Force and motion

by,
Sue Cahalane
Science Teacher
Grades PK - 4

Next Generation Science Standard addressed in this packet:
Kindergarten: Forces & Interactions

K-PS2-1: Plan & conduct an investigation to compare the effects of different strengths or different directions of pushes & pulls on the motion of an object.

K-PS2-2: Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.

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Activity I: A Push is a Force!

Materials: 12 meter sticks lined up along the floor or if you do not have meter sticks- just put pieces of tape along the floor at the 0, 100 cm, 200 cm, 300 cm, etc. marks., toy cars or something that will glide down the floor and stop

Activity:

1. Put a piece of tape labeled "start" on the floor. Put car on start line. Line up meter sticks on each side of the car creating an alley for it to drive through
2. Students take turns pushing the car and recording distance traveled. on the worksheet provided. Make a prediction first! For the first try, push the car with a medium force. For the second try, push the car as hard as you can! Students should see the relationship between force and distance.

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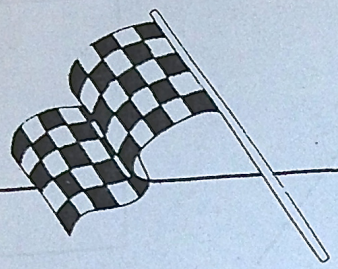
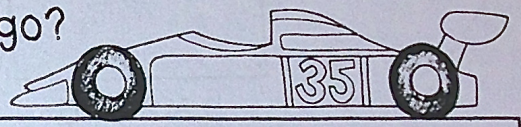
I have my students line up alongside the meter sticks. Everyone takes a turn and records their data.

Name Kyle

A Push is a Force!

How far did your car go?





	Distance in Centimeters
Predict first!	500
	232
Second Try	200
Third Try	328

Use this worksheet to practice numbers. I have to write the numbers on the side for my students to copy.

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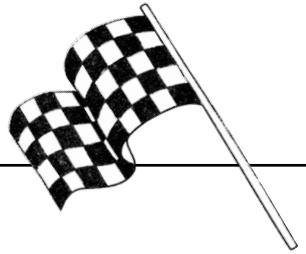
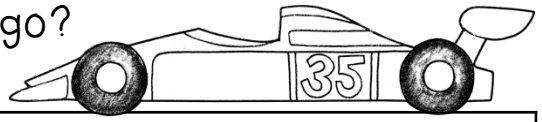
Name _____

A Push is a Force!

How far did your car go?





	Distance in Centimeters
Predict first! I think my car will go this far:	
First Try	
Second Try	

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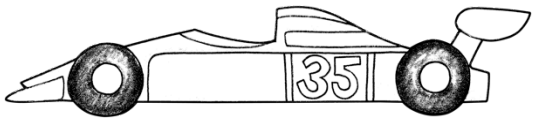
Name _____

A Push is a Force!

How far did your car go?



	Distance in Centimeters
Predict first! I think my car will go	
Second Try	

Use this worksheet with crayons. Students do not write numbers, they color in the smiley face.

Color code:

