

Unit 4: Percents
Grade 7 Math
10 Class Meetings
Revised May 2024

Essential Questions

- When is it most convenient to use percentages?

Enduring Understandings with Unit Goals

EU 1: Percentages can be used to understand the relationship between parts of quantities and the whole quantity, and how quantities change in relation to their starting values.

- Construct tables, proportion and percent equations to solve problems.
- Model real-world applications involving price change, simple interest, commissions, and fees using percentages.

Standards

Common Core State Standards:

- **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.
- **7.NS.A.3:** Solve real-world and mathematical problems involving the four operations with rational numbers.
- **7.EE.2.A:** Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

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Unit Content Overview

1. Percent, Part, and Whole

- Define the percent of a number
- Solve percent problems mentally with benchmark percentages
- Evaluate percent of a number when given percent and the whole
- Evaluate the whole given a part and a percent
- Evaluate the percent given a part and a whole
- Solve percent problems using proportions, tables and percent equations
- **Vocabulary and Key Terms** – Percent, Part, Whole, Is, Of, Proportion, Ratio, Percent Proportion, Tape Diagrams, Double number lines, Tables, Percent Equations, Equivalent

2. Percent Increase and Decrease

- Solve for a new amount given the original amount and a percent increase or decrease.
- Calculate for the original amount given new amount after a given percent increase or decrease.
- Solve percent problems using proportions, tables and percent equations.
- **Vocabulary and Key Terms** – Percent, Part, Whole, Is, Of, Proportion, Ratio, Percent of Change Proportion, Tape Diagrams, Double number lines, Tables, Percent Equations, Equivalent, Percent increase, Percent decrease, Difference, Change, Original Amount, New Amount

3. Percent Application

- Solve for percent problems involving discounts, tax, and tip
- Calculate percentages involving simple interest, commissions, and other fees
- Solve for percent problems involving measurement and percent error
- Solve percent problems using proportions, tables and percent equations
- **Vocabulary and Key Terms** – Percent, Part, Whole, Is, Of, Proportion, Ratio, Percent of Change Proportion, Tape Diagrams, Double number lines, Tables, Percent Equations, Equivalent, Percent increase, Percent decrease, Difference, Change, Original Amount, New Amount, Discounts, Tax, Tip/Gratuinity, Commission, Markup, Simple Interest, Fees, Percent Error, Markdown, Sales Tax, Interest

Interdisciplinary Connection:

- Language Arts - Word Problems
- Science – Word Problems

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Daily Learning Objectives with *TWPS Activities*

Students will be able to...

- Convert and relate fractions, decimals, and percentages
 - *TWPS – (SBAC) How can you simplify the expression by combining like terms? Explain using mathematical reasoning.*
- Solve percent problems to find the whole, part, or percent
 - *TWPS – How do you turn a decimal into a percent? Explain using mathematical reasoning.*
- Investigate and explain how percentages can be used to represent increases and decreases in quantities
 - *TWPS – (SBAC) Find the mean, median, and mode of the given data. Explain using mathematical reasoning.*
- Calculate total cost using tax and tip while using percentages
 - *TWPS – How do you figure out what amount of tip you want to leave at a restaurant? Explain using mathematical reasoning.*
- Solve and justify solutions using markups, markdowns, interest, and commissions
 - *TWPS – (SBAC) How can you find the discount price of a t-shirt, given its original cost and percent discount? Explain using mathematical reasoning.*
- Evaluate percentages involving sales tax and discounts
 - *TWPS – (SBAC) What is the difference in temperature of two states, given a number line? Explain using mathematical reasoning.*
- Solve for percent error
 - *TWPS – Given the table, what is the likelihood of the events listed below? Explain using mathematical reasoning.*
- Apply proportional relationships to solve multi-step percent problems
 - *TWPS – (SBAC) What is the probability I spin the spinner and land on the same color twice? Explain using mathematical reasoning.*

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Instructional Strategies/Differentiated Instruction

- TWPS
- Whole group instruction
- Guided notes
- Student-led instruction
- Small group instruction
- Independent problem-solving
- Collaborative problem-solving
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Manipulatives
- Homework
- Highlighted words
- Fill in the blanks
- Access to multiplication chart
- Access to calculator
- Color coded notes
- Pre-teaching/Reteaching

EL DIFFERENTIATED INSTRUCTION:

- Word Walls with visuals
- TWPS (Think, Write, Pair, Share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit Modeling
- Key Vocabulary
- Graphic Organizers
- Strategic Grouping
- Non-verbal Assessments

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Assessments

FORMATIVE ASSESSMENTS:

- Warm-ups (SBAC)
- Whiteboards
- Mid-class check-ins
- Exit Slips
- Accountable Talk Discussions
- Do Now
- Student-led instruction
- Homework
- Performance Task - Iggy's Ice Cream
 - Problem Solving Rubric

SUMMATIVE ASSESSMENTS:

- Unit 4 Test (Edulastic)
- Performance Task - Iggy's Ice Cream

Unit Task

Unit Task Name: Iggy's Ice Cream Performance Task

Description: Students will use information learned in this unit about percentages to plan how to sell ice cream at a school sporting event. They will use the survey to help calculate the quantities needed to buy the supplies and the profit they are expected to make on that day with the percentages of each favorite flavor (EU 1) and explain their reasonings clearly.

Evaluation: Summative Assessment and Problem Solving Rubric

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Unit Resources

- Match FishTank
- Illustrative Mathematics
- Khan Academy
- SolvemeMobiles.org
- Flipped Google Classroom Videos
- Worksheets
- Calculator
- Laptops
- SBAC Prep Online
- Performance Task - Design a Garden
- Blooket
- Edulastic
- 99math.com
- Legends of Learning