

Welcome to
STEM Storytelling:
Using Picture Books to Integrate
Mathematics
Lindsey Herlehy and Karen Togliatti

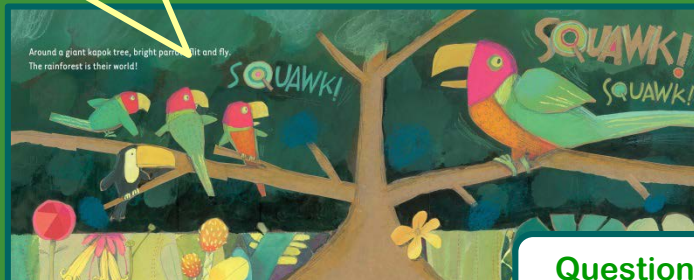


Who Lives Here?

Listen to Our World

by Bill Martin, Jr. and Michael Sampson

Why might the parrots be squawking?



Around a giant kapok tree, bright parrots sit and fly.
The rainforest is their world!

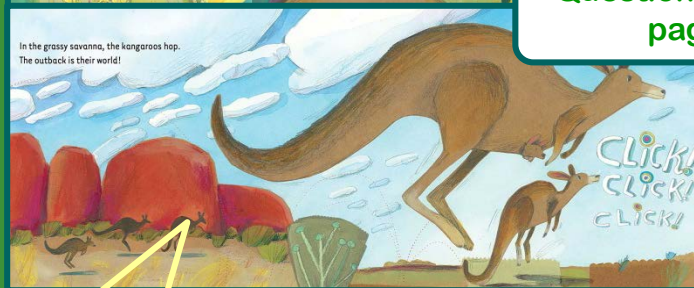
What does the jungle look like?



In the dense jungle, monkeys swing on vines.
The jungle is their world!

Questions begin on
page 6.

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

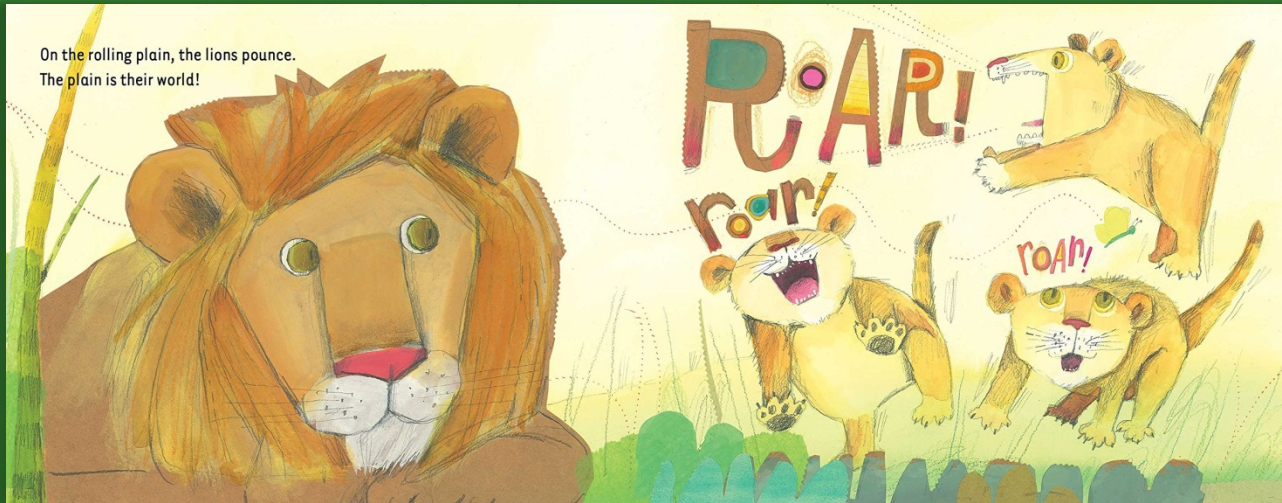


In the grassy savanna, the kangaroos hop.
The outback is their world!

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.

