


Early Simple Machines Set

Measuring Car


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Exploring energy, forces and friction and non-standard measuring.

 30-45 min.

 Intermed.

 Grades 1-2



Lesson Plan

Connect

After a day of measuring at school, Sam and Sara have tried to measure almost everything on their way home. When they get to their favorite play area, Sam wonders how far it is from the tree house to the ice-cream shop. Sam says that it doesn't look that far from where he's standing. Sam pulls out a measuring tape and wants to start measuring, but Sara thinks there could be a much better way of measuring distance.

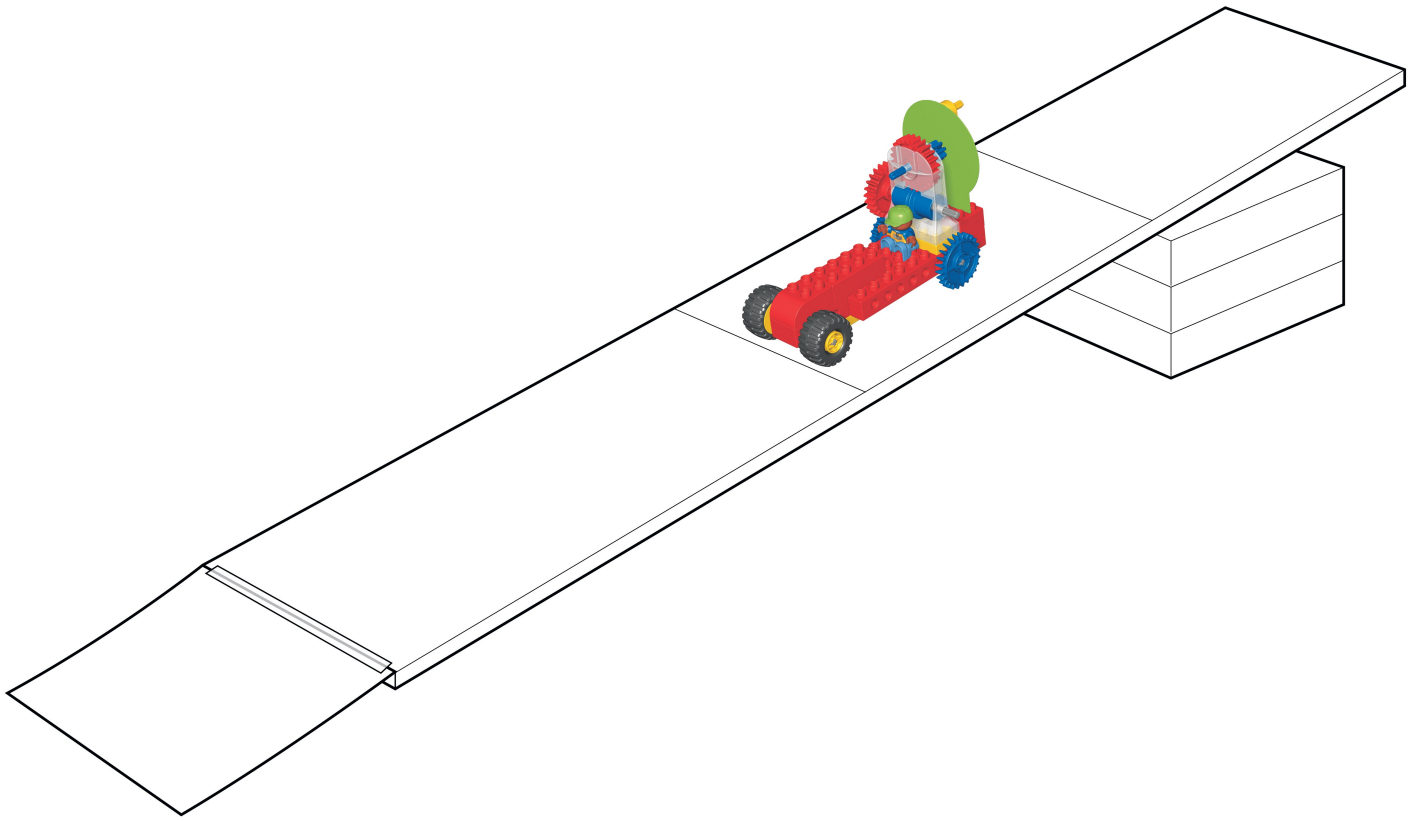
Can you help Sam and Sara build a car that measures how far it travels? Let's find out!



