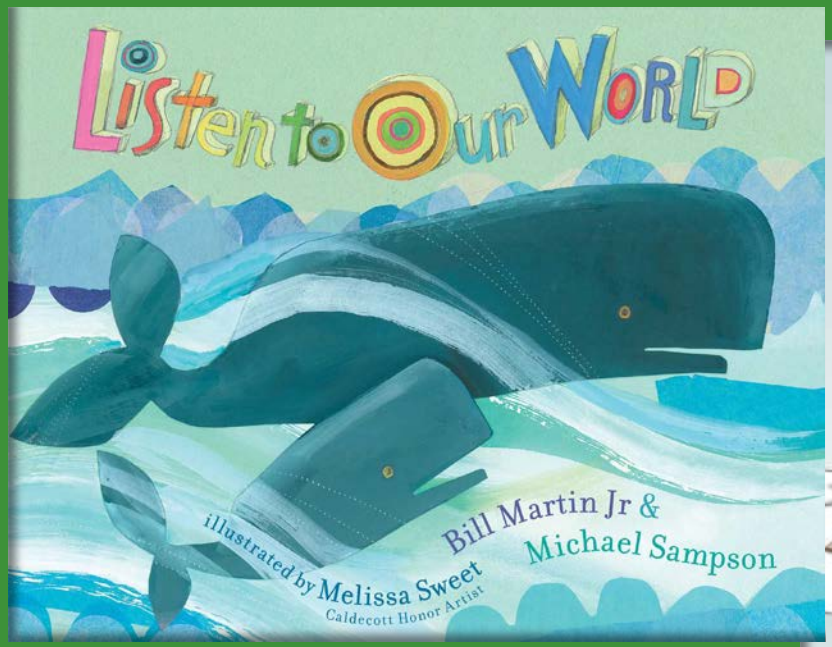




# Welcome to

# STEM Storytelling:

## Using Picture Books to Integrate Mathematics

**Lindsey Herlehy and Karen Togliatti**

# Who Lives Here?

## *Listen to Our World*

## by Bill Martin, Jr. and Michael Sampson

Why might the parrots by squawking?

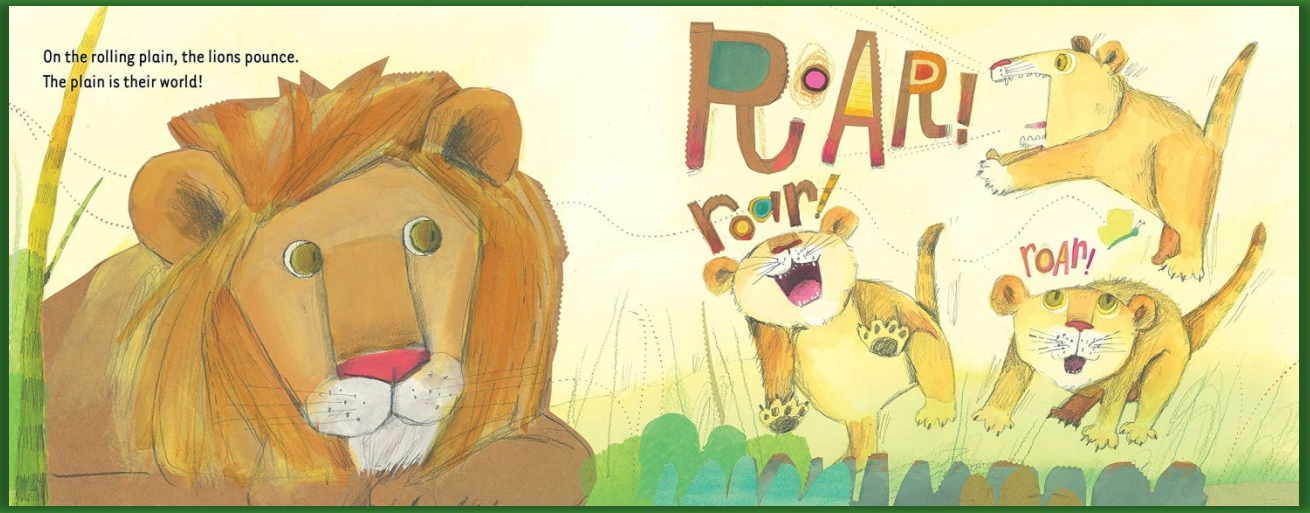
What does the jungle look like?


