

NEW MILFORD PUBLIC SCHOOLS
New Milford, Connecticut



Practical Math – Applications of Percents
June 2016

Approved by BOE November 2016

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Authors of Course Guide

Ryan Fitzsimmons

New Milford's Mission Statement

The mission of the New Milford Public Schools, a collaborative partnership of students, educators, family and community, is to prepare each and every student to compete and excel in an ever-changing world, embrace challenges with vigor, respect and appreciate the worth of every human being, and contribute to society by providing effective instruction and dynamic curriculum, offering a wide range of valuable experiences, and inspiring students to pursue their dreams and aspirations.

Practical Math: Applications of Percents Overview

This is a one-semester course designed to give students exposure to real-world applications of percents. Because this is a course in practical math; standards will focus on the Standards for Mathematical Practice and assessments will often be practical in nature

From the Program of Studies:

The goal of this course is to provide a review of foundational skills and concepts related to percent before exploring how the concept is used in a variety of fields.

Skills to be reviewed will include but are not limited to solving single variable equations, including proportions and converting percent to decimal and vice versa.

Applications that will be discussed include but are not limited to taxes, discounts/markups, interest (auto/home loans, banking, etc.), and estate division.

Pacing Guide

Unit Title	# of Weeks
Working with Percents	2 Weeks
Applications of Percents in the News	2 Weeks
Applications of Percents: Loans and Interest	4 Weeks
Applications of Percents: Budgeting & Taxes	3 Weeks
Working with Decimals, Fractions, Ratios and Proportions	2 Weeks
Applications of Percents: Cooking, Baking and Mixtures	3 Weeks
Applications of Percents: Consumerism	2 Weeks
Culminating Project & Exam	2 Weeks

Committee Member(s): Ryan Fitzsimmons Unit Title: Working with Percents	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 2
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Percents can be expressed in a variety of different forms 	<ul style="list-style-type: none"> • How do I express a percent? • How do I calculate a percentage? • When is a percentage appropriate to use?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to calculate a percentage of a quantity • How to express a percentage correctly Students will be able to do the following: <ul style="list-style-type: none"> • Write a mathematically correct statement about a percentage • Write and solve an expression involving percentages 	

Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to use a calculator to simplify an expression and solve problems involving percentages • Use an internet connected device to acquire relevant data regarding percentages 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher will work to improve number fluency as it relates to calculations with percents • Teacher will help students process readings in a variety of contexts using percents 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will express percentages numerically, in sentences within context and perform calculations as it relates to a news article. • Students will research current data from a scholarly source and demonstrate their knowledge of percentages from this reading through the creation of a poster

Assessments	
Performance Task(s)	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: Create a poster which expresses the different forms of percentages.</p> <p>Role: Employee presenting relevant news data to a superior</p> <p>Audience: The work superior</p> <p>Situation: You have found some information in a scholarly journal and you need to present it to your work</p>	<ul style="list-style-type: none"> • Quiz on Working with Percents, fluency with the mathematics of expressing percentages

<p>superior.</p> <p>Product or Performance: a 5-minute presentation on the findings including a properly cited source.</p> <p>Standards for Success:</p> <ul style="list-style-type: none"> - Presentation Rubric for NMHS 	
Suggested Resources	
<ul style="list-style-type: none"> • Any scholarly journal available through NMHS or NMPS • Supplemental Skills Worksheets • Supplemental Practical Worksheets from Yummy Math http://www.yummymath.com 	

Committee Member(s): Ryan Fitzsimmons Unit Title: Applications of Percents in the News	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 2
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Percents are presented daily in news articles 	<ul style="list-style-type: none"> • How are percentages expressed in a news article? • How do I interpret percentages in the news? • How can percentages be misleading in the news?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to calculate a percentage • How to express a percentage correctly Students will be able to do the following: <ul style="list-style-type: none"> • Write a mathematically correct statement about a percentage • Read a news article from a reputable source, and find data to be referenced • Summarize data from a news article 	

Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to use a calculator to simplify an expression and solve problems involving percentages • Use an internet connected device to acquire a news article and relevant data regarding percentages 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher will work to improve number fluency as it relates to calculations with percents • Teacher will help students process readings in a variety of contexts using percents 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will express percentages numerically, in sentences within context and perform calculations as it relates to a news article. • Students will research and summarize a news article which contains data that can be expressed as a percent

Assessments	
Performance Task(s)	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: Write a summary of a current event news article, focusing on the date presented in the article.</p> <p>Role: Friend at a dinner party</p> <p>Audience: Your friends</p> <p>Situation: You want to talk about a current event and share correct and knowledgeable information</p>	<ul style="list-style-type: none"> • Quiz on reading and interpreting data from the news

Product or Performance: a 150 word summary of a news article focusing on the data presented within the article.

