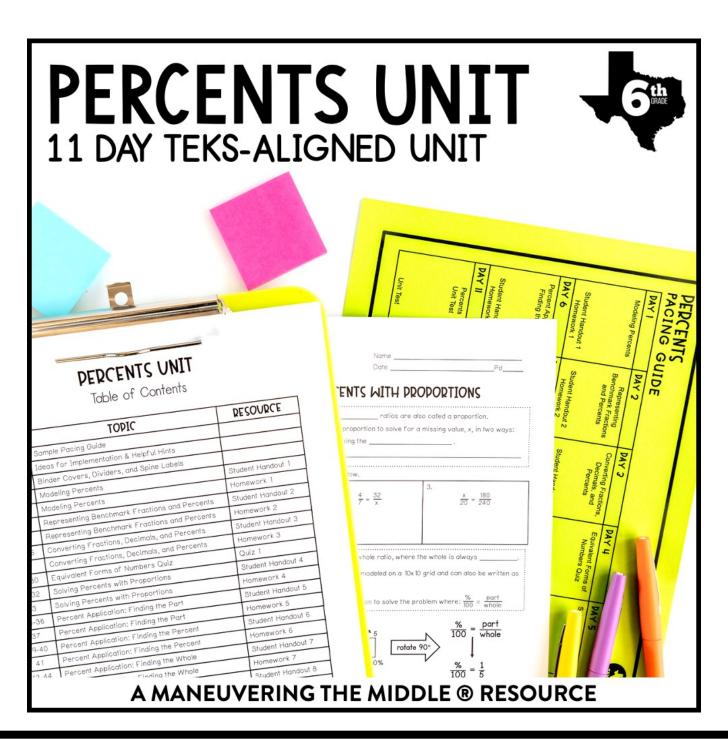# learning focus:

✓ convert between fractions, decimals, and percents

✓ represent benchmark fractions and percents

✓ model and apply percents to real-world situations to find the percent, part, and whole

PERCENTS

6th GRADE

an 11 day TEKS-aligned unit
TEKS: 6.4E, 6.4F, 6.4G, 6.5B, 6.5C

ready-to-go, scaffolded student materials

PERCENTS UNIT
Table of Contents

PERCENTS

an 11 day TEKS-aligned unit
TEKS: 6.4E, 6.4F, 6.4G, 6.5B, 6.5C

student friendly + real-world application

self-checking practice

Unit: Percents
Homework 4

Name _____
Date _____ Pd____

SOLVING PERCENTS WITH PROPORTIONS

In 1-6, record the problem number in the box ___
off the percent sign. Then solve questions 7 ___

60	7

1. 63 is what percent of 84?	2. What per

4. What percent is 36 of 90?	5. What is 2

7. Describe and correct the error Karl made i
solving the problem below.

What number is 24% of 80?

$$\frac{80}{x} = \frac{24}{100}$$
$$x = 333\frac{1}{3}$$

Use your understanding of proportions to set up a percent proportion and solve.

6. What percent of 20 is 14?	7. What is 45% of 60?	8. 16 is 25% of what number?

9. What number is 90% of 140?

12. What percent is equivalent to
portion below?

14. Jiro solved the problem, "Wh
What mistake did Jiro make? So

$$\frac{7}{150} = \frac{x}{100}$$ _____

15. Five proportions are given b
to solve the problem, "24 is 120%

$$\frac{x}{24} = \frac{120}{100}$$ $$\frac{24}{x} = \frac{12}{10}$$

Summarize today's lesson:

Unit: Percents
Student Handout 4

Name _____
Date _____ Pd____

SOLVING PERCENTS WITH PROPORTIONS

PROPORTIONS

- Two _____ _____ ratios are also called a proportion.
- You can use a proportion to solve for a missing value, x, in two ways:
  - Determining the _____.
  - _____

Find the missing value in the proportion below.

1. $\frac{8}{9} = \frac{x}{81}$	2. $\frac{4}{7} = \frac{32}{x}$	3. $\frac{x}{20} = \frac{180}{240}$

USING PROPORTIONS TO FIND PERCENTS

- Percent is a part to whole ratio, where the whole is always _____.
- Each percent can be modeled on a 10x10 grid and can also be written as a _____.
- You can use a proportion to solve the problem where: $\frac{\%}{100} = \frac{part}{whole}$

part → 1   whole → 5

part				

x   100%

% ... 100

rotate 90°

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

$$\frac{\%}{100} = \frac{1}{5}$$

Use your understanding of proportions to set up a percent proportion and solve.