Questions begin on page 6.

Which kangaroo is the momma kangaroo? How do you know?

Why do you think a whale comes to the surface of the ocean?

# Inferential Reasoning




How many total paws do the lion cubs have in this picture?

Do you think the adult lion has the same number of toes on each paw as the lion cubs? Convince me.

- ✓ Relying explicitly on data
- ✓ Attend to uncertainty
- ✓ Making and evaluating mathematical claims

# Kindergarten Activity

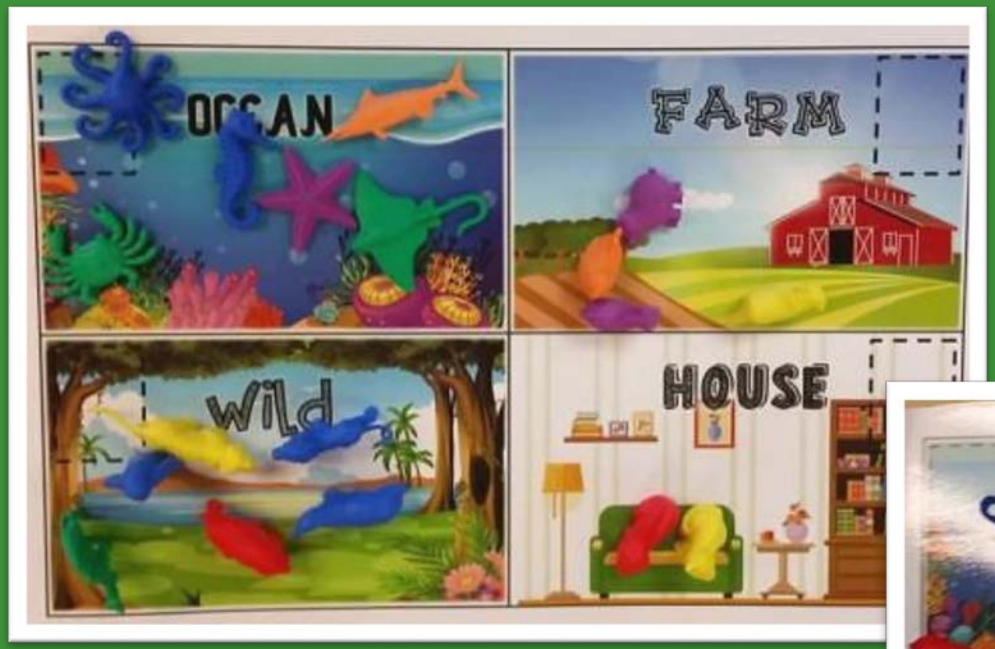
Begins on page 9

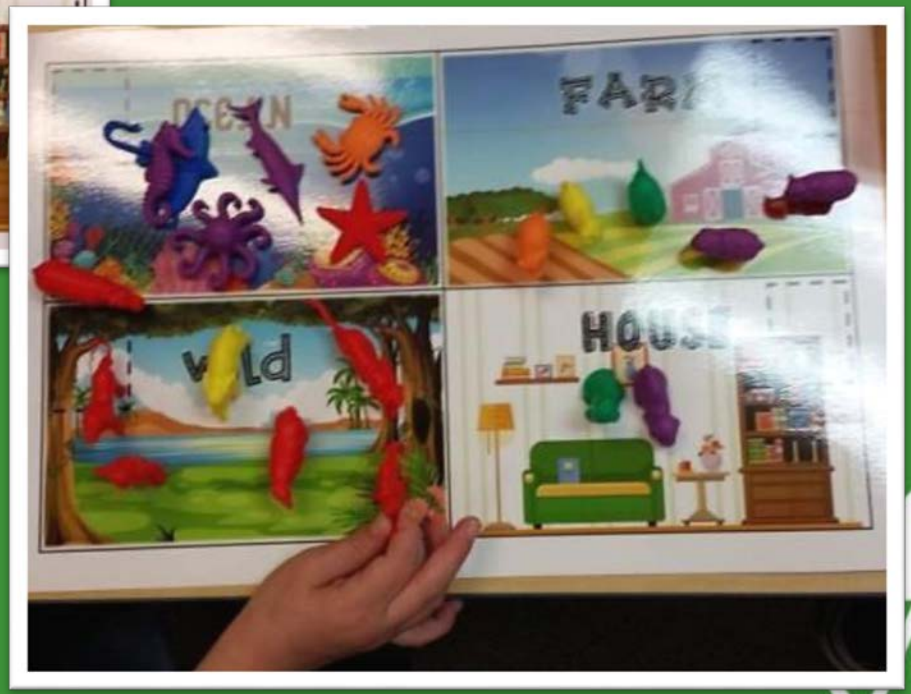
Students are asked to define a habitat following the completion of the read-aloud.

