

## Virtual Lead Student Lesson

### L13: Using Slope and Writing Equations

#### Main Purposes

- Discuss the BYU-Pathway Worldwide devotional
- **Practice speaking English.** Getting better at the skills listed below will help all students to be more readily understood when they speak English with others.
- **Answering questions.** There may be some in the class who are struggling and need some help. Using some time to help them overcome the issues is great. However, spending too much time on questions will take away from the activities that need group participation at the end of the lesson. If questions take too long for the gathering, be sure to remind everyone that tutoring is instantly available at [byui.edu/mathhelp](http://byui.edu/mathhelp), and that they can get a personal tutor to meet with them if they would like.
- **Lines and Slope.** The shortcuts of using the y-intercept and slope should help students to graph lines more quickly and efficiently. If you have students who are finding two points instead of using the point and the slope, let them know that they are correct but that there is also a simpler way.
- **Slope Monster.** Helping the students to see the connections between the slope of the line and the numbers in the equation. Finishing the Slope Monsters should make that more readily visible. Getting slope quickly from lines will also make it easier to do the last set of problems which will require students to write the equations of lines when knowing the slope.
- **Exam 4 Retakes.** The policy is different for Exam 4 than for the others. Please make sure to discuss it.

#### Student Preparation

Students were asked to prepare for gathering by completing specific activities and/or pondering certain questions. Please refer to the gathering instructions in this week's unit or lesson in the course.

#### Lesson Outline

As the Lead Student this week you will facilitate the Thursday Gathering. The times given for each activity are suggested times. The Gathering should not last more than 90 minutes. Try to make sure that the objectives of the gathering are met each week.

#### MAIN GATHERING ROOM – ALL PARTICIPANTS

OPENING

LED BY MISSIONARIES

<p><b>Announcements, Hymn, and Prayer</b></p> <p>(5 minutes)</p>	<p>Announcements</p> <p>Opening Hymn: Chosen by missionaries</p> <p>Opening Prayer: By Invitation</p>
<p><b>CLASS ACTIVITIES</b></p>	<p><b>LED BY LEAD STUDENT</b></p>
<p><b>BYU-Pathway Worldwide Devotional</b></p> <p>(10 minutes)</p>	<p><b>Whole Class</b></p> <p>Students were asked to watch the BYU-Pathway Worldwide devotional this week at <a href="http://byupathway.lds.org/devotionals">http://byupathway.lds.org/devotionals</a>. They should have done this prior to the gathering. As a class discuss the devotional according to the information provided on the website.</p>
<p><b>Math Exercise 4.3 Part A</b></p> <p>(10 minutes)</p>	<p><b>Whole Class</b></p> <p>Review this week’s <a href="#">Math Exercise 4.3 Part A</a> homework problems. If there are questions about the assignments, work out a few of the most difficult problems together as a group.</p> <p>Ask for a volunteer who understands the difficult problems and can explain how to complete the problem. (It may help to remind people that being able to explain something to someone else is a great way to reinforce one’s learning. Try to include everyone.)</p> <p><b>Note:</b> Participants may use a whiteboard program, such as “Windows Paint”, to share their work, or they may write it on a piece of paper and show it to the group using their webcam.</p>
<p><b>Slope Monster</b></p> <p>(10 minutes)</p>	<p><b>Whole Class</b></p> <p>In this class we have had timed tests that practice fundamental arithmetic facts and skills, which we called Monster tests. (Why is “Monster” the word we use? I don’t know.) In the first week, you had to fill out the Addition/Subtraction Monster and the Multiplication Monster tests. Now we have one for slope. This is to make sure that the skill of being able to get the slope of a line from its equation is very practiced. Make sure that everyone has a copy, or can see a copy of the <a href="#">Slope Monster</a>. (This is Exercise 4.3B #1)</p> <ul style="list-style-type: none"> <li>• Have everyone fill out the Slope Monster (put the slopes next to the lines). Time it for three minutes.</li> <li>• Correct it in class using the solution. Ask those that finished how they were able to do it so quickly. Put those ideas up on the board. Make sure everyone understands them.</li> <li>• Give another copy to everyone and time it for two minutes. Correct it again. The improvement in students' times and grades should help give them confidence.</li> </ul> <p>If anyone is ready to give up and doesn’t get it, please encourage them to get with a tutor. They will feel better if they do.</p>

## SMALL GROUP GATHERING ROOM – 3-6 PARTICIPANTS

### English Verb Tense Practice

(15 minutes)

#### Small Groups

Divide the students into groups of 3-6, (there should be no more than three total groups), and instruct them to go into their specific group chat rooms.

