**Unit Calendar on Pizza Joint Linear Lines Project**

**“Get in Line, it’s Pizza Time”**

**Heather McNeill & Anthony Finelli**

**Week 1 of 4**

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| **Unit Engagement** | **Field Trip**  **To Leonardo’s Pizza** | **Slope-Intercept Benchmark** | **Slope-Intercept Investigation** | **Point-Slope Benchmark** |
| **Objectives: (SWBAT)**  -Begin thinking about the unit project  -Consider ideas to investigate for the project  **Engage:** The students will enter responses on TI-Navigators and have their answers conglomerated for the class to see. Then the teacher will give the students pizza facts and ask the students which are the hardest and easiest to believe.  **Explore: None**  **Explanation: None**  **Elaboration: None**  **Evaluation: None** | **Objectives: (SWBAT)**  -Investigate elements of a pizza parlor in the real world.  -Practice interview and question skills as they interact with employees  -Conceptualize the project based off of experiences in the restaurant.  **Engage:** Teacher will remind the students of their goals for the day and have them work through getting the questions on their worksheets answered (questions about specifics of pizza companies.)  **Explore:** Students will ask employees their remaining questions.  **Explanation:** Students will discuss their findings as groups with the whole class.  **Elaboration:** none  **Evaluation:** Teacher will collect worksheet and return the next day to provide feedback. | **Objectives: (SWBAT)**  -Identify an equation that is in slope-intercept form.  -State what information is given by an equation in slope-intercept form.  -State the linear equation of a graphed line.  **Engage:**  Give the students an entrance slip and once it is completed they are to complete a calculator scavenger hunt.  **Explore:**  Explore Slope-intercept form using TI calculator activity.  **Explanation:**  The teacher will lead a class discussion about what the students found in the activity.  **Elaboration:**  Students will play a round Robin game working in groups with slope-intercept form.  **Evaluation:**  Student will journal about the days lesson and will fill out an exit slip. | **Objectives: (SWBAT)**  -Create equations in slope intercept form  -Graph lines in slope intercept form  -Compare graphs of lines in slope intercept form  **Engage:**  Students will complete an entrance slip and then work with their company to create a list of food supplies they will need for their pizzas.  **Explore:**  Students will work together to come up with the amounts they are willing to pay for each type of food item. With this information they are to convert the data to different forms.  **Explanation:**  Class discussion about which food supplier was chosen and the rationale why.  **Elaboration:**  The teams then evaluate company prices and compare the food supplier’s graphs of the prices they sell their food to determine which company(s) to use.  **Evaluation:**  Students will journal about the days lesson and then individually complete a quiz. | **Objectives: (SWBAT)**  -Identify equations in point-slope form  -Discern when point-slope form is appropriate to use  -Convert equations from point-slope form into slope-intercept form  -Graph equations given in point-slope form  -Justify reasons of why point-slope form is useful  **Engage:**  Students complete an entrance slip refreshing them on addition of negatives. Then the class will discuss the pros and cons of point-slope form  **Explore:**  The teacher will put up a picture of the town with different potential pizza shop locations and have students find slopes of lines and equations to compare different locations using point-slope form.  **Explanation:**  The students will discuss their findings on why point-slope form was useful for this activity. The teacher will also question the students to clear up misconceptions.  **Elaboration:**  The teacher will explicitly link point-slope form to slope-intercept form by deriving y=mx+b.  **Evaluation:**  The teacher will clear up last problems then have the students complete an exit slip as a formative assessment, cementing ideas. |
| **Assessments:**  Entrance and exit slip asking student to both answer and create questions. | **Assessments:** Worksheet with questions for students to ask employees. | **Assessments:**  Entrance and Exit Slips | **Assessments:**  Entrance slip and quiz | **Assessments:**  Entrance and exit slips |
| **Resources:**  Class set of TI-Nspires with TI-navigator Projector, Pizza statistics retrieved from <http://daviola.com/system/image_uploads/58.pdf> ,  A poster board for each group of students, A pack of markers for each group of students, Class set of name tags, Camera, Class set of paper | **Resources:** Worksheets (class set) | **Resources:**  Class set of: entrance/ext slips, calculators.  Download calculator activity onto calculators  Projector | **Resources:**  Class set of entrance slips and quizzes, worksheets of companies and graph paper. | **Resources:**  Class set of entrance and exit slips,  Map of town with potential locations on a PPT. |

