Lesson 5-6 – Solving Percent Problems using Proportions

Objectives:

- Students will divide positive integers from the multiplication table without remainders, as evidenced by them passing one-minute quizzes.
- Students will solve proportions, as evidenced by them completing a warm-up worksheet where they do so.
- Students will solve percent problems using proportions, as evidenced by them completing a homework assignment where they do so.

Materials:

- Unit calendar transparency
- Minute Quiz 5-6
- Warm-up 5-6
- Notes #5-6 and Homework #5-6 (front and back)
- Notes #5-6 Teacher's Edition

Do Now:

- Park stuff
- Work on warm-up
- Get ready for minute quiz

Homework:

- Homework #5-6
- 8 hours of ALEKS due Friday

Time	Activity
Before Bell	**AGENDA, DO NOW, AND WARM-UPS** Write the **agenda** and the **do now** on the board. As students enter the classroom, shake their hands and direct them to follow the directions listed for the "do now."
10 min	**MINUTE QUIZ, WARM-UP, ATTENDANCE, AND HOMEWORK COLLECTION** **Minute Quiz and Warm-up** When the bell rings, quickly go around and put the **minute quiz** on each student's desk, face down. Then, start everyone on the quiz at the same time and give everyone one minute. Students should work on the warm-up when they're done with the minute quiz. After the minute is over, have a student collect the minute quizzes and give them to the teacher's aide (TA) to grade. **Attendance and Collect Homework** While students work on the warm-up, take **attendance** and have the TA collect **homework** & stamp homework checkers.
5 min	**ANNOUNCEMENTS** Explain to students that you have a couple announcements to make. **ALEKS** Ask students, *The first announcement has to do with ALEKS. This week, how many hours of ALEKS are due this Friday?* Point to the homework assignment that indicates the answer. *[Eight.] It's just another hour each week.* **Unit Overview** *The second announcement is to describe what we're doing today.* Put the unit calendar transparency on the overhead. *Last time we met, and also last Friday, we talked about percents and wrote them as fractions and decimals. Today, we will begin using percents to solve problems.*
30 min	**LESSON** Go through "Notes 5-6." Afterwards, have the TA go around and stamp warm-up & notes checkers.
30 min	**CLASSWORK & ALEKS** **Classwork** Students must complete problems 1, 3, and 5 on their homework assignment before working on

	ALEKS. This is to ensure that students will be able to do the rest of the problems before they leave class. **ALEKS** When students finish their classwork, they should work with **ALEKS**. Use this student work time to **return graded homework**.
5 min	**CLEAN UP** Students must check the laptops with the teacher or the TA before putting them away. After putting the laptops away, students should pack up, sit in their seats, and wait to be dismissed by the teacher (not by the bell). Make sure students push in their chairs as they leave.

Numeracy
Minute Quiz 5-6 A

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

24 ÷ 2 =	144 ÷ 12 =	108 ÷ 12 =
24 ÷ 6 =	99 ÷ 9 =	60 ÷ 5 =
8 ÷ 8 =	108 ÷ 12 =	10 ÷ 5 =
35 ÷ 7 =	33 ÷ 3 =	48 ÷ 6 =

Numeracy
Minute Quiz 5-6 A

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Date: Period:

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8 ÷ 8 =	108 ÷ 12 =	10 ÷ 5 =
35 ÷ 7 =	33 ÷ 3 =	48 ÷ 6 =

Numeracy
Minute Quiz 5-6 B

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

8 ÷ 1 =	36 ÷ 6 =	49 ÷ 7 =
28 ÷ 4 =	16 ÷ 2 =	15 ÷ 5 =
36 ÷ 9 =	40 ÷ 8 =	4 ÷ 4 =
45 ÷ 5 =	90 ÷ 9 =	12 ÷ 1 =