0 - 100 cm = red

101 - 200 cm = blue

201- 300 cm= orange

301 - 400 cm = green

401 - 500 cm = purple

501 - 600 cm= yellow

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0 - 100 cm = red

101 - 200 cm = blue

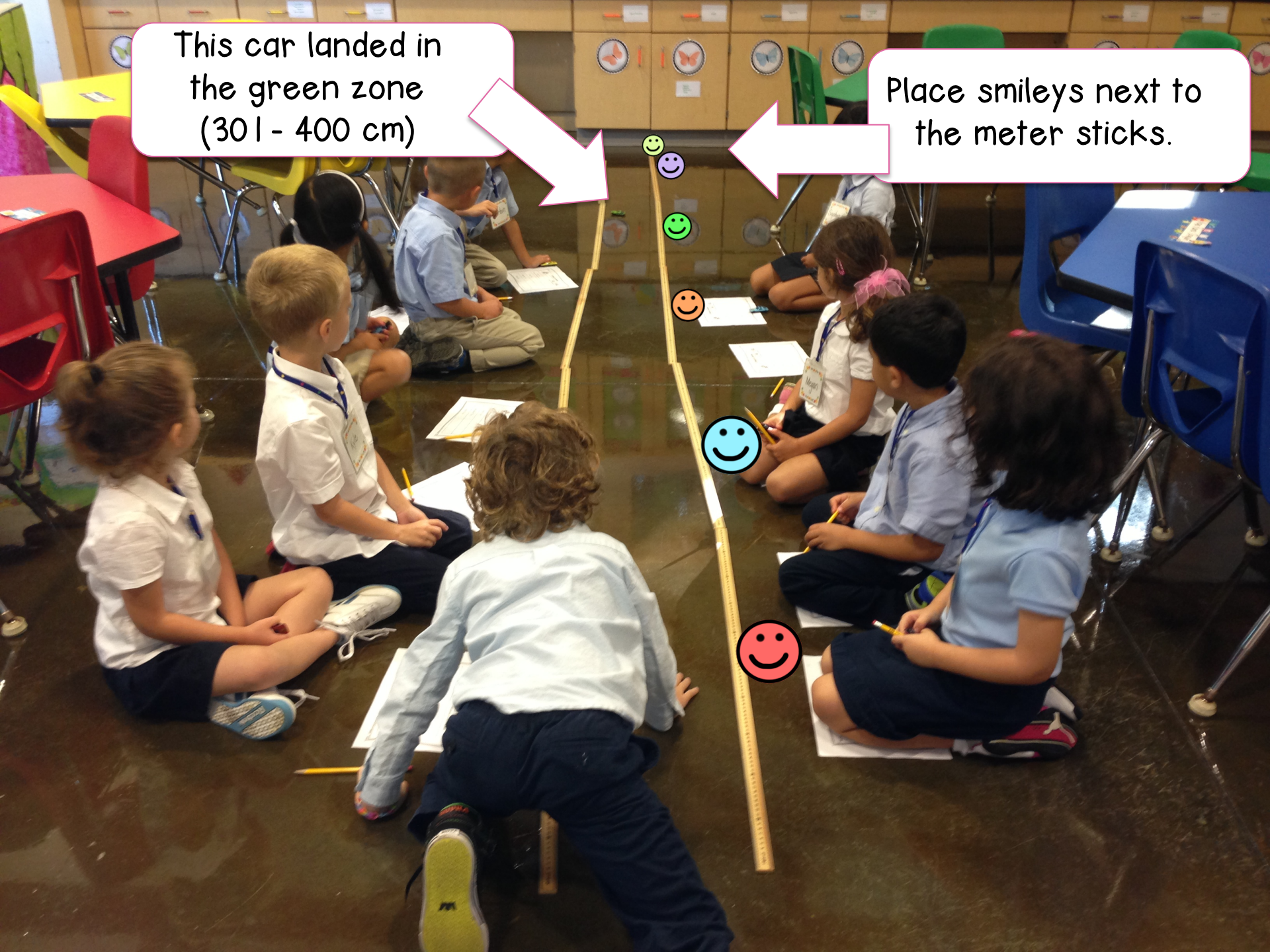
201 - 300 cm = orange

Laminate this sheet. Cut out smileys and place alongside meter sticks (see photo).

301 - 400 cm = green

401 - 500 cm = purple

501 - 600 cm = yellow


This car landed in the green zone (301 - 400 cm)
Place smileys next to the meter sticks.

Activity 2: Go Car Go!

Materials: meter sticks, toy cars or something that will roll down a ramp, ramps. Ramp ideas: I use my student test – taking privacy folders, other options: a wooden board, a piece of foam board, cardboard or posterboard.

Activity:

1. Set up a ramps using a board and a stack of text books. I set up 4 boards for a class of 20.

2. Students take turns – cars are released from the top of the ramp. The first time – no force (push) is used, the second time, the car is pushed down the ramp. Record results on worksheet provided. Students should see the relationship between force and distance.

