


storybook **STEM** THE POLAR EXPRESS

POLAR PASS

The Polar Express needs to get to the North Pole!

Can you build a train bridge that will hold the most weight?




YOU MAY USE:

- linking cubes, base ten blocks, or dominoes
- popsicle sticks
- toy trains or paper trains

POLAR PASS

The Polar Express

Name: _____



STEM CHALLENGE

Can you build a train bridge that holds the most weight?

What I Know About Bridges:

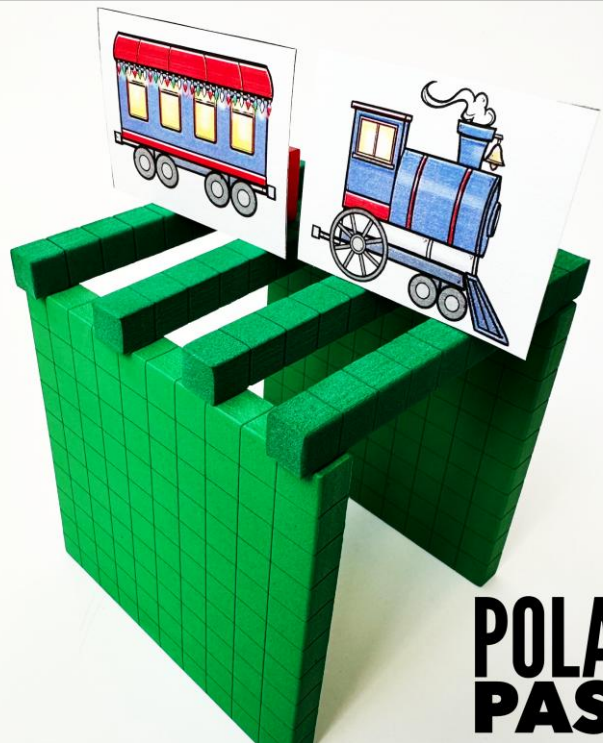
- 1 _____
- 2 _____

CREATED BY BROOKE BROWN AND KATIE KING

POLAR EXPRESS STEM

POLAR PASS

STUDENTS CHOOSE
FROM A VARIETY OF
BUILDING MATERIALS!



POLAR PASS

STEM COMPONENTS

LESSON PLAN

KEY VOCABULARY

STEM CHALLENGE: POLAR PASS



LESSON PLAN

STEM CHALLENGE: POLAR PASS

Challenge Description: Using a choice of materials, students will design and build a bridge that will hold the most weight. The challenge is to build a bridge that will hold the most weight. The challenge is to build a bridge that will hold the most weight. The challenge is to build a bridge that will hold the most weight.

Challenge Materials: linking cubes, base ten blocks, or dominoes; popsicle sticks; toy trains or paper trains.

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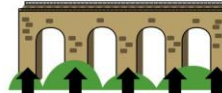


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POLAR PASS

PIER



a vertical support on a bridge

DECK



the main horizontal surface of a bridge

WEIGHT



how heavy an object is

BALANCE



equal distribution of weight

TEACHER CHART & VIDEO LINKS

POLAR PASS

Real World Examples



Types of Bridges

ARCH



BEAM



SUSPENSION



Parts of a Bridge



Why do you think bridges are important?

LET'S EXPLORE BRIDGES AND TRAINS!

ALL ABOUT BRIDGES



FAMOUS BRIDGES



STRONG BRIDGES



TRAINS



The Polar Express Maker Task Cards

Use the following task cards in a Maker Space or with STEMiners for students to make more creations.

Make a train.



design a new pair of holiday pajamas.



Make a bell that makes noise.



Write a recipe for a new type of hot cocoa.

WEIGHT TESTS

Test	Number of Trains Held
1	
2	
3	

One thing that was EASY:

One thing that was HARD:

One new thing I LEARNED:

POLAR PASS

The Polar Express



STEM CHALLENGE

Can you build a train bridge that holds the most weight?

What I Know About Bridges:

1

2

BRIDGE
of train bridge
of the PIERS.

MATERIALS

Draw or write the materials you will use to build your bridge.

MAKER CARDS

ELA COMPONENTS

Vivid

Verbs



move quietly



rustle

told



insisted

walk



tiptoe

moved



pranced



SIMILES

as cute as a button



it means little and adorable. The puppy was cute as a button. The child in Mrs Moore's class was as cute as a button while singing Happy Birthday.

as quick as lightning



when something happens so fast that you barely see it. As quick as lightning, the thief jumped out the open window. The raccoon was as quick as lightning as he disappeared into the tree hollow.

as sick as a dog



as sick as a dog means throwing up a lot. Suzie was sick as a dog over the holidays. I was sick as a dog after eating that chicken salad.

like a bull in a china shop



means to be clumsy and wreckless. Jon was like a bull in the china shop at his Grandma's house.

Similes

When an author uses LIKE or AS to make a comparison.

We drank hot cocoa as thick and as rich as melted chocolate bars.



We climbed mountains so high it seemed as if we would scrape the moon.



Faster and faster we ran along, rolling over peaks and through valleys like a car on a roller coaster.



Vivid Verbs

Verbs are action words.

Authors can add a lot of meaning to books by using descriptive or **VIVID VERBS**.



DOODLE



SMA

Name: Parker **SIMILES**

Directions: Highlight the simile. Write about how it helped you understand the text better.

I can picture the exact kind of candy! This simile makes me continue to think of winter and all things cold!



Name: Kelly **MENTAL IMAGE**
With the Help of Verbs



When the author said the wolves were roaming through the woods it made me picture a mysterious forest that was dangerous. It made the scene more exciting!



imile
ize
the
And