

The Scientist Shortcut

Scientists have to work with really long numbers all the time and have come up with a shorthand way of writing them. See if you can find the trick.

Numbers Bigger Than Zero

Long Way	Shortcut
93,000,000	9.3×10^7
147,000	1.47×10^5
1,088,700,000	1.0887×10^9
5,000	5×10^3
10,300,000,000,000	1.03×10^{13}

Numbers Less Than Zero

Long Way	Shortcut
.000076	7.6×10^{-5}
.0104	1.04×10^{-2}
.0000000006	6×10^{-9}
.00000052	5.2×10^{-7}
.00000000010300	1.03×10^{-10}

What do you think the rule is for writing the short versions of the numbers?

Soda Can Lab

1. Find the surface area of the soda can using centimeters. Round to the nearest whole number.

Be sure each member of the group can explain how you got this answer.

2. Find the volume of the soda can using centimeters. Round to the nearest whole number.

Be sure each member of the group can explain how you got this answer.

3. The company is thinking about changing the size of the can and wants to know if it would be cost-effective. What would happen to the volume of the can if the diameter doubled?

Do you think this would be a good idea? Why or why not?

4. The company that produces this product would like to design a new label. What would the dimensions and area of this label have to be?

Car Ramp Problem

5. Draw a straight line through 2 of your points. Choose the line that best fits your data. Write the coordinates of those two points below.

(_____ , _____) (_____ , _____)

6. Write an equation for your line.

Use this equation to answer the following questions:

7. How far would the car roll from the ramp if the height of the ramp were 4.2 centimeters?
8. How high would the ramp need to be to have the car roll exactly 22 centimeters from the ramp?
9. How far would the car roll from the ramp if the height of the ramp were 8.7 centimeters?
10. How high would the ramp need to be to have the car roll exactly 65 centimeters from the ramp?