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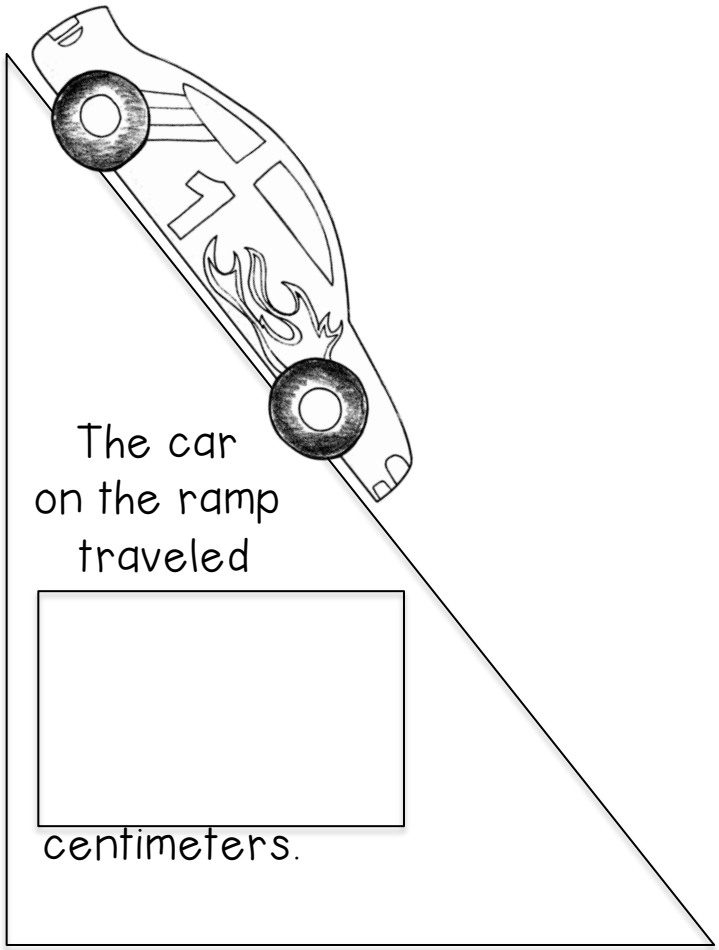
DO YOUR BEST!
Have a good breakfast.
Get a full night's sleep.
You can do it!
Show What You Know!
Show What You Know.
Do your best!
Do Your Best!
Get a full night's sleep.
Really Good Stuff
Testing Privacy Shield