In this activity, groups will practice using irregular verbs in the present and past tenses.

- Participants will describe one of their most embarrassing moments. While describing the experience, participants will try to use at least 5 of the words from the English Irregular Verbs List from the English exercises (**List found below**). Participants will use any of the tenses that are appropriate for the story.
- After each participant describes their experience, the group will ask questions about the experience using "wh" questions: what, when, where, why, who, and how.
- The participant describing their experience will answer the questions to provide more details of the situation.
- The rest of the group will share any thoughts on the story and ask any other follow-up questions they may have.
- Then, another participant will tell their story and others will ask questions for them to respond to.

### Math Exercise 4.3 Part B

(15 minutes)

#### Small Groups

Work through the problems in [Math Exercise 4.3 Part B](#). (**Do at least 1 of each type of problem. Then, if time, go back and complete the rest of the assignment.**) Rotate the responsibility to explain how to do each problem through the group. If a participant doesn't know how to do a problem when it is their turn, they should explain as much as possible and then the rest of the group should help finish the problem. Then, the participant should explain how to solve the problem back to the group.

- **#2,3** can be done quickly. If anyone is still having trouble with these, get them to a tutor.
- **#4-6** Note that the instructions here are explicitly for the intercepts. To do these correctly, students can't just pick their own values; they must pick 0 for x to get the y-intercept and 0 for y to get the x-intercept. On number 5, (0,0) will be obtained twice. That is both the x and y intercept. We need some other second point somewhere to graph this line. This is where students may pick any value to stick in.
- **#7-13** Formula and review on slope. May go quickly.
- **#14-19** Now is the time to use the shortcuts. Get one point (easiest is an intercept) and the slope. Remember that slope

	<p>is rise (up and down) over run (across left and right). If students are graphing with two random points they aren't wrong; they are still right. But this activity is specifically to lift their sights higher and to help them see that there is a more efficient way.</p>
<b>MAIN GATHERING ROOM – ALL PARTICIPANTS</b>	
<p><b>Writing Equations of Lines</b></p> <p>(10 minutes)</p>	<p><b>Whole Class</b></p> <p>Everyone should come back to the main gathering room.</p> <ul style="list-style-type: none"> <li>• Be sure to do the example from pg. 182 on the board so everyone can see it done and have something to follow.</li> <li>• <b>#20-25</b> Most students will feel best if slope-intercept form, <math>y = mx + b</math>, is used in writing the equations of the lines. A few students will find it exciting to do it as well with Standard Form. If they are getting the right answers, let them do it that way, but answer questions from students with the method that they are trying to get good at.</li> </ul>
<p><b>Exam Preparation</b></p> <p>(15 minutes)</p>	<p><b>Whole Class</b></p> <p>Exam review. The students will discuss their visual charts for the upcoming exam. If they have not completed their visual chart, the students should work on it together. Make sure all the students understand the material for the upcoming Exam 4.</p> <p><b>Notice: Since Exam 4 is so close to the end of the semester, students who score 75% or below will not be required to retake it, but retakes are optional to everyone, and especially encouraged for those that feel studying for Exam 4 will help prepare them for the Final.</b></p>
<p><b>Personal Experience/ Testimony</b></p>	<p><b>Lead Student to Class</b></p> <p>As appropriate, bear your testimony as it pertains to this lesson, this course, or your experiences with the math or personal finance concepts you have learned.</p>
<b>CLOSING</b>	
<b>LED BY MISSIONARIES</b>	
<p><b>Prayer</b></p>	<p>Closing Prayer: By Invitation</p>

## Note

*Please download and print a copy of these instructions to use as a reference during Thursday's Pathway Gathering.*

MATH 100L Virtual Gathering Slope  
Monster and Irregular Verbs

## Before the Gathering:

Print off the Slope Monster activity. You will complete it during the gathering. Also below, is a copy of the English Irregular Verbs List.

