✓ SIMPLE SUPPLIES
- ✓ INTERACTIVE ANCHOR CHARTS
- ✓ VISUAL VOCABULARY
- ✓ QR CODE RESEARCH

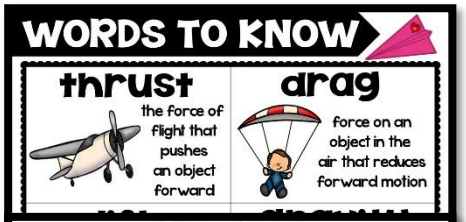


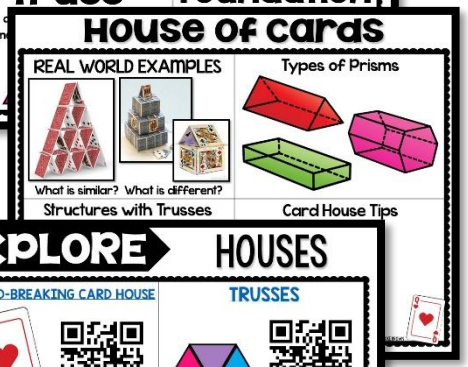


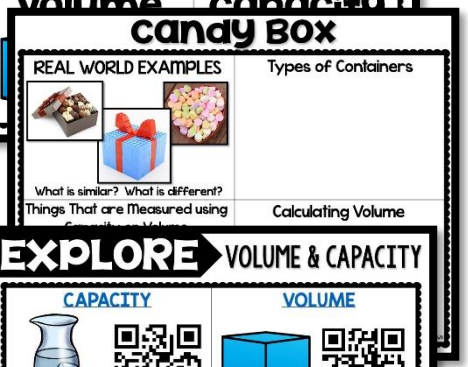


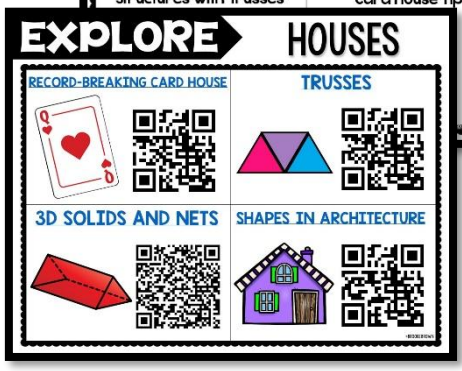


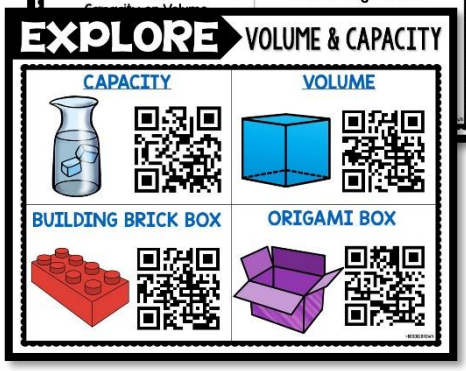


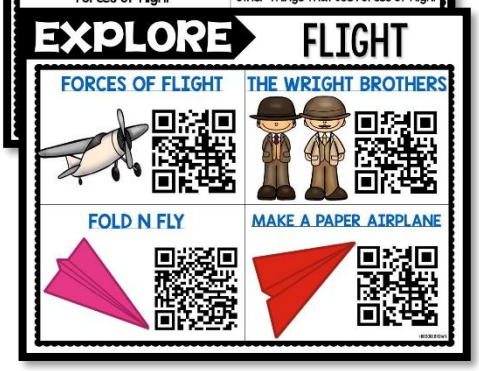




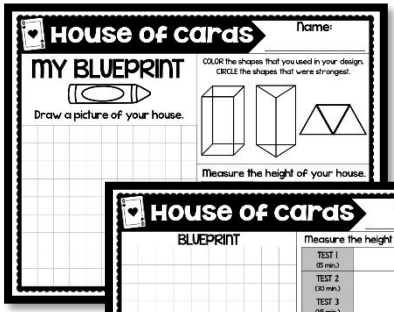


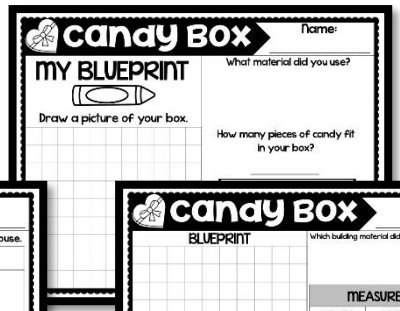


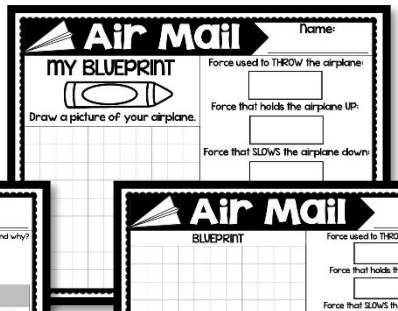


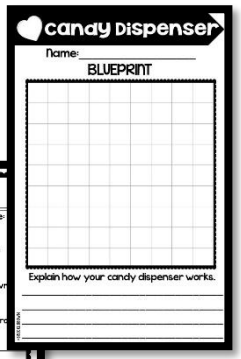


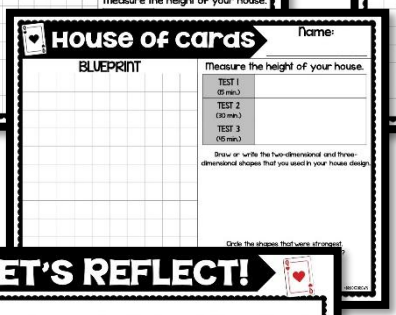
DIFFERENTIATED RECORDING SHEETS FOR K-5TH GRADE

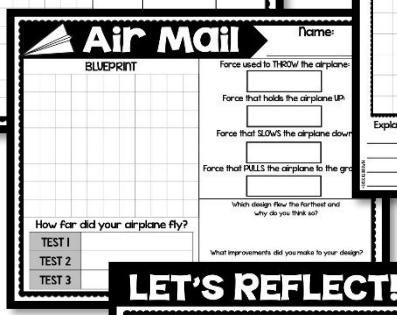


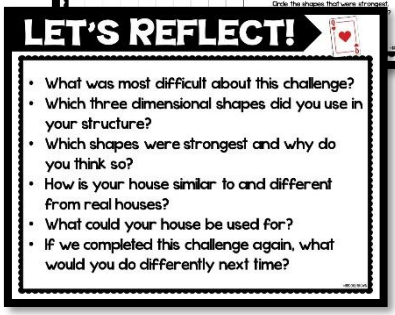


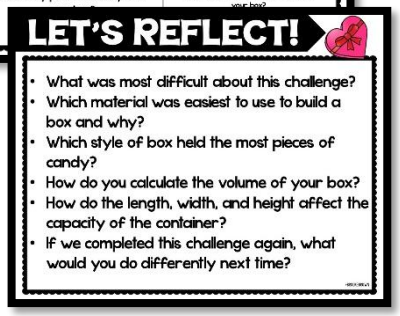


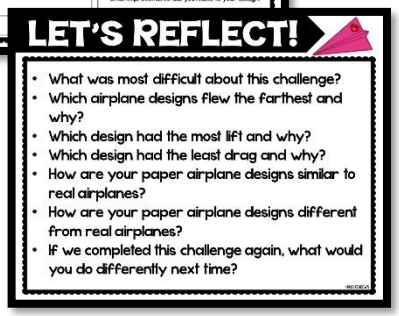




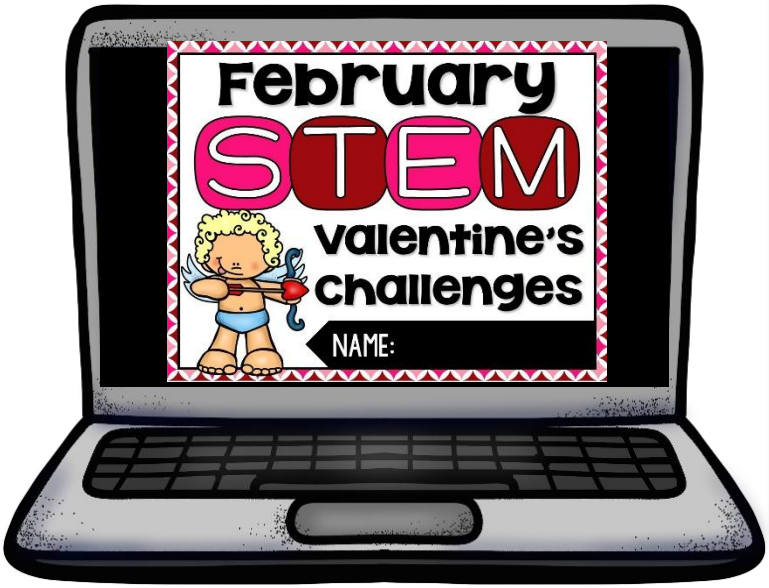


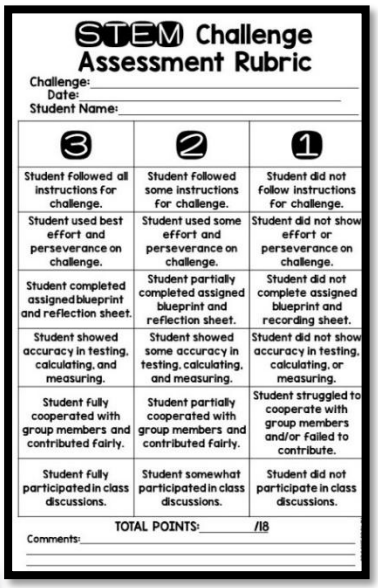


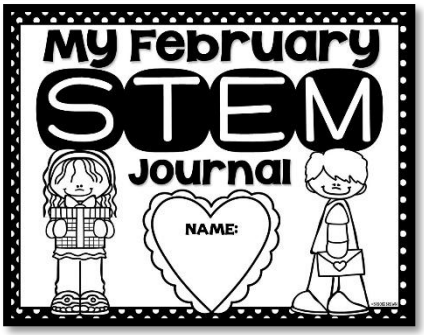


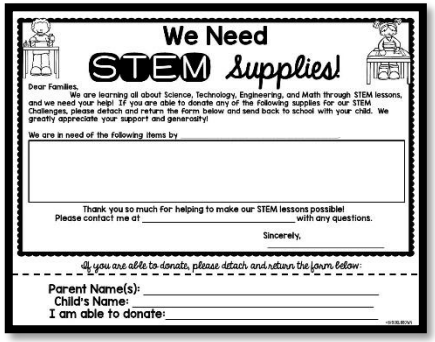


DIGITAL GOOGLE SLIDES NOTEBOOK









SAY *Hello* TO STRESS-FREE STEM!

SUPPLIES CHECKLIST

FEBRUARY SUPPLIES CHECKLIST

STEM CHALLENGE	ITEM	NUMBER PER GROUP	I HAVE IT
House of Cards	playing cards or index cards	40	
	masking tape	6 ft.	
	ruler	1	
Candy Box	building bricks	1 small tub	
	construction paper	2 sheets	
	playdough	1 cup	
	candy conversation hearts (or other small candies)	30	
	ruler	1	
Air Mail	copy paper	3-4 sheets	
	secret code template	1	