Standards for Success:

- Communication Rubric for NMHS

Suggested Resources

- Any scholarly journal available through NMHS or NMPS
- Supplemental Skills Worksheets
- Supplemental Practical Worksheets from Yummy Math <http://www.yummymath.com>

Committee Member(s): Ryan Fitzsimmons Unit Title: Applications of Percents: Loans and Interest	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 4
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Percents are presented daily in news articles and the world around us. 	<ul style="list-style-type: none"> • How does interest work? • How much will a loan cost at its conclusion? • What is a good interest rate?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to calculate a percentage • How to calculate interest and loan payments • How to express a percentage correctly Students will be able to do the following: <ul style="list-style-type: none"> • Use an amortization table • Calculate the monthly payment for a loan • Calculate interest on an account 	

Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to use an amortization calculator online to determine payments • Use an internet connected device to acquire a payment information and current rates 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher will work on the introduction of terms used in loans, interest and financing • Teacher will help students determine an appropriate financial decision 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will research amortization tables and payments • Students will define terms used in interest and loans

Assessments	
Performance Task(s)	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: Create a table which amortizes a car, student loan or mortgage over its term</p> <p>Role: Consumer</p> <p>Audience: Co-signer</p> <p>Situation: You want demonstrate that a certain loan is a good deal to a person who will be co-signing with you</p> <p>Product or Performance: a table with description and summary of terms of a loan.</p>	<ul style="list-style-type: none"> • Quiz on terms of loans and interest • Quiz on amortization tables

Standards for Success:

- Specific Product rubric

Suggested Resources

- <http://www.amortization-calc.com/>
- <http://www.federalreserve.gov/releases/h15/current/>
- Supplemental Skills Worksheets
- Supplemental Practical Worksheets from Yummy Math <http://www.yummymath.com>

Committee Member(s): Ryan Fitzsimmons Unit Title: Applications of Percents: Budgeting and Taxes	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 3
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A budget is a helpful tool for a consumer in society. • A budget can be calculated by percent of one's monthly income • Taxes are calculated by a percentage of one's income 	<ul style="list-style-type: none"> • How do I create a budget? • What percent should I allot to the portions my budget? • How much do I get taxed? • How do I file taxes?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to calculate a percentage • How to divide a monthly income • How to calculate their tax rate for income tax • Determine sales tax Students will be able to do the following: <ul style="list-style-type: none"> • Create a budget 	

<ul style="list-style-type: none"> • Present a budget in graphical form • Identify a tax bracket and calculate net income after income tax • Prepare a basic tax document 	
Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to navigate the website (http://www.irs.gov) for important tax information helpful for filing taxes. • Use an internet connected device to research current information on item costs for budgeting. 	
Develop Teaching and Learning Plan	
Teaching Strategies: <ul style="list-style-type: none"> • Teacher will work with students to divide a chosen income into portions for a budget • Teacher will discuss the basics of filing taxes and income taxes • Teacher will introduce students to basic tax documents 	Learning Activities: <ul style="list-style-type: none"> • Students will display a budget in both graphical and tabular forms. • Students will explore the process of filing taxes • Students will complete basic tax worksheets

Assessments	
Performance Task(s)	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
Goal: Create a budget using both graphical and tabular forms. Role: Consumer Audience: Self Situation: You need to divide an income	<ul style="list-style-type: none"> • Quiz on student's ability to budget a given amount • Quiz on basic tax information • Completion of personal Tax Worksheet

into appropriate sections in order budget effectively

Product or Performance: a budget presented in both graphical and tabular forms.