**Week 2 of 4**

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| **Point-Slope Investigation** | **Relation Between Slope-Intercept and Point-Slope Benchmark** | **Relation Between Slope-Intercept and Point-Slope Investigation** | **Standard Form Benchmark** | **Standard Form Investigation** |
| **Objectives: (SWBAT)**  -Utilize slope-intercept form to gather information from a graph  -Convert equations from point-slope form into slope-intercept form  -Graph equations given in point-slope form  -Graph equations given in both slope-intercept and point-slope form  **Engage:**  The students will complete an entrance slip to remind them of yesterday’s learning as well as ask for justification of this form’s usefulness.  **Explore:**  The class will work through different deals for pizzas based off of pricing from other restaurants, looking at equations in point-slope form and writing their own equations.  **Explanation:**  The class will explain their findings for what the most profitable deal is and why they chose that method of pricing. They’ll discuss discrepancies with the y-intercept and discuss how math matches the real world in different ways.  **Elaboration:**  The teacher will give the students an equation in slope-intercept and point-slope form and let the students graph them, finding that they make the same graph. This helps to cement the idea that they are interchangeable for different uses.  **Evaluation:**  Students will complete an exit slip as a summative assessment of this two day lesson. | **Objectives: (SWBAT)**  **-**Recognize the various forms of equations of lines.  -Discuss what information is required to use a certain form to represent a line.  -Use different forms of lines to represent various real-world situations  **Engage:**  Students will take a pre-assessment in the form of an entrance slip assessing knowledge of the previous forms of lines. Also there will be a quick review of the forms of lines.  **Explore:**  Students will do an activity demonstrating that each form (S/I and P/S) can be used to represent any line. They will also explore the relationship between the two forms.  **Explanation:**  Groups will discuss their results with the class and examine examples.  **Elaboration:**  Students will do an activity in pairs that has them further practice different scenarios involving S/I and P/S forms.  **Evaluation:**  Students will fill out an exit slip and include any questions they have about the day's lesson | **Objectives: (SWBAT)**  -Make real-world decisions using a graph(s)  -Recognize which form of a line to use to represent a situation.  -Use various forms of lines to represent real world situations  **Engage:**  Review what was discussed the day before and address any questions that came up on the exit slips. Have a class discussion on hours of operation of a pizza joint.  **Explore:**  Students will do an activity that helps them determine how to find out which decision to make regarding hours of operation of their business.  **Explanation:**  Students discuss their results and make sure to talk about when it was less profitable to stay open compared to when it was most profitable. The class will also be sure to discuss when it is appropriate to use each form of a line.  **Elaboration:**  Students will use the information they found in the exploration and apply it to their specific pizza joint (from their project)  **Evaluation:**  Students will take a quiz at the end of the period (or a take home quiz) assessing the objectives of the lesson. | **Objectives: (SWBAT)**  -Indentify equations in standard form  -Find the x and y intercept from standard form  -Write equations in standard form using integer coefficients  **Engage:**  Give students an entrance slip and have students talk about what standard means to them.  **Explore:**  Give the groups examples and non examples of equations in standard form and have groups come up with a rule for it.  **Explanation:**  Have groups state their rules and go over graphing lines in standard form.  **Elaboration:**  Give groups examples and non examples of standard form addressing integer coefficients. Have groups come up with an addition of their rule.  **Evaluation:**  Discuss their rules and give an exit slip. | **Objectives: (SWBAT)**  -Interpret charts of data  -Create equations in standard form  -Graph lines in standard form  **Engage:**  Give students an entrance slip and have a discussion on minimum wage and how much the students think their employees should be paid.  **Explore:**  Give charts on cooks and pay and delivery men and pay to the groups and have the groups graph the data and write the equation in standard form.  **Explanation:**  Have the students present their work and what payment they are going to use.  **Elaboration:**  Present the idea of having a dine-in area for their pizza joint. Have the students discuss in their groups if they should hire a wait staff or have delivery men cover this.  **Evaluation:**  Have a few groups state their thoughts and give them a quiz. |
| **Assessments:**  Entrance and exit slip | **Assessments:**  Entrance slip, exit slip, formative assessment in the lesson | **Assessments:**  Quiz, formative assessments in the period. | **Assessments:**  Entrance and Exit Slip | **Assessments:**  Entrance Slip and Quiz |
| **Resources:**  Entrance and exit slips | **Resources:**  -Worksheets for the activities  -problems written out beforehand to ask the class  -Entrance and exit slips. | **Resources:**  -Activity worksheets  -Charts with all the data from the activities  -Quizzes. | **Resources:**  -Examples and non examples of equations in standard form  -Examples and non examples of equations addressing integer coefficients  -Class set of entrance slips and exit slips | **Resources:**  -Class set of entrance slips and quizzes  -Group sets of charts for cooks and delivery men |