Construct

Build the measuring car using building instructions no. 6.

The wheels should turn freely and not rub on the sides of the car
When the blue gear wheels turn, the pointer should also move
The pointer should not rub on the scale

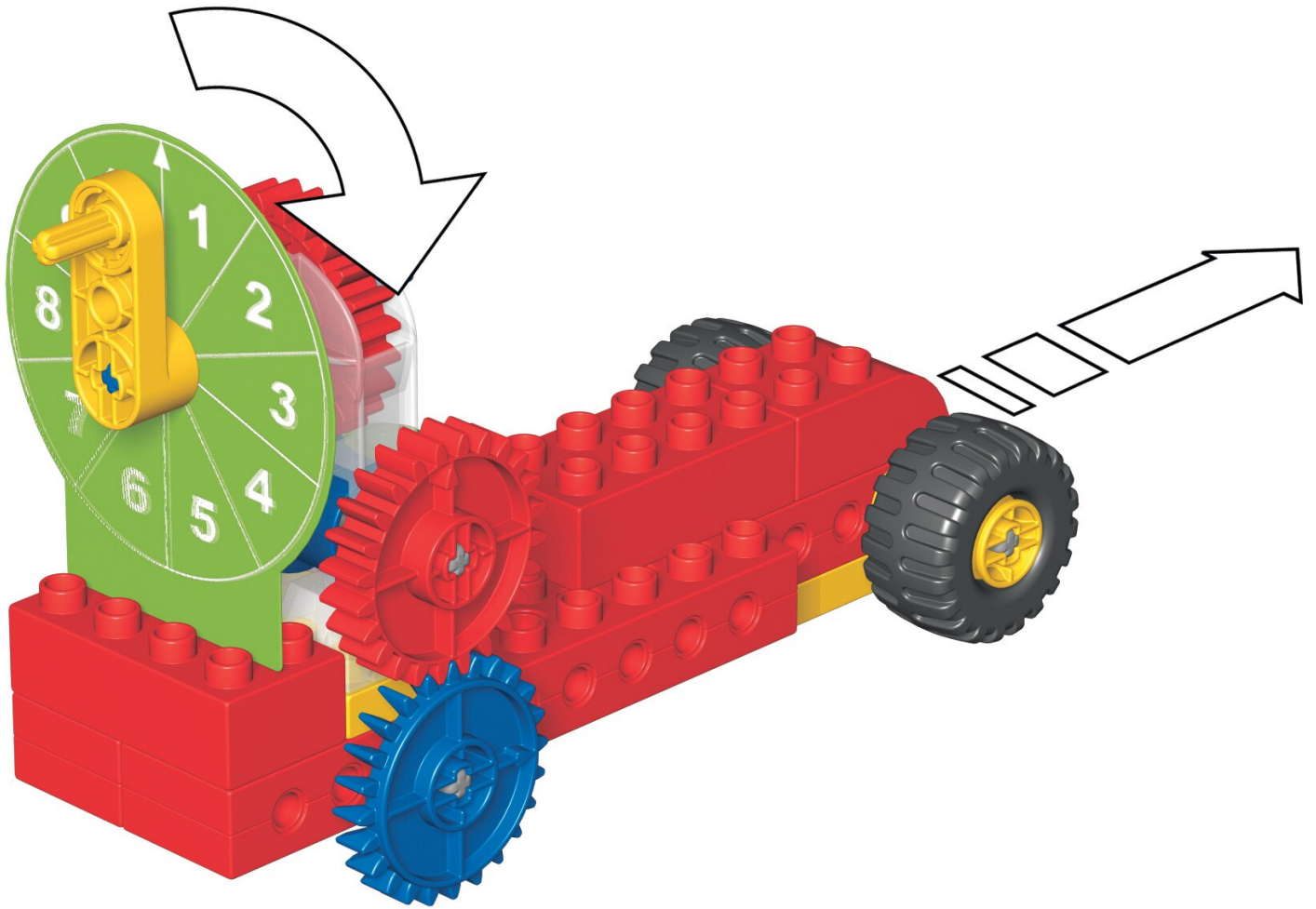


Make Your Test Ramp

Draw a start line 1 yard and another start line 20 in from one end of the plank
Place a support so that the top start line is 6 in from the floor

Idea:

If the thickness of the plank means that the measuring car bumps down onto the floor, use a piece of paper or card and sticky tape to make a smooth transition from plank to floor.