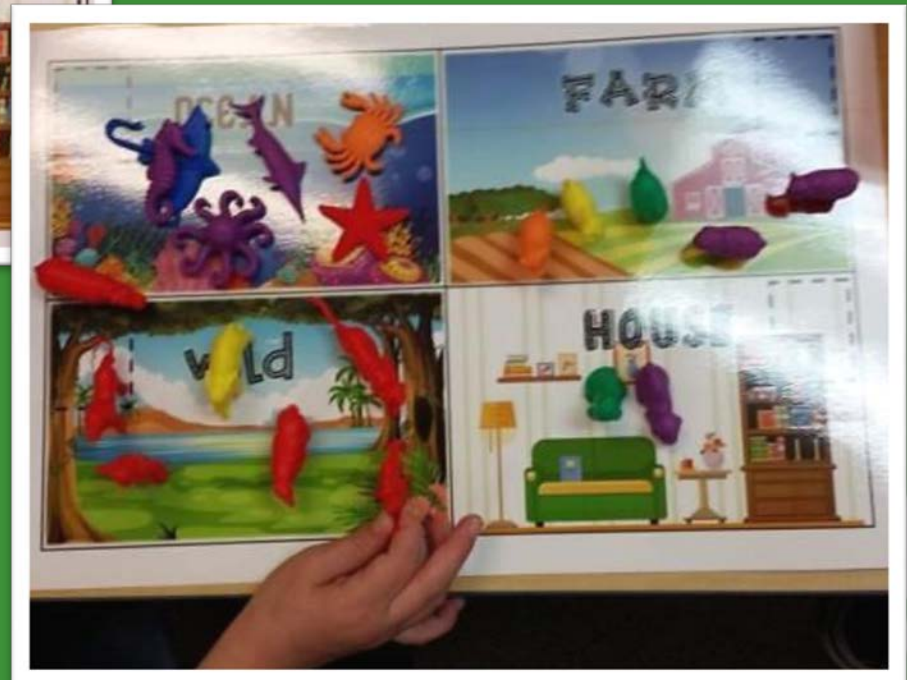


Students will take turns sorting the animal figures by habitat onto the placemat.

Working with a Buddy		
1	My whole body is listening	I am using my eyes for looking, ears for listening, and my hands are quiet.
2	I am taking turns	I am making sure that all voices get a turn.
3	I am using my quiet voice	I am using a soft voice and only my group can hear me.
4	I am staying with my buddy	I will raise my hand if we need help from the teacher.
5	I am being a helper	I am asking my buddy for help and giving my buddy help.
6	I am being kind	I am using words for helping and not for hurting.



Sample Student Work



Individual Accountability

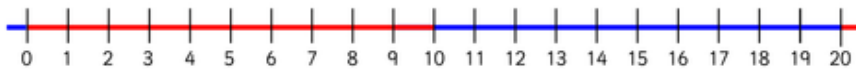
Each student will receive one Animal Card and will place it in the class pocket chart according to the habitat category of the animal.



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



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----



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?



1. Farm + Ocean = _____

+

6. Ocean - House = _____

-

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



Second Grade Activity

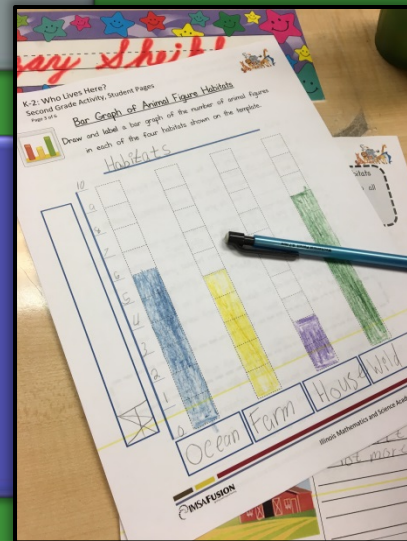
Begins on page 20

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




The pair take a good, long look.
It leans a little to the left, and it's a bit heavier
than **expected**. The color could use a bit of work, too.
But it's just what she wanted!