**Week 3 of 4**

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| **Relation Between All Three Forms** | **Relation Between All Three Forms** | **Perpendicular Lines** | **Perpendicular Lines** | **Work Day** |
| **Objectives: (SWBAT)**  -Identity equations in slope-intercept form, standard form, and point-slope form  -Decide when it is appropriate to use each form  -Explain the relationship between each of the different forms  -Manipulate equations from one form to another  **Engage:**  Students will take a pre-assessment in the form of an entrance slip reviewing the vocabulary of equations of linear lines. They will then watch a video clip on transformers and relate it to the three different equations for linear lines.  **Explore:**  While in their groups, students will follow an exploration worksheet on graphing lines in point-slope, slope-intercept, and standard form seeing that they all graph the same line.  **Explanation:**  Explain to students how each form represents the same line. Have students work in their groups to figure out how to go from one form to another.  **Elaboration:**  **Evaluation:**  Give exit slip in the last 5 minutes of class and remind students to write in their journal. | **Objectives: (SWBAT)**  -Identity equations in slope-intercept form, standard form, and point-slope form  -Decide when it is appropriate to use each form  -Explain the relationship between each of the different forms  -Manipulate equations from one form to another  **Engage:**  Give students an entrance slip covering material that was taught the previous day and talk about what they decided to price each pizza at.  **Explore:** none  **Explanation:**  The students will work with their companies figuring out how to change their prices to increase profit, exploring the relationship between point-slope, slope-intercept and standard form.  **Elaboration:**  Have students work on the elaboration game on graphing lines in each equation form in their groups. Give 3 minutes for each round.  **Evaluation:**  Give the students 7 minutes to work on their quiz on the material taught yesterday and today and remind the students to write in their journal for today. | **Objectives: (SWBAT)**  - Identify graphs of perpendicular lines.  - Formulate the equation of a line perpendicular to a given line at a given point.  - Communicate ideas to one another professionally.  **Engage:**  Students will fill out an entrance slip to assess prior knowledge. Afterwards, the teacher will lead the class in a discussion on the various ways foods (including pizza) can be cut, and the benefits of each kind of cut. Students will then fill out “Factory Slices” worksheet  **Explore:**  Students will work on the “pizza by the slice” worksheet in which they will discover that the best way to cut a pizza into 4 equal pieces is to use perpendicular cuts.  **Explanation:**  The teacher will begin a discussion where the class talks about how to recognize if lines are perpendicular, and at the end of this day, the teacher will pass out an exit slip for some formative assessment.  **Elaboration:**  none  **Evaluation:**  Students will make a journal entry for the day detailing their successes, their struggles, and their questions about the day’s lesson. | **Objectives: (SWBAT)**  - Identify graphs of perpendicular lines.  - Formulate the equation of a line perpendicular to a given line at a given point.  - Communicate ideas to one another professionally.  **Engage:**  Students will be re-engaged from the lesson before and will discuss the results of the exit slip from the day before.  **Explore:** none  **Explanation:**  The students and teacher will discuss the results of the entrance slip from this day and begin to discuss exceptions to the rules discussed about perpendicular lines from the day before. Out of this, the class will create their definition of perpendicular lines. At some point in this section, students will have filled out the “Additional Factors?” worksheet.  **Elaboration:**  Students will play a game of round robin with their groups to gain additional practice in perpendicular lines. Students will construct lines perpendicular to given lines, graph the lines they find, and check that their partners have also found perpendicular lines.  **Evaluation:**  Students will make a journal entry for the day detailing their successes, their struggles, and their questions about the day’s lesson. Also, there will be a short quiz to assess student understanding summatively. | **Objectives: (SWBAT)**  -Put the finishing touches on their project  -Cooperatively complete remaining tasks for unit project.  **Engage:** Tell students they’ll be working on their own in groups today, reminding them to use the little time they have left productively.  **Explore:** Students will work in their groups to finish as much as they can.  **Explanation:** none  **Elaboration:** none  **Evaluation:** Teacher will observe the class during the period to ensure participation and to give credit. Also, students will complete a journal detailing their progress towards project completion. |
| **Assessments:**  Entrance and Exit Slip | **Assessments:**  Entrance Slip and Quiz | **Assessments:**  Entrance and Exit slips. | **Assessments:**  Entrance slip and quiz | **Assessments:**  Journal and teacher participation log. |
| **Resources:**  -class set of entrance slips  -class set of exit slips  -group set of exploration worksheets  -youtube video of transformers | **Resources:**  -class set of entrance slips  -class set of quizzes  -group set of elaboration game | **Resources:**  -Graph paper for students  - Class set of worksheets  - Class set of entrance and exit slips. | **Resources:**  -Graph paper for students  - Class set of each worksheet  -Class set of entrance slip and exit slip/quiz.  - Class set of elaboration game. | **Resources:** Reserve time in computer lab for students to finish research and presentations. |