Standards for Success:

- Presentation rubric for NMHS

Suggested Resources

- <http://www.irs.gov>
- <https://www.consumer.gov/articles/1002-making-budget>
- Supplemental Skills Worksheets
- Supplemental Practical Worksheets from Yummy Math <http://www.yummymath.com>

Committee Member(s): Ryan Fitzsimmons Unit Title: Working with Decimals, Fractions and Proportions	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 2
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A numerical value can be expressed as a decimal or a fraction • A numerical value can be converted between fraction and decimal • A proportion can be used to express a certain fraction with a different whole. 	<ul style="list-style-type: none"> • How else can I express a percentage? • How can I change between a fraction and percentage? • How can a proportion be used to rewrite a fraction?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to change between fraction and percentage • How to solve a proportion • How to use a proportion to change a fraction Students will be able to do the following:	

- Apply a proportion to change the terms of a fraction
- Read a blueprint and/or survey
- Scale a photo or copy to size

Character Attributes

- Respect
- Responsibility
- Honesty
- Compassion
- Perseverance
- Citizenship
- Integrity
- Loyalty
- Courage
- Cooperation

Technology Competencies

- Be able to navigate the website (<http://www.irs.gov>) for important tax information helpful for filing taxes.
- Use an internet connected device to research current information on item costs for budgeting.

Develop Teaching and Learning Plan

Teaching Strategies:

- Teacher will show methods for converting between fractions and percentages
- Teacher will show examples of blueprints and how they are made
- Measure and apply percent error

Learning Activities:

- Students will practice skills on changing forms of a numerical value.
- Students will apply ratios and proportions
- Students will create a blueprint
- Use percent error as it applies to manufacturing

Assessments

Performance Task(s)

Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)

Other Evidence

Application that is functional in a classroom context to evaluate student achievement of desired results

Goal: Create a blueprint to accurately model a design

Role: Architect

Audience: Client

Situation: You need to create a blueprint for the house of a client to scale

Product or Performance: a blueprint which

- Quiz on conversion skills
- Quiz on ratios and proportions

is correct to scale

Standards for Success:

- Presentation rubric for NMHS

Suggested Resources

- Graph Paper and Rulers
- Supplemental Skills Worksheets
- Supplemental Practical Worksheets from Yummy Math <http://www.yummymath.com>

Committee Member(s): Ryan Fitzsimmons Unit Title: Applications of Percents: Cooking, Baking and Mixtures	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 3
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A recipe is crucial to obtain repeatable results • A mixture can be scaled to larger or smaller amounts • A recipe or mixture is an important media for communication 	<ul style="list-style-type: none"> • How do I read a recipe? • Why do we follow a recipe? • How can a proportion be used to change a recipe? • Are baking times proportional?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to measure dry and wet ingredients • How to scale a recipe • How to apply mixtures in the garage Students will be able to do the following:	

<ul style="list-style-type: none"> • Read a recipe • Read a description of oil/gas mixtures • Cook or bake an item to share using a recipe 	
Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to navigate a website for a useful recipe • Use an internet connected device to research current information on item costs for budgeting. 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher will lead students in a discussion of recipes for cooking and baking • Teacher will show how to use various measuring apparatus 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will practice skills for measuring both dry and wet ingredients. • Students will be able to describe important parts of a recipe • Students will create a product based on a recipe.

Assessments	
Performance Task(s)	Other Evidence
<p>Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)</p>	<p>Application that is functional in a classroom context to evaluate student achievement of desired results</p>
<p>Goal: Cook/Bake an item to share with the class</p> <p>Role: Cook/Baker</p> <p>Audience: Class</p> <p>Situation: You need to cook or bake an item using a recipe</p> <p>Product or Performance: food product</p>	<ul style="list-style-type: none"> • Practical Quiz on Measuring • Quiz on reading/scaling a recipe

Standards for Success:	
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| - Presentation rubric for NMHS | |
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Suggested Resources	
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| <ul style="list-style-type: none">• Various cooking/baking measurement tools• Supplemental Skills Worksheets• Supplemental Practical Worksheets from Yummy Math http://www.yummymath.com | |
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Committee Member(s): Ryan Fitzsimmons Unit Title: Applications of Percents: Consumerism	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 2
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • A percentage off can be estimated quickly • A gratuity can be calculated easily without technology • A consumer who understands percentages is a smart consumer 	<ul style="list-style-type: none"> • How do I calculate a markup or markdown? • How do I calculate a commission or a gratuity? • How would I calculate fees?
Expected Performances What students should know and be able to do	
Students will know the following: <ul style="list-style-type: none"> • How to estimate a percentage within 10% • How to estimate fees, commission, gratuity Students will be able to do the following: <ul style="list-style-type: none"> • Calculate an appropriate gratuity 	

<ul style="list-style-type: none"> • Calculate a markdown or markup • Complete a shopping list 	
Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to navigate a website for shopping information • Use an internet connected device to research current information on item costs for budgeting. 	
Develop Teaching and Learning Plan	
<p>Teaching Strategies:</p> <ul style="list-style-type: none"> • Teacher will lead students in a discussion of fees, taxes, gratuity • Teacher will show how to calculate final cost. 	<p>Learning Activities:</p> <ul style="list-style-type: none"> • Students will be given a shopping list and a budget to complete the list. • Students will be given a restaurant bill and be asked to calculate various gratuities.