Students are provided a Habitat Placemat and are asked to think about each of the presented habitats.


Students will take turns sorting the animal figures by habitat onto the placemat.

# Sample Student Work

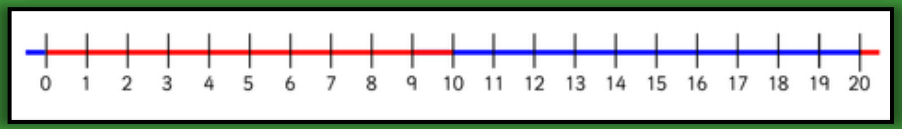


# Individual Accountability

**Each student will receive one Animal Card and will place it in the class pocket chart according to the habitat category of the animal.**

# Counting and Cardinality



- Classify objects and count the number of objects in each category
- Count to tell the number of objects
- Count to answer "*How Many?*" questions
- Compare numbers

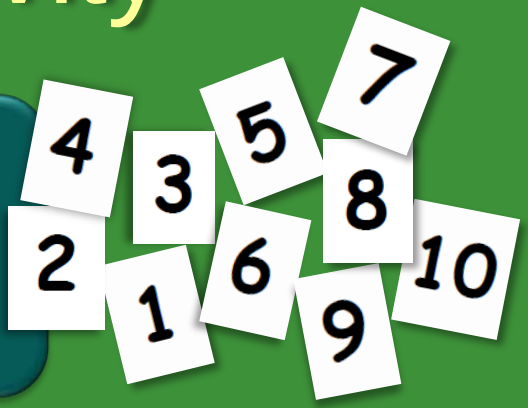
# Assessment and Debrief


- Can you think of any other animals that may live in the habitats we talked about today?
- In which habitat do you think MOST of the animals in the world live? Why might you think that?
- Can you give an example of an animal that can live in one habitat but not another habitat? Explain.
- What new questions do you have? What are you wondering about now?

# First Grade Activity

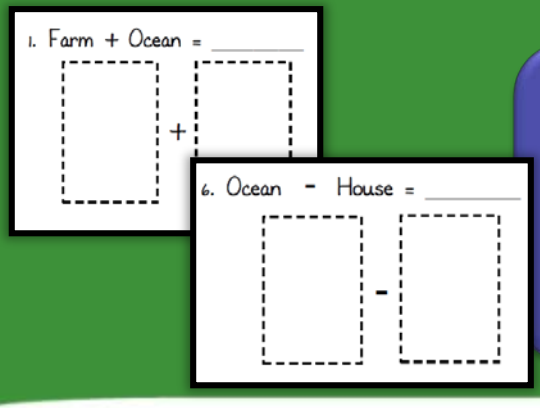
Begins on page 15

Students use various counting strategies to select a Number Card that represents the number of animal figures in each habitat on their placemat.




Students make mathematical observations:

- ✓ What do you notice?
- ✓ How do you know this?
- ✓ How can you convince me?


Students complete put together, take apart and compare problems using their animal figures, Number Cards, and student work page.

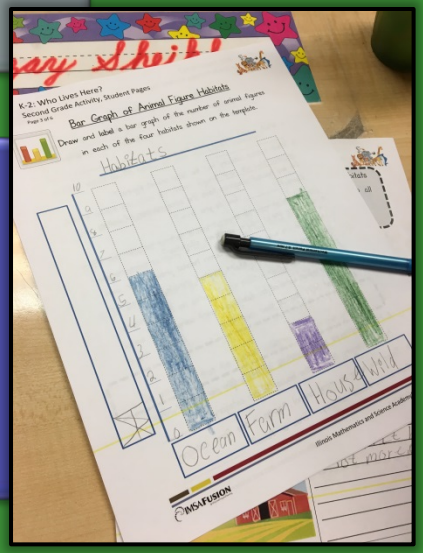
# Second Grade Activity

**Begins on page 20**

Students sort each animal figure onto the bar graph template according to their habitat.