**Week 4 of 4**

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| **Work Day** | **Presentations** | **Presentations/Pizza Party** | **Review** | **Unit Test** |
| **Objectives: (SWBAT)**  Put the finishing touches on their project  Cooperatively complete remaining tasks for unit project.  **Engage:** Tell students they’ll be working on their own in groups today, reminding them to use the little time they have left productively.  **Explore:** Students will work in their groups to finish as much as they can.  **Explanation:** none  **Elaboration:** none  **Evaluation:** Teacher will observe the class during the period to ensure participation and to give credit. Also, students will complete a journal detailing their progress towards project completion. | **Objectives: (SWBAT)**  Professionally present their final product from the unit.  **Engage:** none  **Explore:** none  **Explanation:** none  **Elaboration:** none  **Evaluation:** Students will present using their PowerPoint or display board. | **Objectives: (SWBAT)**  Professionally present their final product from the unit.  **Engage:** none  **Explore:** none  **Explanation:** none  **Elaboration:** none  **Evaluation:** Students will present using their PowerPoint or display board. | **Objectives: (SWBAT)**  Review prior knowledge through a Jeopardy game.  **Engage:** Tell the groups that they’ll be playing Jeopardy and to split into their groups.  **Explore:** Jeopardy game  **Explanation:** none  **Elaboration:** none  **Evaluation:** none | **Objectives: (SWBAT)**  Assess knowledge from unit with a summative assessment.  **Engage:** none  **Explore:** none  **Explanation:** none  **Elaboration:** none  **Evaluation:** Exam |
| **Assessments:**  Journal and teacher participation log. | **Assessments:**  Students will be evaluated on rubric for final presentation. | **Assessments:**  Students will be evaluated on rubric for final presentation. | **Assessments:** Students will record their work to give credit for participation for the day. | **Assessments:** This test will cover all the topics discussed in the unit including: the three different ways of representing linear equations. Also, students will write, solve for and graph linear equations. |
| **Resources:** Reserve time in computer lab for students to finish research and presentations. | **Resources:** None | **Resources:** Pizza for students and guests (experts and parents) | **Resources:** Jeopardy game which will have questions on all topics taught in unit. | **Resources:** Final test (class set) |