

Just In Time Quick Check
Standard of Learning (SOL) 7.10a

Strand: Patterns, Functions, and Algebra

Standard of Learning (SOL) 7.10a

The student will determine the slope, m , as rate of change in a proportional relationship between two quantities and write an equation in the form $y = mx$ to represent the relationship.

Grade Level Skills:

- Determine the slope, m , as rate of change in a proportional relationship between two quantities given a table of values or a verbal description, including those represented in a practical situation, and write an equation in the form $y = mx$ to represent the relationship. Slope will be limited to positive values.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
 - [7.10ab - Discover Slope \(m\)](#) (Word) / [PDF Version](#)
 - [6.12ab Ratio Tables and Unit Rates](#) (Word) / [PDF Version](#)
- VDOE Algebra Readiness Formative Assessments
 - [SOL 7.10a](#) (Word) / [PDF](#)
- VDOE Algebra Readiness Remediation Plans
 - [Slope-Rate of Change in Proportional Relationship](#) (Word) / [PDF](#)
- VDOE Word Wall Cards: Grade 7 ([Word](#)) | ([PDF](#))
 - Slope
 - Unit Rate
 - Proportional Relationship: $y = mx$
 - Proportional Relationship
- Desmos Activity
 - [Desmos 7.10ab – Slope Investigation Student Activity](#)

Supporting and Prerequisite SOL: [7.3](#), [6.1](#), [6.8b](#), [6.12a](#), [6.12b](#), [6.12c](#)

SOL 7.10a - Just in Time Quick Check

1. The table of values represents a proportional relationship between x and y .

a. What is the slope of the line that best represents this relationship?

b. Write an equation in the form $y = mx$ to represent the relationship shown in the table.

x	y
2	1
5	$2\frac{1}{2}$
6	3

2. Miguel makes bags. He can make 8 bags with 2 yards of fabric. Write an equation to represent the yards of fabric, x , needed to make a certain number of bags, y .

3. The table of values represents a relationship between the number of cupcakes, x , and the total cost, y .

a. What is the slope of the line that best represents this relationship?

b. Write an equation that represents the proportional relationship shown in the table.

Number of Cupcakes (x)	Total Cost (y)
0	0
1	3
2	6
3	9

4. Sid is creating a model volcano for his science project using Paper Mache. To create the Paper Mache glue that holds the paper strips together, he must mix $\frac{3}{4}$ cups of water with $\frac{1}{4}$ cup of flour. Write an equation to represent the proportional relationship between the number of cups of flour, y , and the number of cups of water, x , needed to make the glue mixture.

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Common Errors/Misconceptions and their Possible Indications

1. The table of values represents a proportional relationship between x and y .

- a. What is the slope of the line that best represents this relationship?

One common error is determining what the y -value is multiplied by to get the x -value and stating the slope is two. This indicates that a student may not have a strong understanding of how to determine slope from a table. Students may benefit from additional practice with finding unit rate or slope from ratio tables. Refer to 6.12 for more examples (Math 6 Curriculum Framework).

x	y
2	1
5	$2\frac{1}{2}$
6	3

- b. Write an equation in the form $y = mx$ to represent the relationship shown in the table.

A common error would be to use the reciprocal slope, producing an incorrect answer of $y = 2x$. This indicates the student lacks a conceptual understanding of slope as the change in y over the change in x or the constant ratio of y to x . The student may benefit from a review of vocabulary related to proportional relationships, slope and unit rate. (Math 7 Word Wall cards) The student may also benefit from practice finding the unit rate and rate of change from a table. For examples, refer to the Desmos activity [Slope Investigation Student Activity](#) and SOL 6.12c, d (Math 6 Curriculum Framework).

2. Miguel makes bags. He can make 8 bags with 2 yards of fabric. Write an equation to represent the yards of fabric, x , needed to make a certain numbers of bags, y .

A common error would be to write $x = 4y$. A student may also incorrectly use the difference of the x -value and y -value, resulting in an answer of $y = 6x$. These errors indicate that the student may not have a strong understanding of how to determine slope. The student may benefit from additional practice determining slope when given a practical situation. Reference VDOE Math Instructional Plan 7.10ab - Discover Slope (m) (Word) / PDF Version.

The errors also may indicate a learning gap regarding proportional relationships. The student may benefit from practice identifying and representing proportional relationships. Reference SOL 6.12 in the Math 6 Curriculum Framework.

3. The table of values represents a relationship between the number of cupcakes, x , and the total cost, y .

- a. What is the slope of the line that best represents this relationship?

A student may incorrectly use the reciprocal slope resulting in a slope of $\frac{1}{3}$. This indicates that the student believes the slope represents the change in x over the change in y . Another common error a student may make is to use the first non-zero ordered pair and think the slope is two, since $2 + 1 = 3$. This would indicate that a student thinks the slope is found using an additive relationship. The student may benefit from additional practice determining slope from a table using the VDOE Mathematics Instructional Plans [6.12ab - Ratio Tables and Unit Rates](#).

Number of Cupcakes (x)	Total Cost (y)
0	0
1	3
2	6
3	9

- b. Write an equation that represents the proportional relationship shown in the table.

A common error would be to write $y = x + 3$ because every y -value increases by three. This indicates a student may lack a conceptual understanding of slope as the rate of change. For additional examples and practice writing the equation of a proportional relationship, consider using the VDOE Algebra Readiness Remediation Plans: Slope-Rate of Change in Proportional Relationship.

4. Sid is creating a model volcano for his science project using Paper Mache. To create the Paper Mache glue that holds the paper strips together, he must mix $\frac{3}{4}$ cups of water with $\frac{1}{4}$ cup of flour. Write an equation to represent the proportional relationship between the number of cups of flour, y , and the number of cups of water, x , needed to make the glue mixture.

A common error would be to subtract the two values and use the difference as the slope resulting in $y = \frac{1}{2}x$. The error indicates the student determines the relationship is additive rather than proportional. The student would benefit from a review of key vocabulary including proportional and additive relationships using the Math 7 VDOE Word Wall Cards.