They climb aboard and take it for a spin.
They are not disappointed.
It really is **THE MOST MAGNIFICENT THING**.

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.

Jacket illustrations © Ashley Spires
Jacket design by Karen Powers

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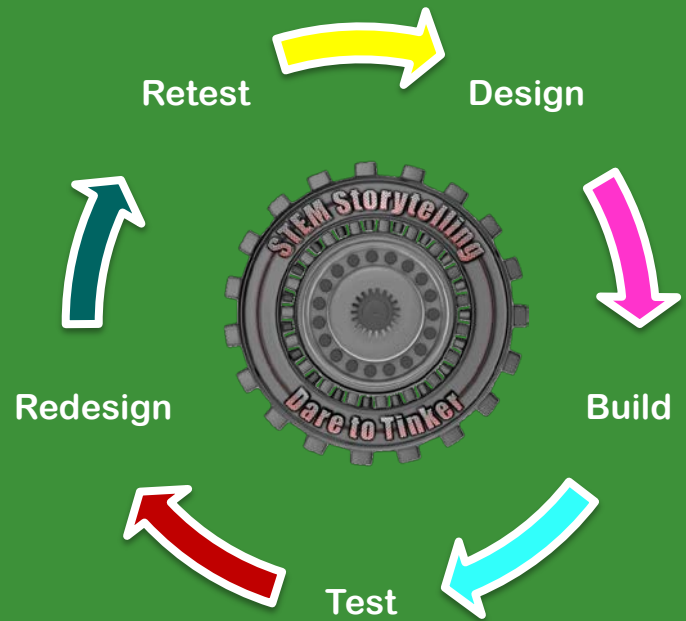
 **KIDS CAN PRESS**

Questions begin on
page 48.

Design Challenge

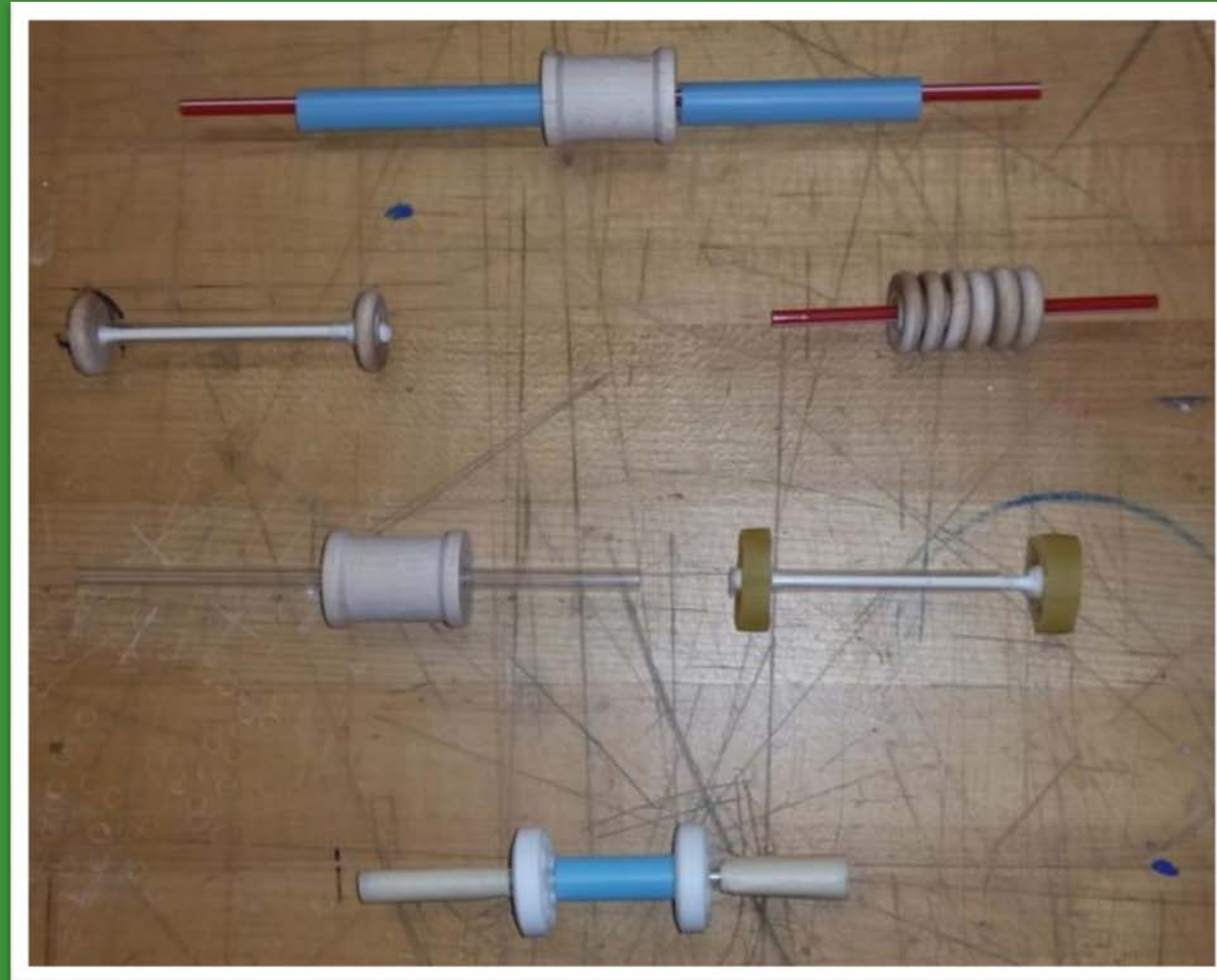
Design, build, and test
a **MAGNIFICENT** vehicle!

