

21st Century Lesson Cycle Template

Grade: 10

Subject: Math 10 PreIB

Textbook: Mathematics for the International Student Pre-Diploma SL and HL (second edition)

By Haese and Harris

Topic 4: Linear Equations

Driving Question:

How do we graph linear equations by hand?

Specific Curriculum Outcome:

RF04 Students will be expected to describe and represent linear relations using words, ordered pairs, table of values, graphs and equations.

RF05 Students will be expected to determine the characteristics of the graphs of linear relations, including the intercepts, slope, domain, and range.

RF6 Students will be expected to relate linear relations to their graphs expressed in slope-intercept form

Prior Knowledge:

- Being able to rearrange equations
- Being able to solve simple equations

Screencast Link(s):

1. Prior knowledge:
Rearranging equations - <https://www.youtube.com/watch?v=LPjgc3w46b8>
Solving simple equations - <https://www.youtube.com/watch?v=jBymEbgDJXM>
2. Graphing Linear Equations by Hand - <https://www.youtube.com/watch?v=wYeRkxgyqGo>

Link to graphing linear equations worksheet (free from Kuta Software):

<http://www.kutasoftware.com/FreeWorksheets/Alg1Worksheets/Graphing%20Lines%20SI.pdf>

Link to online graphing practice:

<https://www.ixl.com/math/algebra-1/slope-intercept-form-graph-an-equation>

Link to online quiz:

http://www.mathsisfun.com/quiz/linear_equation_test.html

Expected Time: One Class (75 minutes)

**Resources:
(Tools & Tech)**

Lesson Procedure

Prior knowledge screencast linked to teacher website. Students have the option of previewing this prior to the lesson, or they can watch it in class if needed.

Graphing Linear Equations Screencast linked to teacher website. Students have the option of previewing this prior to the lesson, or they can watch it in class.

BYOD: To allow students the opportunity to work at a pace that best suits their learning, they will watch the video on their own devices (with headphones).

I do:

1. Review **prior knowledge** that is directly applicable to this lesson:
 - Order of operations
 - Solving simple algebraic equations
2. Yesterday's investigation should have given students an idea of how linear equations and their graphs are related. In today's lesson, these ideas will be linked to the examples, which will be done through the screencast.
3. Following the videos, a class discussion can be had in order to clarify anything that may still be ambiguous to students.

- | | |
|--|---|
| <input type="checkbox"/> find, validate | <input type="checkbox"/> critical thinking |
| <input type="checkbox"/> remember, understand | <input type="checkbox"/> analyze, synthesize |
| <input type="checkbox"/> collaborate, communicate | |

[Online Graphing Practice](#)

BYOD: Students can make use of their own devices for this activity.

You do:

Following the class examples, students will be given the chance to try to graph some lines on their own. They will go to [this website](#), which generates a variety of questions for students to have to graph. Students can do this on their own devices, or make use of the laptops, which will be booked out for this class. The teacher can circulate to address any issues that may arise while they are working on this activity.

	<input type="checkbox"/> find, validate <input type="checkbox"/> remember, understand <input type="checkbox"/> collaborate, communicate	<input type="checkbox"/> critical thinking <input type="checkbox"/> analyze, synthesize
Graphing Linear Equations Worksheet	<p><i>We do:</i></p> <p>After students have had the chance to try to graph lines online, they will be asked to show that they can do it on paper. In groups of 2-3, students will complete the Graphing Linear Equations Worksheet provided.</p>	
	<input type="checkbox"/> find, validate <input type="checkbox"/> remember, understand <input type="checkbox"/> collaborate, communicate	<input type="checkbox"/> critical thinking <input type="checkbox"/> evaluate, leverage <input type="checkbox"/> analyze, synthesize
	<p><i>We share:</i></p> <p>At the end of class, there will be a final debrief. Groups will share what they have learned from today's class. Then, each group will be asked to write one of their solutions on the board so that answers can be checked.</p>	
	<input type="checkbox"/> find, validate <input type="checkbox"/> remember, understand <input type="checkbox"/> collaborate, communicate <input type="checkbox"/> analyze, synthesize	<input type="checkbox"/> critical thinking <input type="checkbox"/> evaluate, leverage <input type="checkbox"/> create, publish
<p>WRAP UP/REMINDERS:</p> <p>Students will be asked to review all of today's material for homework in preparation for tomorrow's class.</p>		
<p>Differentiation:</p>		
<p>Modification:</p> <p>Allowing students to watch the video on their own devices allows them to work at their own pace. If students need to re-watch a step they have the ability to do so.</p>	<p>Enrichment:</p> <p>Students who have a strong grasp of linear functions can be partnered up with students who may be struggling so that they can provide them with some assistance.</p>	
<p>Evaluation:</p> <p>Students will be informally evaluated during the class. The teacher will make general observations while circulating throughout the class to make sure all students are on track. As well, students will</p>		

be asked to complete this [online quiz](#) for tomorrow. Once they complete the quiz, they will be asked to capture a screenshot of their results so that they can submit it to the teacher (via email).

On-Line Resources:

[Graphing Linear Equations Worksheet](#) provided free from Kuta Software

[Online Quiz](#) provided free from IXL Learning