Students draw a representation of their physical graph model.



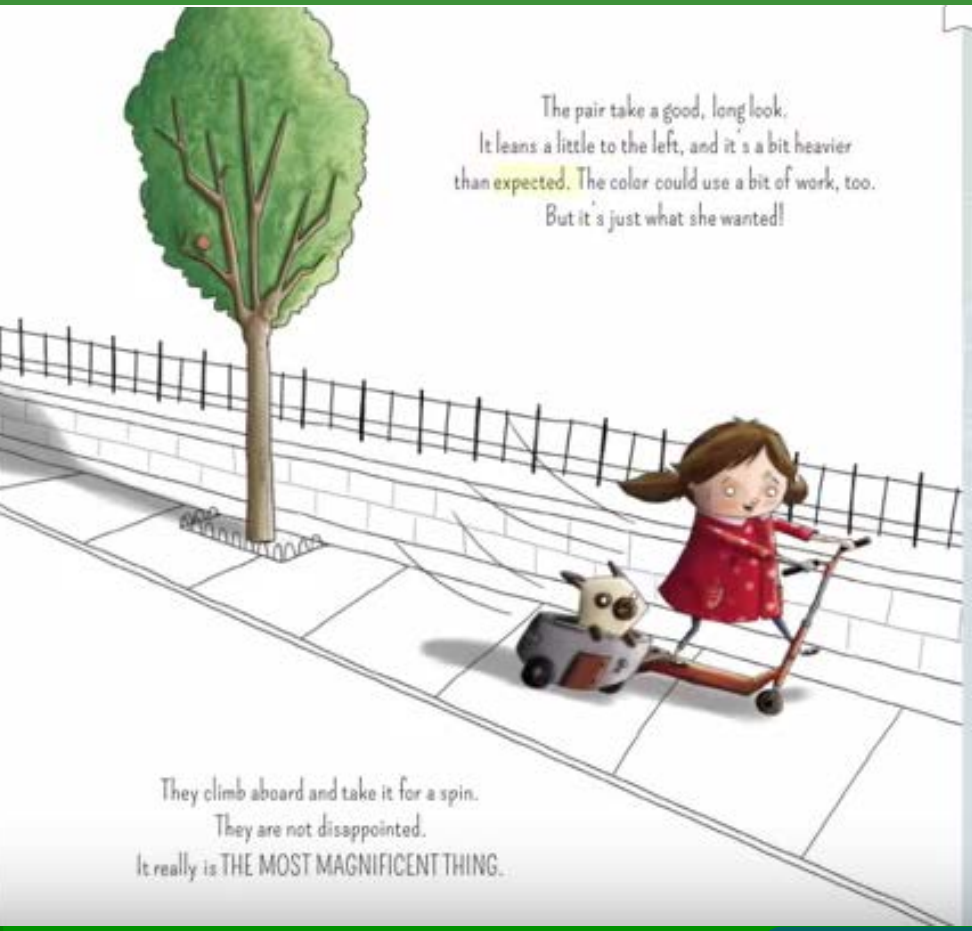

Questioning focuses on:

- ✓ Reading within the data
- ✓ Reading between the data
- ✓ Reading beyond the data

# Sorting Extension & Mapping Activity


# Dare to Tinker

## *The Most Magnificent Thing* by Ashley Spires




ASHLEY SPIRES is the award-winning author and illustrator of a number of books for children, including SMALL SAUL, LARF and the adventures of Binky the Space Cat, an early graphic novel series. Ashley has always loved to make things, and she knows the it-turned-out-wrong frustration well! All of her books have at one point or another made her cry, scream and tear her hair out as she tried to get them JUST RIGHT. Ashley lives in Ladner, British Columbia, where she and her dog, Gordon, are able to walk one of the many lovely trails near their house when a project doesn't go as planned.