- 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.

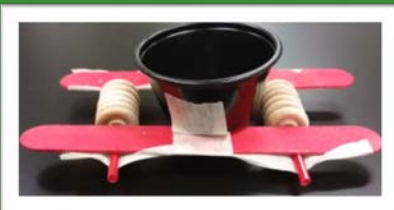
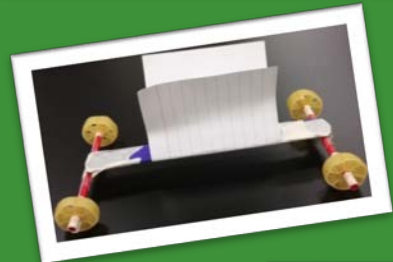
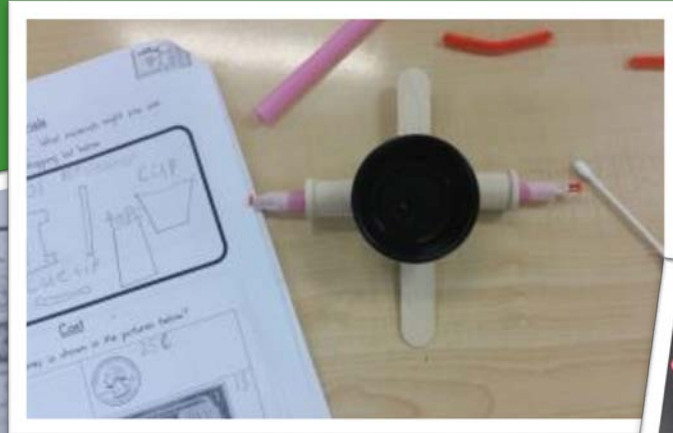


You have ten minutes!!