	yardstick or measuring tape	1	
BONUS BRAINBUILDER: Candy Dispenser	toilet paper rolls	2	
	scissors and markers	1	
	aluminum foil	1 ft.	
	scotch tape	1 roll	
	small candy pieces	20	

STANDARDS ALIGNMENT

FEBRUARY STANDARDS ALIGNMENT

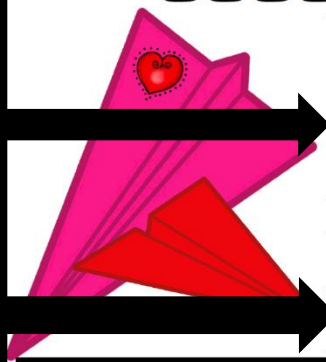
CHALLENGE	ENGINEERING	SCIENCE	MATH
House of Cards	K-2-ETS1 Engineering Design: K-2-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3 3-5-ETS1 Engineering Design: 3-5-ETS1-1, 3-5 ETS1-2, 3-5 ETS1-3	2.Structure and Properties of Matter •Action/Reaction Forces, tension and compression forces, weight, balance, stability	MP1: Make sense of problems and persevere in solving them MP2: Reason abstractly and quantitatively MP4: Model with mathematics MP5: Use appropriate tools strategically MP6: Attend to precision MP7: Look For and make use of structure
Candy Box	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 •Volume and Capacity	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
Air Mail	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 4-PS3 Energy 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 MP6: Attend to precision MP5: Use appropriate tools strategically
BONUS BRAINBUILDER: Candy Dispenser	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	4-PS3 Energy 5-PS2 Motion and Stability: Forces and Interactions	MP1: Make sense of problems and persevere in solving them MP4: Model with mathematics MP5: Use appropriate tools strategically