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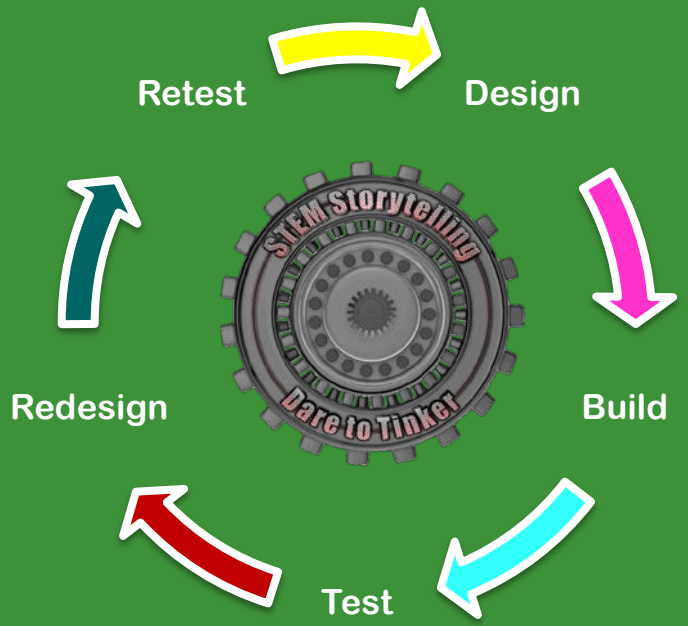
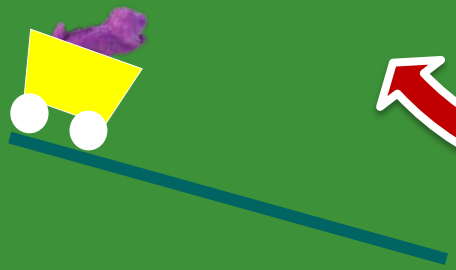
Questions begin on page 48.

