

**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.

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**Supporting Resources:**

- VDOE Mathematics Instructional Plans (MIPS)
  - [7.10ab - Discover Slope \(m\)](#) (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.

**SOL 7.10a - Just in Time Quick Check Teacher Notes**  
**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.*

1. 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](#).*

3. 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.*