Numeracy
Minute Quiz 5-6 B

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

8 ÷ 1 =	36 ÷ 6 =	49 ÷ 7 =
28 ÷ 4 =	16 ÷ 2 =	15 ÷ 5 =
36 ÷ 9 =	40 ÷ 8 =	4 ÷ 4 =
45 ÷ 5 =	90 ÷ 9 =	12 ÷ 1 =

Numeracy
Minute Quiz 5-6 B

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

8 ÷ 1 =	36 ÷ 6 =	49 ÷ 7 =
28 ÷ 4 =	16 ÷ 2 =	15 ÷ 5 =
36 ÷ 9 =	40 ÷ 8 =	4 ÷ 4 =
45 ÷ 5 =	90 ÷ 9 =	12 ÷ 1 =

Numeracy
Minute Quiz 5-6 C

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

6 ÷ 2 =	20 ÷ 2 =	18 ÷ 2 =
70 ÷ 7 =	88 ÷ 11 =	90 ÷ 9 =
24 ÷ 3 =	24 ÷ 6 =	63 ÷ 9 =
30 ÷ 3 =	132 ÷ 11 =	60 ÷ 10 =

Numeracy
Minute Quiz 5-6 C

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

6 ÷ 2 =	20 ÷ 2 =	18 ÷ 2 =
70 ÷ 7 =	88 ÷ 11 =	90 ÷ 9 =
24 ÷ 3 =	24 ÷ 6 =	63 ÷ 9 =
30 ÷ 3 =	132 ÷ 11 =	60 ÷ 10 =

Numeracy
Minute Quiz 5-6 C

Name:
Date: Period:

Solve the following division problems. You have exactly one minute!

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70 ÷ 7 =	88 ÷ 11 =	90 ÷ 9 =
24 ÷ 3 =	24 ÷ 6 =	63 ÷ 9 =
30 ÷ 3 =	132 ÷ 11 =	60 ÷ 10 =

Numeracy | Name:
Warm-up 5-6 | Date: | Period:

Solve each proportion by finding the missing piece.

1) $\frac{3}{4} = \frac{n}{100}$

2) $\frac{25}{100} = \frac{8}{n}$

3) $\frac{n}{75} = \frac{16}{100}$

4) $\frac{80}{100} = \frac{n}{20}$

Numeracy | Name:
Warm-up 5-6 | Date: | Period:

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1) $\frac{3}{4} = \frac{n}{100}$

2) $\frac{25}{100} = \frac{8}{n}$

3) $\frac{n}{75} = \frac{16}{100}$

4) $\frac{80}{100} = \frac{n}{20}$

Numeracy | Name: **Teacher's Edition**
Notes #5-6 – Percent Problems: Proportions | Date: | Period:

Introduction

There are three types of percent problems:

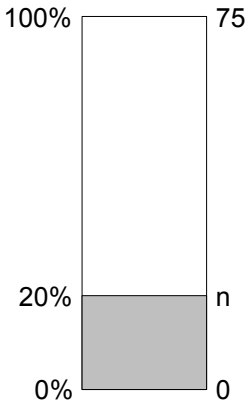
Percent Problem	Example
Finding Part of a Whole	What is 20% of 75?
Finding a Percent	30 is what percent of 40?
Finding a Whole Amount	24 is 80% of what number?

There are two ways to solve percent problems:

- Proportions (Today)
- Percent Equations (Next Lesson)

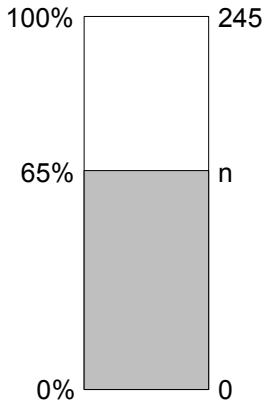
Finding Part of a Whole

Ex: What is 20% of 75?



$$\frac{20}{100} = \frac{n}{75}$$
$$75 \cdot \frac{20}{100} = \frac{n}{75} \cdot 75$$
$$\frac{1500}{100} = n$$
$$15 = n$$

