

learning focus:

- ✓ review concepts of ratios, rates, and proportions
- ✓ convert within/between measurement systems
- ✓ understand and apply percents to real-world situations, including percent of change

PROPORTIONALITY UNIT



11 DAY TEKS-ALIGNED UNIT

PROPORTIONALITY UNIT
Table of Contents

PAGE	TOPIC	RESOURCE
4	Sample Pacing Guide	
5-6	Tools for Impasse/Revision & Helpful Hints	
7-16	Folder Covers, Dividers, and Spine Labels	Student Handout 1
17-18	Ratios and Proportions	Homework 1
19	Ratios and Proportions	Student Handout 2
21-22	Unit Rate	Homework 2
23	Unit Rate	Student Handout 3
25-26	Measurement Conversions	Homework 3
27	Measurement Conversions	Quiz 1
29-30	Rate and Proportions Quiz	Student Handout 4
31-32	Intro to Percents	Homework 4
33	Intro to Percents	Student Handout 5
35-36	Application of Percents	Homework 5
37	Application of Percents	Student Handout 6

MULTI-STEP PERCENT APPLICATION

When solving real-world percent problems, you can ask yourself the following questions to better understand the problem:

- What are you looking for?
- Does your solution make sense in the context of the problem?

Logos may increase or decrease to the original.

TIP **GRATUITY** **MARK DOWN**

Questions below:

For every \$100 unit sold, what is her rate?

WHAT TO KNOW:

SOLUTION:

How much did Mrs. Jeffery save? \$12.00.

WHAT TO KNOW:

SOLUTION:

PROPORTIONALITY PACING GUIDE

DAY	TOPIC	RESOURCE
DAY 1	Introduction and Overview	Student Handout 1
DAY 2	Unit Rate	Homework 1
DAY 3	Measurement Conversions	Student Handout 2
DAY 4	Rate and Proportions Quiz	Homework 2
DAY 5	Intro to Percents	Student Handout 3
DAY 6	Intro to Percents	Homework 3
DAY 7	Application of Percents	Quiz 1
DAY 8	Application of Percents	Student Handout 4
DAY 9	Application of Percents	Homework 4
DAY 10	Application of Percents	Student Handout 5
DAY 11	Application of Percents	Homework 5

A MANEUVERING THE MIDDLE® RESOURCE

PROPORTIONALITY



an 11 day TEKS-aligned unit
TEKS: 7.4B, 7.4D, 7.4E

ready-to-go, scaffolded
student materials

PROPORTIONALITY UNIT

Table of Contents

PAGE	TOPIC	RESOURCE
4	Sample Pacing Guide	
5-6	Ideas for Implementation & Helpful Hints	
7-16	Binder Covers, Dividers, and Spine Labels	
17-18	Ratios and Proportions	Student Handout 1
19	Ratios and Proportions	Homework 1
21-22	Unit Rate	Student Handout 2
23	Unit Rate	Homework 2
25-26	Measurement Conversions	Student Handout 3
27	Measurement Conversions	Homework 3
29-30	Rate and Proportions Quiz	Quiz 1
31-32	Intro to Percents	Student Handout 4
33	Intro to Percents	Homework 4
35-36	Application of Percents	Student Handout 5
37	Application of Percents	Homework 5
39-40	Multi-Step Percent Application	Student Handout 6
41	Multi-Step Percent Application	Homework 6
43-44	Percents Quiz	Quiz 2
45-46	Percent of Change	Student Handout 7
47	Percent of Change	Homework 7
49-52	Proportionality Unit Study Guide	Study Guide
53-55	Proportionality Unit Test	Test

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PROPORTIONALITY



an 11 day TEKS-aligned unit
TEKS: 7.4B, 7.4D, 7.4E

student friendly + real-world application

Unit: Proportionality
Student Handout 4

Name _____
Date _____ Pd _____

INTRO TO PERCENTS

Leona and Paris were looking at a model in Mrs. Henry's class. Leona says that the model represents 12% because 12 squares were shaded. Paris says that isn't true. How could Paris explain her reasoning to Leona?

use of grade level modeling

PERCENTAGES

- Percent is a part of a whole.
- Percents can be written as fractions, decimals, or percents.

Ex: 78% = $\frac{78}{100}$

Ex: $\frac{3}{5} \rightarrow 60\%$

$\frac{\%}{100} = \frac{\text{part}}{\text{whole}}$

PART = % · WHOLE (AS A DECIMAL)

← (DECIMAL)
← (PERCENT)

Write the fraction, decimal, and percent name for each shaded portion.

1. fraction: _____ decimal: _____ percent: _____

2. fraction: _____ decimal: _____ percent: _____

Use your understanding of proportions to solve the problem.

4. Use the tape diagram below to set up a proportion and/or equation.

Unit: Proportionality
Homework 4

Name _____
Date _____ Pd _____

INTRO TO PERCENTS

1. Which of the following proportions could be used to find, "42 is 35% of what number?"

a. $\frac{35}{100} = \frac{x}{42}$ c. $\frac{x}{35} = \frac{42}{100}$

b. $\frac{35}{x} = \frac{42}{100}$ d. $\frac{35}{100} = \frac{42}{x}$

2. What does the shaded portion represent?

fraction: _____
decimal: _____
percent: _____

SOLVING PERCENT PROBLEMS

- Percent problems can be solved by setting up a proportion.
- Set up a proportion to solve like a proportion.
- Plug the given values into the proportion to solve for the missing value.

Use your understanding of percent proportions to solve the problem.