# Design Challenge

**Design, build, and test a MAGNIFICENT vehicle!**

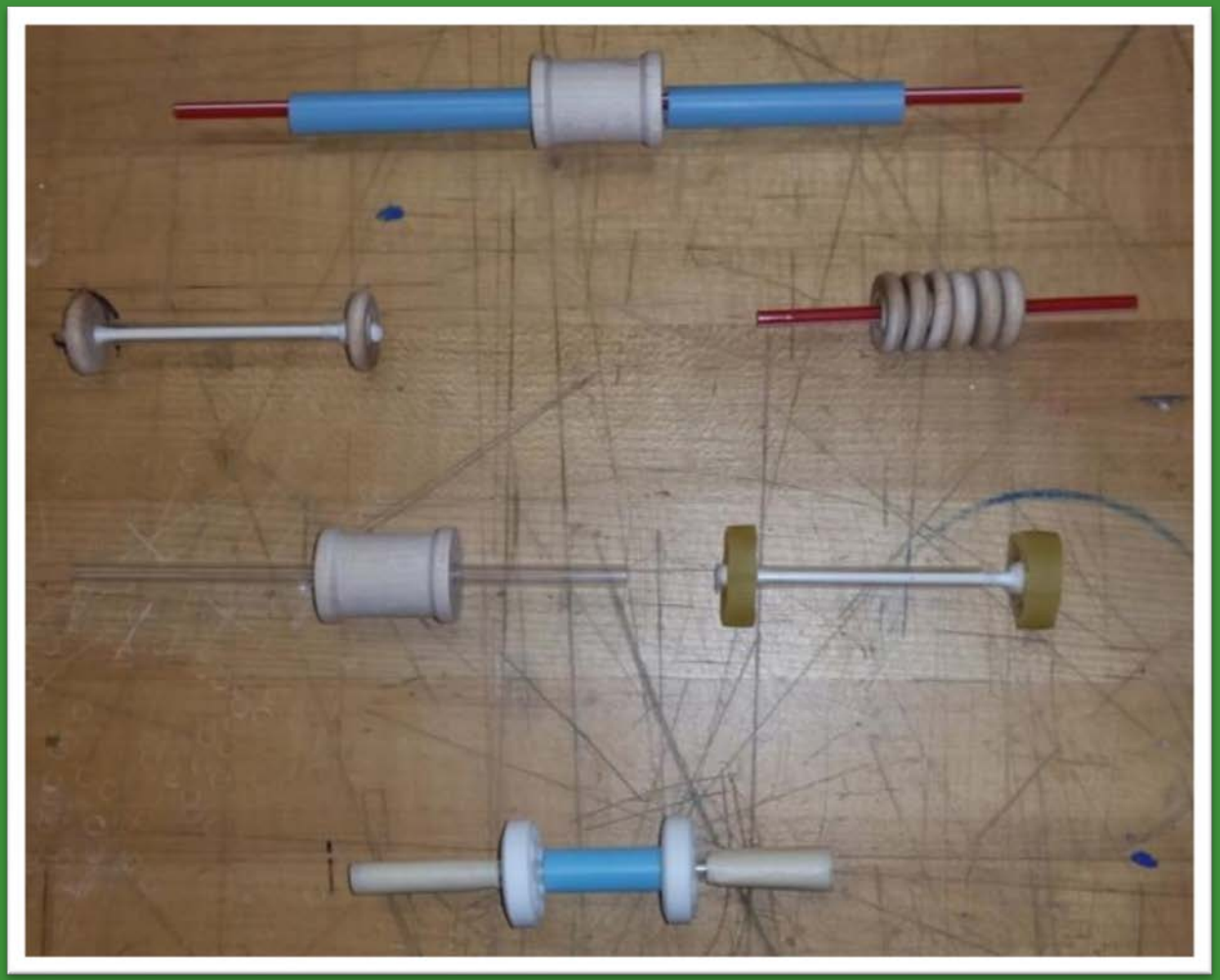


- A plastic pet will ride on your vehicle.
- Your vehicle must roll down a ramp.
- Your pet cannot be taped onto the vehicle.
- Your vehicle should travel at least twelve inches past the bottom of the ramp.
- You do not want to spend a lot of money on your design.

# Wheel and Axle

NGSS ETS1.C: *Because there is always more than one possible solution to a problem, it is useful to compare and test designs*.



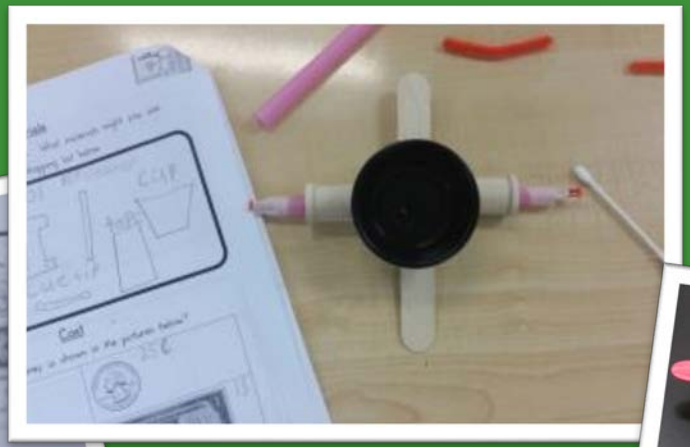
# Materials: Store Setup

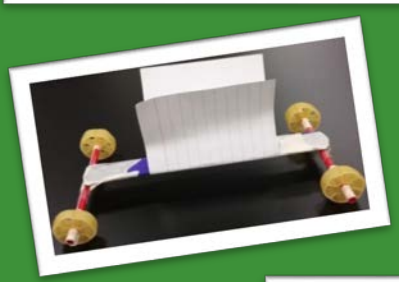
NGSS PS1.A *A great variety of objects can be built up from a small set of pieces.*

# You have ten minutes!!

10 5 0





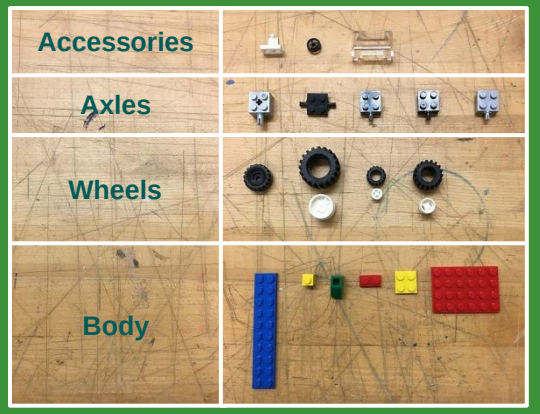
# Mathematics






# Kindergarten and First Grade

Students will use Brickyard™ Building Blocks or Lego ® pieces to build a magnificent vehicle to transport a pet.




Building materials are investigated to determine their potential usage and object movement (push/pull) is highlighted.

Paper strips are used to model distance each vehicle travels. Kindergarten focuses on comparison while first-graders are introduced to estimation and use a pet dog to "measure" the distance traveled.

# THANK YOU!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- Download lessons from:
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  goo.gl/5yX5Yd