



Standard #: MAFS.8.EE.2.6

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Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Grade: 8

Cluster: [Understand the connections between proportional relationships, lines, and linear equations. \(Major Cluster\)](#)

Date Adopted or Revised: 02/14

Clusters should not be sorted from Major to Supporting and then taught in that order. To do so would strip the coherence of the mathematical ideas and miss the opportunity to enhance the major work of the grade with the supporting clusters.

Content Complexity Rating: [Level 2: Basic Application of Skills & Concepts](#) - [More Information](#)

Date of Last Rating: 02/14

Status: State Board Approved

Assessed: Yes

TEST ITEM SPECIFICATIONS

Item Type(s): This benchmark may be assessed using: [MS](#), [TI](#) item(s)

N/A

Assessment Limits :

All triangles must be right triangles and on a coordinate grid. Numbers in Items must be rational numbers. Functions must be linear.

Calculator :

Yes

Context :

Allowable

SAMPLE TEST ITEMS (2)

Test Item #: [Sample Item 1](#)

Question: Select all pairs of triangles that can be used to show the slope of a line is the same anywhere along the line.

Difficulty: N/A

Type: [MS](#): Multiselect

Test Item #: [Sample Item 2](#)

Question:

Two collinear points are given in the table.

Give a third point that is also on this line.

Difficulty: N/A

Type: [TI](#): Table Item

Related Courses

Course Number	Course Title
1205050 :	M/J Grade 7 Mathematics Advanced (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1205070 :	M/J Grade 8 Pre-Algebra (Specifically in versions: 2014 - 2015, 2015 and beyond (current))
1204000 :	M/J Intensive Mathematics (MC) (Specifically in versions: 2014 - 2015, 2015 and beyond (current))

Related Access Points

Access Point

Access Points Number	Access Points Title
MAFS.8.EE.2.AP.6a:	Define $y = mx$ by identifying the coordinates (x, y) of a point and rise/run (m) for a linear equation plotted on a coordinate plane that passes through the origin.

Related Resources

Formative Assessment

Name	Description
Deriving Lines - 1:	Students are asked to derive the general equation of a line containing the origin.
Deriving Lines - 2:	Students are asked to derive the general equation of a line with a y-intercept of $(0, b)$.
Slope Triangles:	Students are asked to use similar triangles to explain why the slope is the same regardless of the points used to calculate it.

Lesson Plan

Name	Description
Designing a Skateboard Kicker Ramp:	In this lesson students will use a real life situation. Students will design a "Skateboard Kicker Ramp" to discover and analyze that slope of similar triangles is the same at any two distinct points. Students will make sense of the task and persevere in solving it. Students will model with mathematics the concept of slope, use appropriate tools, attend to precision and, make use of structure by looking at the pattern set by similar triangles.
Slope Intercept - Lesson #2:	This is lesson 2 of 3 in the Slope Intercept unit. This lesson introduces graphing non-proportional linear relationships. In this lesson students will perform an activity to collect data to derive $y = mx + b$ and will use a Scratch program to plot the graph of the data, as well as check for proportional and/or linear relationships.
Slope Intercept - Lesson #3:	This is lesson 3 of 3 in the Slope Intercept unit. This lesson introduces similar triangles to explain why slope is the same between any two points on a non-vertical line. In this lesson students perform an activity to determine that slope is constant throughout a line and students will discover the slope for vertical and horizontal lines.

Problem-Solving Task

Name	Description
Find the Change:	This activity challenges students to recognize the relationship between slope and the difference in x- and y-values of a linear function. Help students solidify their understanding of linear functions and push them to be more fluent in their reasoning about slope and y-intercepts. This task has also produced a reasonable starting place for discussing point-slope form of a linear equation.

Tutorial

Name	Description
Finding the slope from two ordered pairs:	This tutorial shows an example of finding the slope between two ordered pairs. Slope is presented as rise/run, the change in y divided by the change in x and also as m.
Finding the slope from two ordered pairs:	This tutorial shows how to find the slope from two ordered pairs. Students will see what happens to the slope of a horizontal line.
Using Similar Triangles to Prove that Slope is Constant for a Line:	In this tutorial, you will use your knowledge about similar triangles, as well as parallel lines and transversals, to prove that the slope of any given line is constant.

Assessment

Name	Description
Sample 1 - Eighth Grade Math State Interim Assessment:	This is a State Interim Assessment for eighth grade.
Sample 4 - Eighth Grade Math State Interim Assessment:	This is a State Interim Assessment for eighth grade.

Student Resources

Name	Description
Find the Change:	This activity challenges students to recognize the relationship between slope and the difference in x- and y-values of a linear function. Help students solidify their understanding of linear functions and push them to be more fluent in their reasoning about slope and y-intercepts. This task has also produced a reasonable starting place for discussing point-slope form of a linear equation.

Finding the slope from two ordered pairs:	This tutorial shows an example of finding the slope between two ordered pairs. Slope is presented as rise/run, the change in y divided by the change in x and also as m.
Finding the slope from two ordered pairs:	This tutorial shows how to find the slope from two ordered pairs. Students will see what happens to the slope of a horizontal line.
Using Similar Triangles to Prove that Slope is Constant for a Line:	In this tutorial, you will use your knowledge about similar triangles, as well as parallel lines and transversals, to prove that the slope of any given line is constant.

Parent Resources

Name	Description
Find the Change:	This activity challenges students to recognize the relationship between slope and the difference in x- and y-values of a linear function. Help students solidify their understanding of linear functions and push them to be more fluent in their reasoning about slope and y-intercepts. This task has also produced a reasonable starting place for discussing point-slope form of a linear equation.