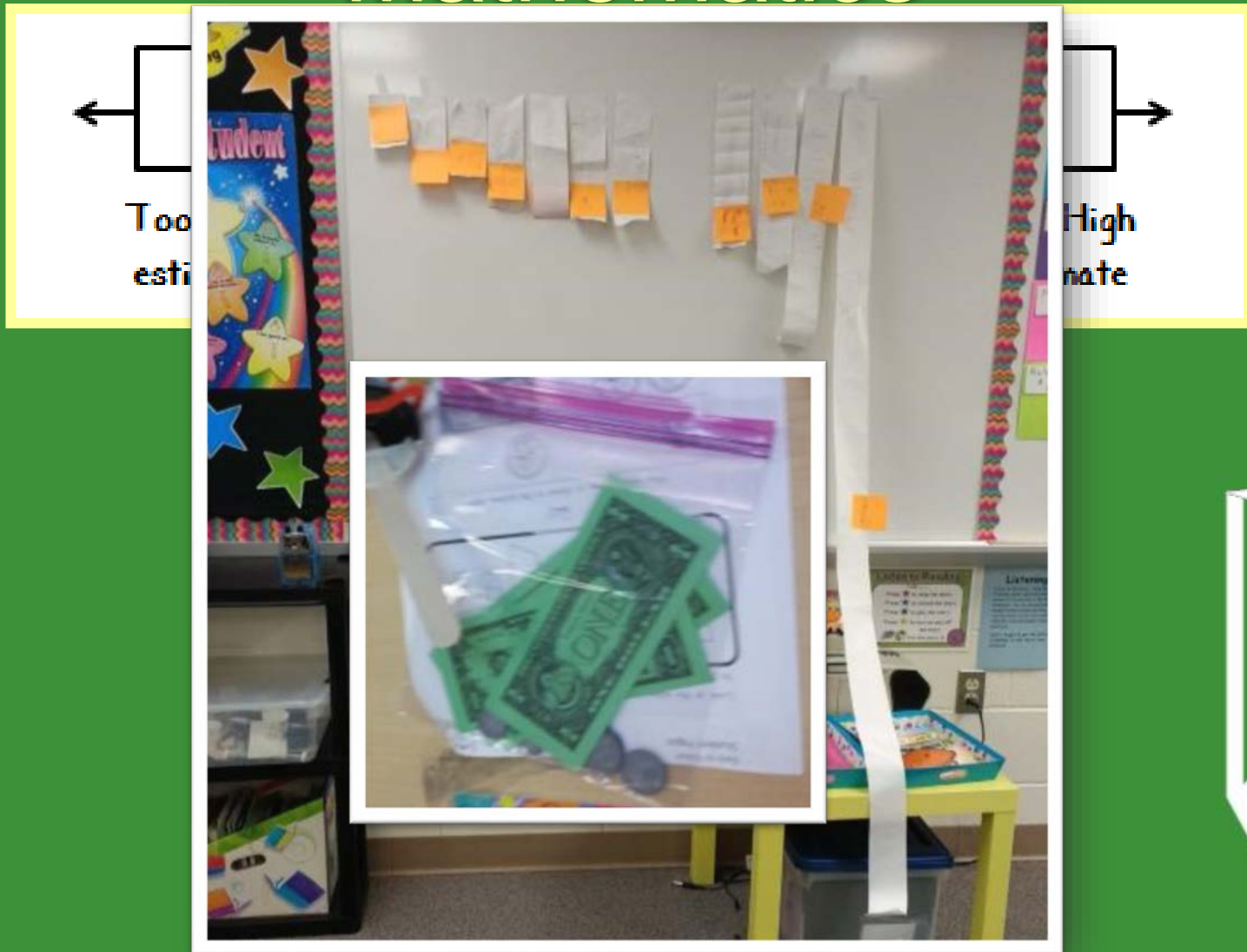
10

5

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Mathematics

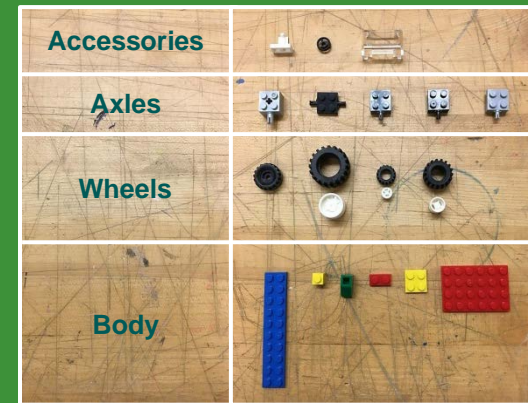


Kindergarten and First Grade

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:
goo.gl/21awMB
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