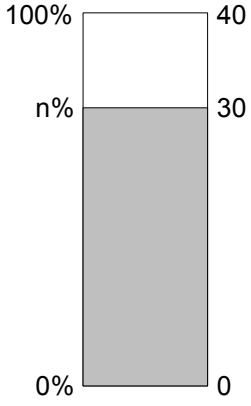
Ex: What is 65% of 245?



$$\frac{65}{100} = \frac{n}{245}$$
$$245 \cdot \frac{65}{100} = \frac{n}{245} \cdot 245$$
$$\frac{15925}{100} = n$$
$$159.25 = n$$

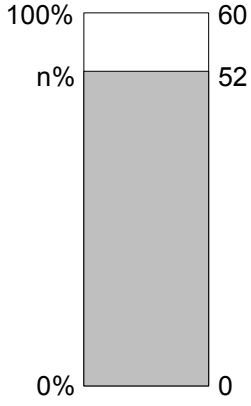
Finding a Percent

Ex: 30 is what percent of 40?



$$\frac{n}{100} = \frac{30}{40}$$
$$100 \cdot \frac{n}{100} = \frac{30}{40} \cdot 100$$
$$n = \frac{3000}{40}$$
$$n = 75$$
$$\text{So, } n = 75\%$$

Ex: 52 is what percent of 60?

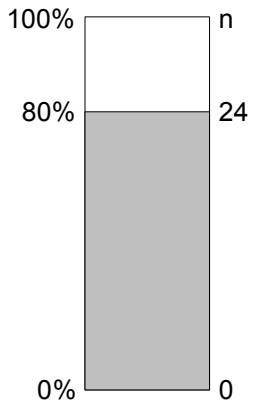


$$\frac{n}{100} = \frac{52}{60}$$
$$100 \cdot \frac{n}{100} = \frac{52}{60} \cdot 100$$
$$n = \frac{5200}{60}$$
$$n = 86.\overline{6}$$
$$\text{So, } n \approx 86.7\%$$

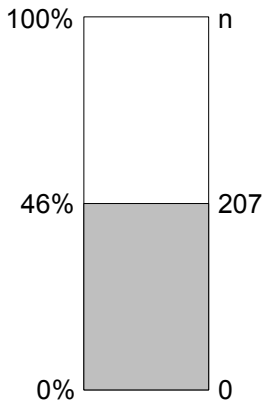
Finding a Whole Amount

Ex: 24 is 80% of what number?

Ex: 207 is 46% of what number?



$$\frac{80}{100} = \frac{24}{n}$$
$$n \cdot \frac{80}{100} = \frac{24}{n} \cdot n$$
$$\frac{80n}{100} = 24$$
$$n = \frac{24 \cdot 100}{80}$$
$$n = \frac{2400}{80}$$
$$n = 30$$



$$\frac{46}{100} = \frac{207}{n}$$
$$n \cdot \frac{46}{100} = \frac{207}{n} \cdot n$$
$$\frac{46n}{100} = 207$$
$$n = \frac{207 \cdot 100}{46}$$
$$n = \frac{20700}{46}$$
$$n = 450$$

Numeracy — Name: **Teacher's Edition**
Homework #5-6 – Percent Problems: Proportions — Date: Period:

Solve the following percent problems using proportions.

1. What is 80% of 20?

2. What is 40% of 60?

3. 4 is what percent of 20?

4. 75 is what percent of 250?

5. 8 is 25% of what number?

6. 14 is 35% of what number?

Numeracy Name:
Notes #5-6 – Percent Problems: Proportions Date: Period:

Introduction

There are _____ types of _____:

Percent Problem	Example

There are _____ ways to solve percent problems:

-
-

Finding Part of a Whole

Ex: Ex:

Finding a Percent

Ex: Ex:

Finding a Whole Amount

Ex: Ex:

Numeracy Name:
Homework #5-6 – Percent Problems: Proportions Date: Period:

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