6. What number is 12% of 315? 7. 60 is 20% of what number?

9. Kai knows that 50% of a number is 150% of the number is?

10. Five proportions are given below. Solve the problem, "What is 36% of 150?"

$\frac{x}{150} = \frac{36}{100}$ $\frac{150}{x} = \frac{36}{100}$

Use your understanding of percent proportions and percent equations to solve the questions below.

3. 36 is 30% of what number? 4. What percent of 88 is 33? 5. What number is 65% of 840?

6. What is 125% of 64? 7. 120% of what number is 54? 8. 19 is what percent of 95?

error analysis

9. Mr. Glover wrote the problem, "Find 16% of 50" on the whiteboard and asked students to create a proportion or equation to solve the problem. Circle the name of anyone who made a true statement.

MAXINE **THEO** **BRYAN** **ELAINE**

I can use the proportion $\frac{x}{50} = \frac{16}{100}$ to solve.

I can find 16% because I can divide 50 by 16.

I know that 16% of 50 is going to be less than 10, because 10% is 5 and 20% is 10.

I can change 16% to 1.6 and multiply it by 50.

PROPORTIONALITY



an 11 day TEKS-aligned unit
TEKS: 7.4B, 7.4D, 7.4E

streamline your planning process with unit overviews

- ✓ key vocabulary
- ✓ vertical alignment

PROPORTIONALITY UNIT OVERVIEW

VERTICAL ALIGNMENT		
6 TH GRADE	7 TH GRADE	8 TH GRADE
Represent ratios and percents with models (6.4E), represent benchmark fractions and percents with models (6.4F), and generate equivalent fractions, decimals, and percents (6.4G). Convert within a measurement system (6.4H).	Solve problems involving ratios, rates, and multi-step percents (7.4D). Convert between a measurement system (7.4E). Calculate unit rates (7.4A).	

KEY VOCABULARY

percent: quantity out of 100
percent decrease: the r
percent increase: the r
rate: a cor
ratio: a cor
unit rate: a cor

COMMON MISCONCEPT

- Students may incorrectly
- Students may not recogn
- Students may struggle to whole.

sample
pacing
calendar

PROPORTIONALITY PACING GUIDE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Ratios and Proportions	Unit Rate	Measurement Conversions	Rate and Proportions Quiz	Intro to Percents
Student Handout 1 Homework 1	Student Handout 2 Homework 2	Student Handout 3		Student Handout 4
DAY 6	DAY 7			
Application of Percents	Multi-Step Percent Application			
Student Handout 5 Homework 5	Student Handout 6 Homework 6			
DAY 11	NOTES			
Proportionality Unit Test				
Unit Test				

PROPORTIONALITY UNIT OVERVIEW

LESSON	TEACHING TIPS
Review of Ratios and Proportions	• A great engagement video: Brainpop.com – Math – Proportions (this one is free)
Unit Rate	• Snap a few pictures at the grocery store of various barcodes where the unit rate is included. Try to get a few where the rates are different (i.e. price per pound, price per unit).
Measurement Conversions	• Students should be familiar with the STAAR Mathematics chart and looking up the conversion. It is beneficial for students to either have a copy in their notebook or to print and laminate a class set.
Percent Estimation	• A great engagement video: Flocabulary.com – Percents
Percent Proportions and Equations	• Bring a king size Hershey bar to class. Discuss what size it is and then draw the connection to a percent bar. Ask students to describe how many rectangles would be one-half, one-fourth, etc.
Percent in Real Life	• The key to this lesson is that students understand the vocabulary and the implications on the math. The process for solving a percent problem remains the same, but it is easy to not answer the question completely.
Percent of Change	• Use the census for your local town to describe the population historically of your area. Discuss how the area has changed and how that can be represented mathematically.

teaching ideas

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an 11 day TEKS-aligned unit
TEKS: 7.4B, 7.4D, 7.4E

unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Proportionality
Quiz 2

Name _____
Date _____ Pd _____

QUIZ: PERCENTS

Answer the questions below. Be sure to show work and justify your thinking.

1. Amanda plans to run eight laps around the track. Each lap is 100 yards. So far Amanda has run 240 yards. What percentage of the total has Amanda completed?

Answers

1. _____
2. _____
3. _____

2. The scale on a map is 2 cm = 25 miles. How many miles away is the next town at 5 cm.

3. Which set of numbers is equivalent to $\frac{3}{4}$?

A. $0.75, \frac{3}{5}$
B. $0.75, \frac{3}{4}$
C. $\frac{3}{4}, 0.075$
D. $0.75, 0.075$

4. What is 25% of 80?

Unit: Proportionality
Review

Name _____
Date _____ Pd _____

PROPORTIONALITY UNIT STUDY GUIDE

Solve each of the problems below. These represent the types of questions on your test. Be sure to ask questions if you need more help with a topic.

I CAN USE PROPORTIONS TO SOLVE PROBLEMS. 7.4D

1. At the neighborhood Fourth of July party, Mrs. O'Conner plans to serve banana bread. She plans to make 2 batches for every 72 people attending. If 72 people will attend the Fourth of July party, how many batches of banana bread does Mrs. O'Conner need to make?

2. Find the missing value.

3. A gear rotates 8 times every 15 seconds. Based on this information, put a checkmark next to any true statement below.

The gear rotates 48 times in 90 seconds.	The gear rotates 16 times in 30 seconds.
The gear rotates 32 times in one minute.	The gear rotates 24 times in 45 seconds.

5. A dolphin jumps 54 times in a 6-hour period. At this rate, how many jumps would be expected in a 2-hour period?

SEVENTH GRADE CURRICULUM

PROPORTIONALITY

UNIT THREE: ANSWER KEYS

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answer keys included