Using the Scale

The scale is divided into 10 units and can be used for non-standard measurement

Push the measuring car forward

Notice that as the measuring car moves forward the pointer turns

The pointer will point to the scale and give you a reading of the distance (units) the measuring car has traveled forward

Contemplate

How far?

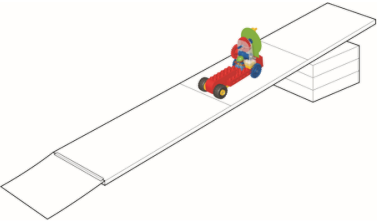
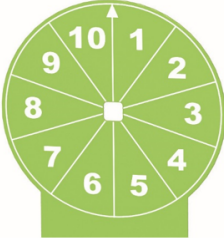
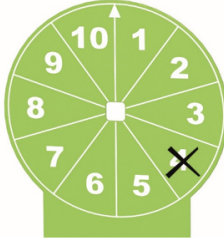
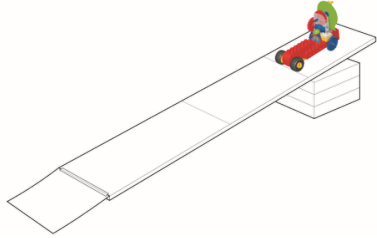
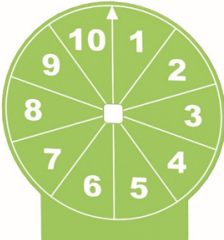
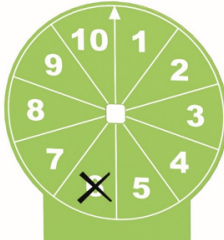
By using the scale you can measure the distance the measuring car travels. Find out how far the measuring car will travel when rolling down from the two different start lines.

First predict how far the measuring car will roll down from the two start lines.

Mark your predictions using the scale and numbers on the worksheet.

Next, test how far the measuring car actually rolls down from the two start lines by reading the scale.

Mark your findings using the scale and numbers on the worksheet.

	My Prediction	What I Discovered
A 		
B 		

Have the students reflect on their tests by asking questions such as:

What did you predict would happen and why?

Describe what happened.

How did you make sure your tests were fair?

Did you always start at the same spot? Did you push the measuring car as it started going down the ramp? Was the pointer reset after each test?

Describe how the model works.

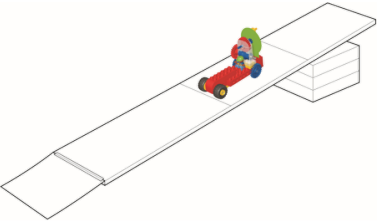
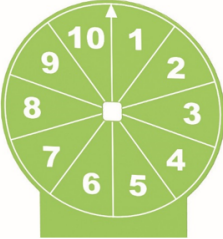

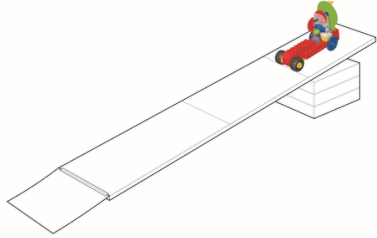

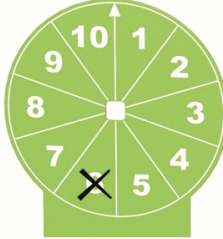
Tip:

Remember to reset the pointer to zero after every test by turning the blue gear wheels until the pointer is at the top of the scale.

Continue

Going further?

Make your test ramp 10 in high and test how this affects the distance the measuring car will travel. Find out how far the measuring car will travel when rolling down from the two different start lines.