Name _____

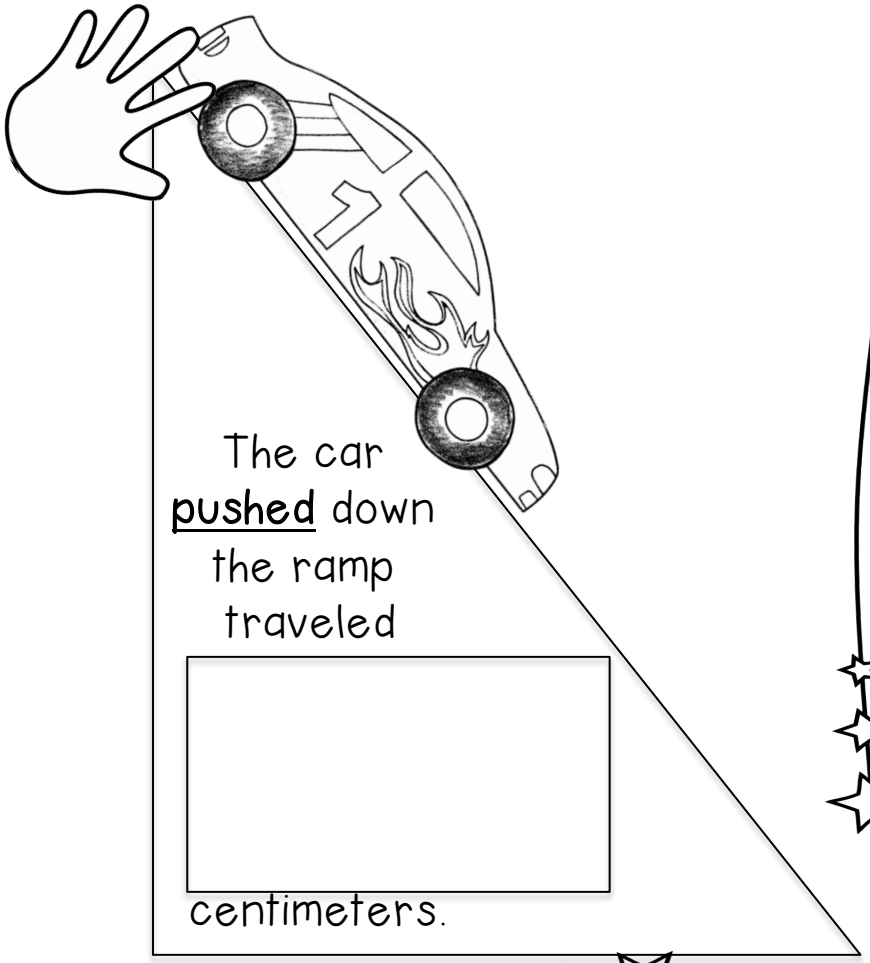
Go Car Go!

Circle the car that traveled the greatest distance:



The car on the ramp traveled

_____ centimeters.



The car **pushed** down the ramp traveled

_____ centimeters.

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Activity 3: Tube Tracks

Can you make a rolling ball change direction?

Materials: ping pong balls, paper towel or toilet paper rolls, tape

Activity:

Cut paper rolls in half lengthwise to create tracks. Students must figure out how to attach the rolls together so the rolling ball changes direction at least once. I just give my students the materials & I ask them to figure out how to make the rolling ball go to the right or to the left. The ball must land on the "Ball Must Land Here" sign. I do not give my kids the answers – they are really good at figuring this out for themselves through trial & error!