### Slope Monster

Equation	Slope		Equation	Slope
$2x - 5y = 7$			$4x - y = 7$	
$y = \frac{5}{9}x - 4$			$y = \frac{5}{2}x - 4$	
$5x - 3y = 7$			$8x - 3y = 12$	
$2x + 7y = 19$			$-4x + 7y = 19$	
$x = 13$			$x = -19$	
$y = \frac{8}{3}x - 8$			$y = \frac{8}{7}x - 4$	
$y = 5x - 8$			$y = -3x - 8$	
$-3x + 9y = 4$			$-10x + 6y = 4$	
$y = -3$			$y = 15$	
$y = -\frac{3}{11}x - 4$			$y = \frac{6}{11}x - 4$	
$7x - 3y = 7$			$2x - 8y = 17$	
$y = \frac{2}{9}x - 4$			$y = \frac{5}{2}x + 6$	
$5x - 3y = 7$			$4x + 7y = 7$	
$4x + 7y = 19$			$2x - 9y = 19$	
$x = -3$			$x = 7$	
$y = -\frac{8}{5}x - 4$			$y = \frac{5}{3}x - 4$	
$y = -2x - 8$			$y = 4x + 13$	
$-3x + 6y = 4$			$-3x - 6y = 4$	
$y = -5$			$y = 7$	
$y = -\frac{3}{4}x - 4$			$y = -\frac{3}{5}x + 15$	

Equation	Slope		Equation	Slope
$2x - 5y = 7$	$m = \frac{2}{5}$		$4x - y = 7$	$m = 4$
$y = \frac{5}{9}x - 4$	$m = \frac{5}{9}$		$y = \frac{5}{2}x - 4$	$m = \frac{5}{2}$

## Common Irregular Verb List

<b>Base Form</b>	<b>Past Simple</b>	<b>Past Participle</b>	<b>3rd Person Singular</b>	<b>Present Participle / Gerund</b>
Abide	Abode/Abided	Abode/Abided/Abidden	Abides	Abiding
Alight	Alit/Alighted	Alit/Alighted	Alights	Alighting
Arise	Arose	Arisen	Arises	Arising
Awake	Awoke	Awoken	Awakes	Awaking
Be	Was/Were	Been	Is	Being
Bear	Bore	Born/Borne	Bears	Bearing
Beat	Beat	Beaten	Beats	Beating
Become	Became	Become	Becomes	Becoming

Feel	Felt	Felt	Feels	Feeling
Fight	Fought	Fought	Fights	Fighting
Find	Found	Found	Finds	Finding
Fit	Fit/Fitted	Fit/Fitted	Fits	Fitting
Flee	Fled	Fled	Flees	Fleeing
Fling	Flung	Flung	Flings	Flinging
Fly	Flew	Flown	Flies	Flying
Forbid	Forbade/Forbad	Forbidden	Forbids	Forbidding
Forecast	Forecast/Forecasted	Forecast/Forecasted	Forecasts	Forecasting
Foresee	Foresaw	Foreseen	Foresees	Foreseeing
Foretell	Foretold	Foretold	Foretells	Foretelling



Overtake	Overtook	Overtaken	Overtakes	Overtaking
Pay	Paid	Paid	Pays	Paying
Preset	Preset	Preset	Prests	Presetting
Prove	Proved	Proven/Proved	Proves	Proving
Put	Put	Put	Puts	Putting
Quit	Quit	Quit	Quits	Quitting
Re-prove	Re-proved	Re-proven/Re-proved	Re-proves	Re-proving
Read	Read	Read	Reads	Reading
Rid	Rid/Ridded	Rid/Ridded	Rids	Ridding
Ride	Rode	Ridden	Rides	Riding
Ring	Rang	Rung	Rings	Ringling
Rise	Rose	Risen	Rises	Rising

Stick  
Sting  
Stick

Stuck  
Stung  
Stung

Stuck  
Stung  
Stung

Sticks  
Stings  
Stings

Sticking  
Stinging  
Stinging