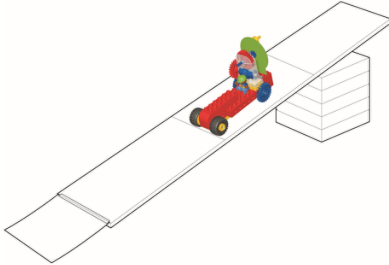

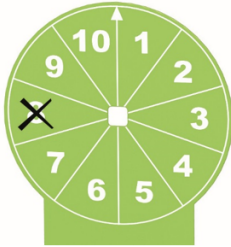
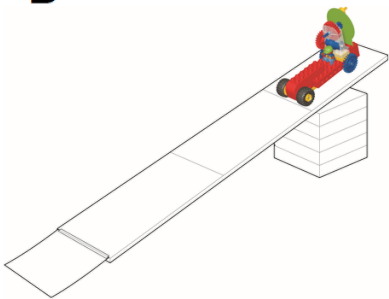


	My Prediction	What I Discovered
A 		
B 		

First predict how far the measuring car will roll down from the two start lines.

Mark your predictions using the scale and numbers on the worksheet.

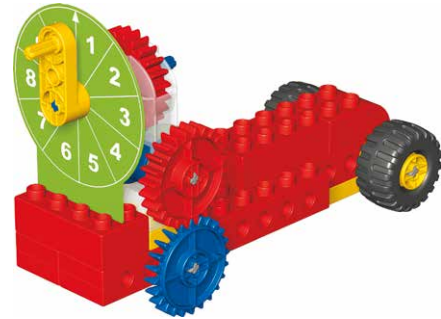
Next, test how far the measuring car actually rolls down from the two start lines by reading the scale.

Mark your findings using the scale and numbers on the worksheet.

	My Prediction	What I Discovered
<p>A</p> 		
<p>B</p> 		

Measuring Car

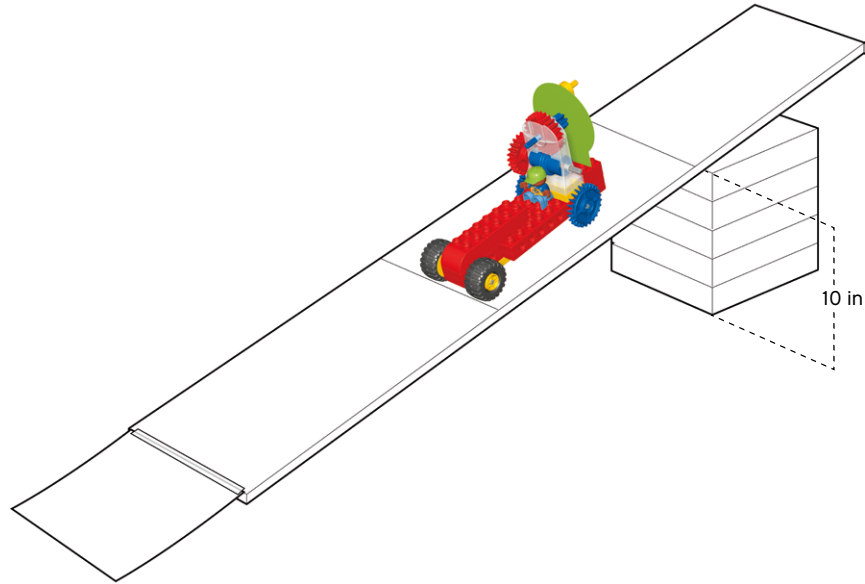
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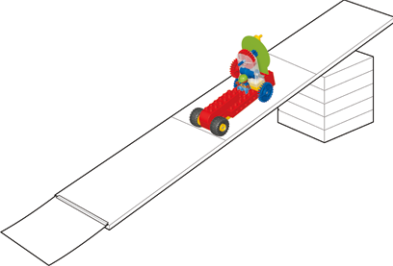
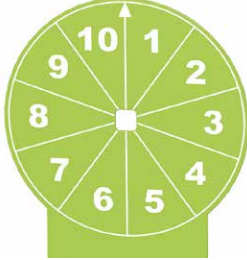
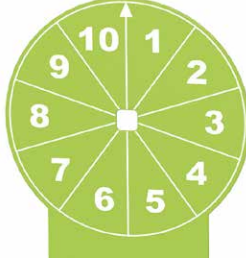


How far?

	My Prediction	What I Discovered
<p>A</p>		
<p>B</p>		

Going further?



	My Prediction	What I Discovered
<p>C</p> 		
<p>D</p> 