Name: _____

Parallel and Perpendicular Lines

By the end of the class, you will be able to

- explain what parallel and perpendicular lines are.
- determine whether two lines are parallel, perpendicular, or neither.

1. Go to [https://phet.colorado.edu/sims/html/graphing-lines/latest/graphing-lines_en.html?screens=3] and explore the page. Move on once you have tried **everything**.

2.

Describe what changes and what *doesn't* change when you move the purple point: 
Describe what changes and what *doesn't* change when you move the purple point: 
What does the Save Line button do?

3. Create any line you want and then press Save Line. Write the equation of your line:

Equation:_____

Create a different line by moving the **purple** point. Write the equation of this new line:

Equation:_____

The two lines are **parallel**.

Give another example of two parallel lines: (Write two equations)	Give an example of two lines that are **not** parallel (Write two equations)

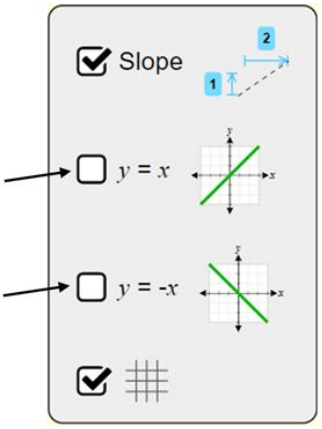
Write in your own words what it means for two lines to be parallel:

4. Explain how you can tell whether two lines are parallel based on their **slopes**.

5. Are the following pairs of lines parallel to each other?

$y = 4x + 5$ and $y = 4x - 8$	$y = 3x + 4$ and $y = 2x + 4$	$y = -3x + 2$ and $y = 3x + 2$
Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐

6. Check the boxes to display $y = x$ and $y = -x$ on the graph.
These two lines are **perpendicular**.
What kind of angle is formed by these two lines?



_____

Identify something in the room that has perpendicular lines.

_____

Uncheck the boxes that display $y = x$ and $y = -x$.

7. Create any line you want then press Save Line. Write the equation for the line:

Equation:_____

Create a line that is perpendicular to the line you created. Write the equation for this line:

Equation:_____

8. Write the two equations you found on the board and draw a box around them. Repeat part 7 by finding other pairs of perpendicular lines and record the equations here:

9. Look at the pairs of equations on the board and that you found in part 8. Describe at least three patterns you notice:

10. Explain how the slopes of perpendicular lines compare to one another.