4. Use the tape diagram below to set up a proportion and solve.	5. Use the tape diagram below to set up a proportion and solve.
30 ... x 20% ... 100%	x ... 48 25% ... 100%

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use of grade level modeling

PERCENTS

6th GRADE

streamline your planning process with unit overviews

✓ key vocabulary

✓ vertical alignment

sample pacing calendar

teaching ideas

PERCENTS OVERVIEW

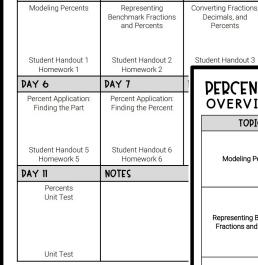| READINESS	SUPPORTING
6.4G Generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money. **6.5B** Solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models.	**6.4E** Represent ratios and percents with concrete models, fractions, and decimals. **6.4F** Represent benchmark fractions and percents, such as 1%, 10%, 25%, 33 1/3%, and multiples of these values using 10-by-10 grids, strip diagrams, number lines, and numbers. **6.5C** Use equivalent fractions, decimals, and percents to show equal parts of the same whole.

BIG IDEAS
- Proportional relationships ex
- Proportional relationships ar

ESSENTIAL QUESTION
- How do proportions explain
- What information and strate
- When would estimation be a

PERCENTS PACING GUIDE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Modeling Percents	Representing Benchmark Fractions and Percents	Converting Fractions, Decimals, and Percents	Equivalent Forms of Numbers Quiz	Solving Percents with Proportions
Student Handout 1 Homework 1	Student Handout 2 Homework 2	Student Handout 3		Student Handout 4

DAY 6	DAY 7	
Percent Application: Finding the Part	Percent Application: Finding the Percent	
Student Handout 5 Homework 5	Student Handout 6 Homework 6	

DAY 11	NOTES
Percents Unit Test	
Unit Test	

PERCENTS OVERVIEW

TOPIC	TEACHING TIPS
Modeling Percents	• For students who are struggling, it might be beneficial to use base ten blocks for a more hands-on approach. I liked to connect the picture to the fraction over a hundred and then reduce in order to find the simplest form of the fraction. • Search www.illuminations.nctm.org for the "Fraction Model Interactive" for a great visual tool of fractions, decimals, and percents.
Representing Benchmark Fractions and Percents	• Consider setting up a large number line from 0 to 2 and marking it off at the fourths. This could be accomplished with Scotch® Expressions tape on the whiteboard. Then, place a marker at a specific point and ask students to determine the number. This will promote critical thinking skills as they have to use the number line and reasonableness to estimate. To make this more difficult, place multiple markers or change the scale of the number line. • Some teachers like to use the phrase "DP," or Dr. Pepper to remind students which way the decimal moves when converting between decimals and percents.
Converting Fractions, Decimals, and Percents	• This can be a key number sense skill for middle school math. It is easy to just tell students to divide, but you really want these conversions to become fluid. This will allow students to eliminate so much additional work and to build on their problem solving skills.
Percent of a Quantity	• There are several ways to determine the percent of a number, including an equation, a proportion, or a tape diagram (percent bar). For students who struggle to understand what is happening in the problem, I suggest having them set up a proportion every time. • Consider using a similar problem and similar information to show students how to set up problems and solve for different parts of the equation/proportion.

PERCENTS

unit study guide + assessments

✓ quizzes

✓ editable unit test

Unit: Percents
Quiz 1

Name _____
Date _____ Pd_____

QUIZ: EQUIVALENT FORMS OF NUMBERS

Answer the questions below. Be sure to show your work.

1. A fruit juice box contains 6% juice. How is this percent written as a decimal?

2. The students in PE have spent $\frac{17}{20}$ of t... What decimal is equivalent to $\frac{17}{20}$?

3. The model at the right best represents...

4. Which set of numbers is equivalent to...

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

5. The model below represents the perce... decimal best represents the percent of p...

Answers

1. _____
2. _____
3. _____

Unit: Percents
Review

Name _____
Date _____ Pd_____

PERCENTS 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 REPRESENT RATIOS AND PERCENTS WITH MODELS, FRACTIONS, AND DECIMALS.   6.4E

1. What percent of the squares in the... below are **not** shaded?

3. About 29% of the world's surface... covered by land. Shade the model be... represent the percent covered by wa...

I CAN SHOW EQUAL PARTS OF A...

5. The model below shows how much... remaining. Fill in the blanks below wi... equivalent forms of the amount rema...

_____, _____, _____

SIXTH GRADE CURRICULUM

PERCENTS

UNIT FIVE: ANSWER KEYS

answer keys included

A MANEUVERING THE MIDDLE® RESOURCE

6th GRADE