Assessments	
Performance Task(s)	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: Complete a shopping list</p> <p>Role: Personal Shopper</p> <p>Audience: Client</p> <p>Situation: You will be given a list of items and a budget for purchasing.</p> <p>Product or Performance: Completed Order</p> <p>Standards for Success:</p> <ul style="list-style-type: none"> - Specific Rubric for Task 	<ul style="list-style-type: none"> • Practical Quiz on Tips, Fees and Gratuity • Activity with a budget including shipping fees, taxes and gratuity
Suggested Resources	
<ul style="list-style-type: none"> • Supplemental Skills Worksheets • Supplemental Practical Worksheets from Yummy Math http://www.yummymath.com 	

Committee Member(s): Ryan Fitzsimmons Unit Title: Culminating Project and Exam	Course/Subject: Practical Math – Applications of Percents Grade Level: 11-12 # of Weeks: 2
Identify Desired Results	
Common Core Standards	
<ul style="list-style-type: none"> • CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them. • CCSS.Math.Practice.MP2 Reason abstractly and quantitatively. • CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others. • CCSS.Math.Practice.MP4 Model with mathematics. • CCSS.Math.Practice.MP5 Use appropriate tools strategically. • CCSS.Math.Practice.MP6 Attend to precision. • CCSS.Math.Practice.MP7 Look for and make use of structure. • CCSS.Math.Practice.MP8 Look for and express regularity in repeated reasoning. • CCSS.Math.Content.7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. • CCSS.Math.Content.6.RP.A.3.c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. 	
Enduring Understandings Generalizations of desired understanding via essential questions (Students will understand that ...)	Essential Questions Inquiry used to explore generalizations
<ul style="list-style-type: none"> • Items in this course will provide me with useful skills for my life • Budgeting is a helpful exercise for healthy spending habits 	<ul style="list-style-type: none"> • What would your taxes look like if you prepared them? • What would your realistic monthly budget look like?
Expected Performances What students should know and be able to do	
<p>Students will know the following:</p> <ul style="list-style-type: none"> • How to calculate percentages and fractions • How to read tax documents <p>Students will be able to do the following:</p> <ul style="list-style-type: none"> • Model a set of prepared taxes • Model their monthly budget 	

Character Attributes	
<ul style="list-style-type: none"> • Respect • Responsibility • Honesty • Compassion • Perseverance • Citizenship • Integrity • Loyalty • Courage • Cooperation 	
Technology Competencies	
<ul style="list-style-type: none"> • Be able to navigate a website for relevant tax information • Be able to use a spreadsheet to prepare a budget • Use an internet connected device to research a variety of information 	
Develop Teaching and Learning Plan	
Teaching Strategies: <ul style="list-style-type: none"> • Teacher will provide students with any requested material for their final project 	Learning Activities: <ul style="list-style-type: none"> • Students will prepare their mock taxes • Students will be able to create a monthly budget

Assessments	
Performance Task(s)	Other Evidence
Authentic application to evaluate student achievement of desired results designed according to GRASPS (one per marking period)	Application that is functional in a classroom context to evaluate student achievement of desired results
<p>Goal: Prepare taxes and create monthly budget</p> <p>Role: Student</p> <p>Audience: Teacher</p> <p>Situation: You will create a culminating project to display learned skills.</p> <p>Product or Performance: Prepared Taxes and a Realistic Budget</p> <p>Standards for Success:</p> <ul style="list-style-type: none"> - Specific Rubric for Task 	<ul style="list-style-type: none"> • Final Exam for course on skills
Suggested Resources	
<ul style="list-style-type: none"> • Supplemental Skills Worksheets • Tax Preparation Documents and Budgeting Tools • Supplemental Practical Worksheets from Yummy Math http://www.yummymath.com 	