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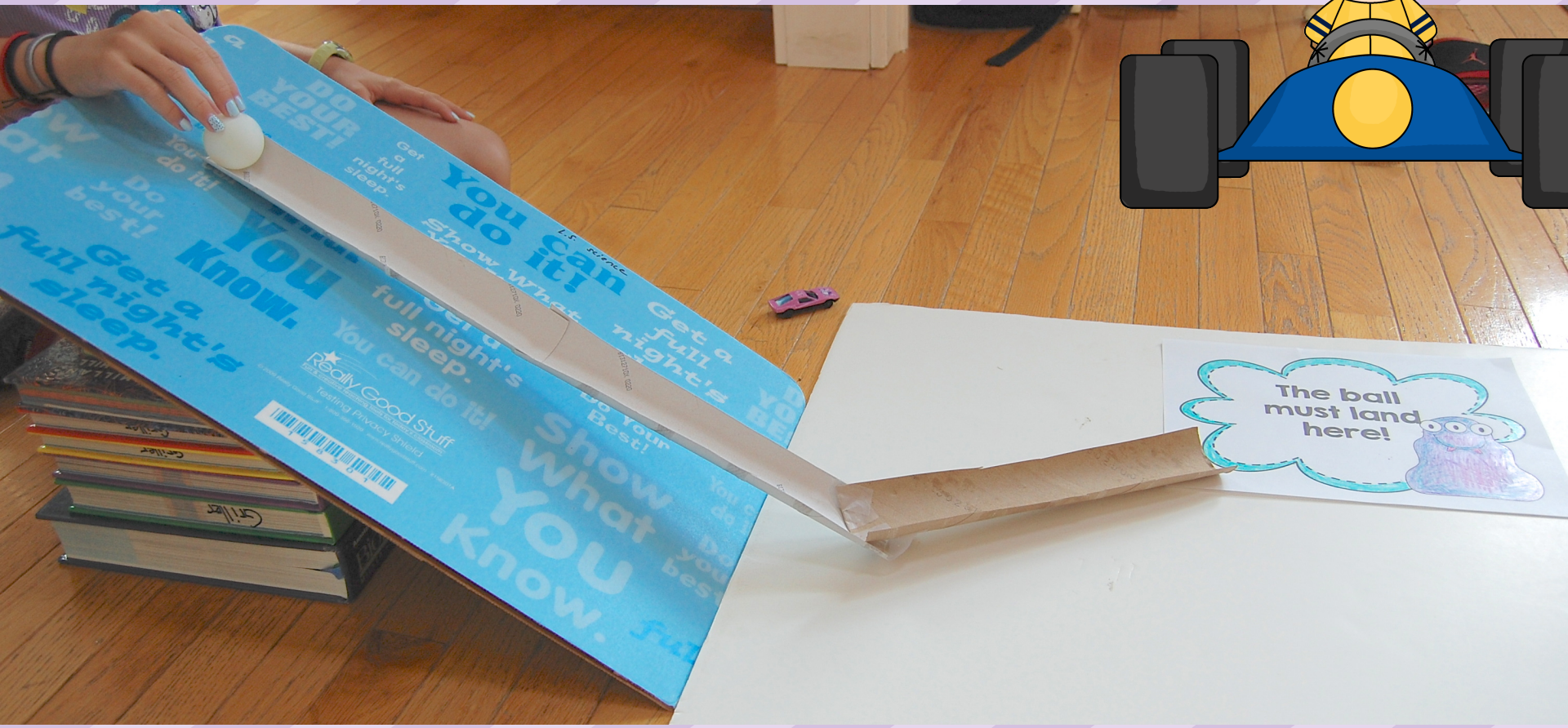
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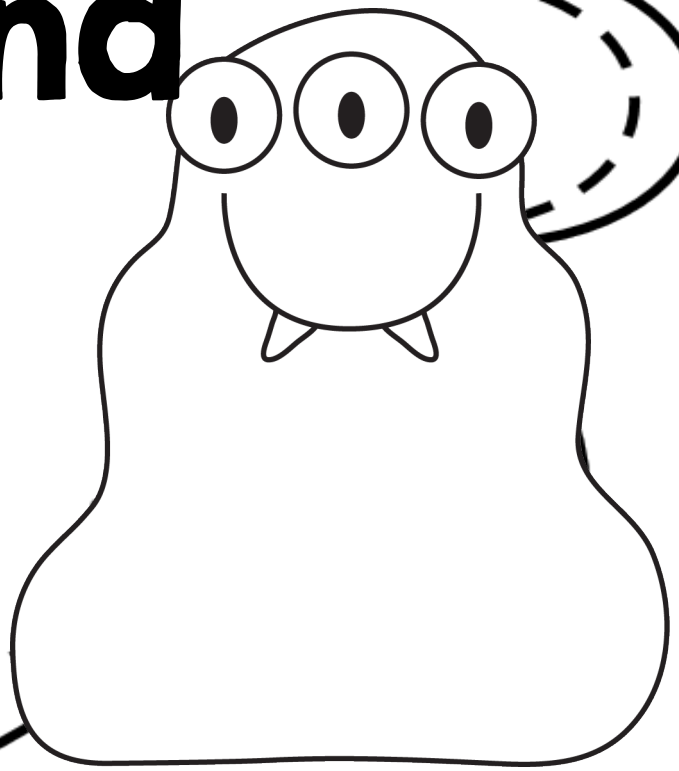
You can do it!
Get a full night's sleep.
Show What You Know.
Do your best!
Get a full night's sleep.
You can do it!
Show What You Know.
Do your best!
Get a full night's sleep.
You can do it!
Show What You Know.
Really Good Stuff
Testing Privacy Shield
The ball must land here!

The ball must land here!



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Thank you & enjoy the day!

Sue Cahalane

Science Teacher

Grades PK – 4

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