Break-Ground:

Pizza and calculus, so cheesy

Two young mathematicians discuss tossing pizza dough.

Check out this dialogue between two calculus students (based on a true story):

Devyn: Hey Riley, do you know what I love?

Riley: Calculus?

Devyn: And pizza! Last night I made my own pizza crust from scratch!

Riley: Mmmmmmm. Calculus.

Devyn: I know! The best part of making the crust is tossing it. But during my pizza tossing, I noticed something. The dough is basically a **cylinder** with a **radius that is expanding**, and a **height that is getting smaller**. Then I started wondering: how are those two rates related?

Riley: Pizza. So delicious. So cheesy. So calculus.

The problem above is an example of a related rates word problem. To solve it, we will need the tools in the Dig-In. For now, let's see if we can reason through some questions related to this problem.

Problem 1 *In the context above, which of the following should be assumed to be functions that vary?*

Select All Correct Answers:

(a) *The radius of the cylinder.* ✓

(b) *The height of the cylinder.* ✓

(c) *The surface area of the cylinder.* ✓

(d) *The volume of the cylinder.*

Problem 2 *In the context above, which of the following should be assumed to be constant?*

Learning outcomes: Identify word problems as related rates problems. Translate word problems into mathematical expressions.

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Select All Correct Answers:

(a) *The radius of the cylinder.*

(b) *The height of the cylinder.*

(c) *The surface area of the cylinder.*

(d) *The volume of the cylinder.* ✓