CHALLENGE OVERVIEW

MATERIALS

STEP BY STEP INSTRUCTIONS

STEM CHALLENGE: Air Mail



OVERVIEW: This challenge is always a favorite! Students experiment with different designs of paper airplanes, test them to see which designs fly the farthest, and measure the distances for each flight. You may choose to have students follow some of the tutorials provided on "Explore Flight" or let them come up with unique designs. As an added extension, students may use the provided "Secret Code" template to write coded Valentine's messages to classmates on their airplanes.

KEY SKILLS: Forces of Flight (gravity, thrust, drag, lift), Measurement

SUGGESTED READ ALOUDS: Flight by Robert Burleigh, Violet the Pilot by Steve Breen, After the Fall by Dan Santat

MATERIALS PER GROUP: 3-4 sheets of copy paper, copy of secret code template, yardstick or measuring tape

KEY SKILLS

SUGGESTED READ ALOUDS

LESSON PLAN

1. Activate students' prior knowledge by asking them to share what they already know about forces of flight and how airplanes work.
2. Share and discuss the videos on "Explore Flight."
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 paper airplanes, write secret codes, test their airplanes, and measure the distances they travel.
8. Hold a whole class closing discussion and reflection, allowing students to share their paper airplane designs. Use the "Let's Reflect" poster to guide the discussion.