

Name: _____

Date: _____

Block: _____

Assignment Criteria

Level

Criterion C: Communicating

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	ii. use limited forms of mathematical representation to present information iii. communicate through lines of reasoning that are difficult to interpret.
3–4	ii. use appropriate forms of mathematical representation to present information adequately iii. communicate through lines of reasoning that are complete
5–6	ii. usually use appropriate forms of mathematical representation to present information correctly iii. usually move between different forms of mathematical representation
7–8	ii. use appropriate forms of mathematical representation to consistently present information correctly iii. move effectively between different forms of mathematical representation

Criterion D: Applying mathematics in real-life contexts

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1–2	i. identify some of the elements of the authentic real-life situation
3–4	i. identify the relevant elements of the authentic real-life situation iii. apply mathematical strategies to reach a solution to the authentic real-life situation
5–6	i. identify the relevant elements of the authentic real-life situation iii. apply the selected mathematical strategies to reach a valid solution to the authentic real-life situation v. explain whether the solution makes sense in the context of the authentic real-life situation.
7–8	i. identify the relevant elements of the authentic real-life situation iii. apply the selected mathematical strategies to reach a correct solution to the authentic real-life situation v. justify whether the solution makes sense in the context of the authentic real-life situation.

Your mission for this real-life assignment is investigate how to create art using lines and relations. Math is EVERYWHERE; you just have to know enough to be able to see it. All physical things have geometry. We can use math functions to model the geometry. Add some colour and use some judgement, you end up with ART!

Although we have only looked at lines, I believe that you have the means to incorporate some new functions and relations.

This project should integrate many of the ideas that you have learned in Chapters 6 and 7:

- Slope-intercept Form
- General Form of a Line
- Slope-point Form
- Parallel/Perpendicular Lines
- Domain and Range

Although you may not gain a full understanding, you will learn how to include circles, ellipses, and trigonometric functions into your artwork!

Because you may forget, I have provided step-by-step video instructions on the techniques for you to create your artwork. You will need to provide your creative vision. These are roughly the steps:

- Create a Desmos account. Go to [desmos.com](https://www.desmos.com). Many of you have Google accounts that you can use to sign in.
- Basic navigation.
- Create a line. Because lines go to $\pm\infty$, you need to set an interval for the domain or range.
- Save/load your graph. You don't want to lose your work!
- Draw a circle/ellipse.
- Draw a wavy line (trigonometric function).
- How to email me the link to your artwork.

Of course this wouldn't be a math project unless it has some parameters (I have kept them to a minimum to lessen the impact on your creativity):

- Must have lines with positive, negative, no, and zero slopes.
- Must have lines using slope-intercept, general, and slope-point forms.
- Must have functions/relations in all 4 quadrants.
- Must have a pair of parallel lines (excluding zero and no slopes). Show reason.
- Must have a pair of perpendicular lines (excluding zero and no slopes). Show reason.
- Must set the domain interval for one function/relation.
- Must set the range interval for one function/relation.

Please email the descriptors and the equation numbers of the above parameters along with the link to your artwork. Optionally, you can hand in this rubric with the answers to the above questions. You must work **INDIVIDUALLY**, so do not make art that matches substantially (more than half) to another student otherwise marks will be deducted.

Feel free to put in additional functions/relations if you find something to enhance your work.

Example of work:

