

Name:

Date:



HARRY O'MALLEY

Smoosh Depth vs Object Width - Linear - Lesson 2

#0 - Teacher hands out the following materials to each student

1 calculator, 1 pencil

WORDS TO WORDS

#1 - Teacher explains the tasks below, then student completes the tasks

Each of the following shows precise and accurate language to use when describing the width of an object that is being compressed according to the functions in this module. For each one, read it and rehearse it in your head until you think you can re-write it without looking at it. Then try to write it. Only look if you really need to.

1. Starting at a width of 5 cm, the width of the object increases at a rate of 2 cm per cm of smoosh depth from 0 cm to 5 cm of smoosh depth.
2. Starting at a width of 43 cm, the width of the object decreases at a rate of 1.5 cm per cm of smoosh depth from 0 cm to 15 cm of smoosh depth.

MATH TO SIMULATION TO WORDS

#2 - Students open and teacher projects the Smoosh Math Simulator

#3 - Teacher models the first example below, then students complete the rest

For each problem, mentally predict what its simulation will do. Then simulate it. Finally, for each one, use words to describe how the width of the object changes as the smoosh depth increases.

3. An object with an initial height of 18 cm:

$$f(x) = 3x + 20, \quad 0 \leq x \leq 15$$

4. An object with an initial height of 3 cm:

$$f(x) = -0.5x + 3, \quad 0 \leq x \leq 2$$

5. An object with an initial height of 21 cm:

$$f(x) = 20x + 100, \quad 0 \leq x \leq 20$$

6. An object with an initial height of 0.13 cm:

$$f(x) = 0.2x + 0.3, \quad 0 \leq x \leq 0.1$$

WORDS TO MATH TO SIMULATION

#4 - With Smoosh Math Simulator still open, teacher models the first example below, then student completes the rest

Translate the following descriptions into mathematical functions. Verify your results by simulating them.

7. Starting at a width of 9 cm and a height of 12 cm, the width of the object increases at a rate of 3 cm per cm of smooch depth from 0 cm to 8 cm of smooch depth.

8. Starting at a width of 3,000 cm and a height of 400 cm, the width of the object decreases at a rate of 8 cm per cm of smooch depth from 0 cm to 200 cm of smooch depth.

9. Starting at a width of 3.28 cm and a height of 4.12 cm, the width of the object increases at a rate of 0.65 cm per cm of smooch depth from 0 cm to 3.07 cm of smooch depth.

10. Starting at a width of 16 cm and a height of 90 cm, the width of the object increases at a rate of 20 cm per cm of smooch depth from 0 cm to 12 cm of smooch depth.

