

COMPARE PERCENTAGES/ FRACTIONS TO EACH OTHER

$$\frac{3}{8} > 14\%$$

GRADE **6**

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Classroom Procedure:

1. Begin by asking students if they speak another language. If possible, ask the students questions in another language or two. Ask them how two people who speak different languages could communicate? Explain that this happens with number forms, such as fractions, decimals, and percentages. Numbers are like other 'languages, and numbers can speak in math.
2. While reading the content pages, *Compare Fractions, Percentages, and Decimals*, reinforce the concept of comparing percentages and fractions to each other and give students additional examples of problems to help them practice. Use the additional resources to enhance understanding.
3. Introduce notes on *Compare Fractions, Percentages, and Decimals* to Each Other. Have students practice problems converting to decimals.
4. Follow the Activity page with students. Have students work with a partner on the activity. Give each pair of students a stack of index cards and have them record their answers on the Activity page. Students can make their own set of cards as a class. Choose various fractions and percents to write on each card. The lesson can be differentiated by making different sets with varying levels of difficulty.
5. Distribute Practice page. Check and review the students' responses as a class.
6. Distribute the Homework page. Have students share a few problems at the beginning of the next class to reinforce their understanding.
7. In closing, ask students to explain why two numbers must be in the same form to compare them. What does the word equivalent mean?

Lesson Title: **Compare Percentages/ Fractions to Each Other**

Subject: **Math**

Approximate Grade Level: **6**

Objectives: Students will convert percentages and fractions into decimals and then compare using $<$, $>$, or $=$. Students will understand that equivalent percentages, fractions, and decimals look different but have the same value.

State Educational Standards*

LB.MATH.CONTENT.6.RP.A.3.D,
LB.MATH.CONTENT.6.RP.A.3.C, &
LB.MATH.CONTENT.SMP.1

Class Sessions (45 minutes): 2

Teaching Materials/Worksheets:

Worksheets: *Compare Fractions, Percentages, and Decimals* content pages (2), Activity page (1), Practice page (2), Homework page (2)

Student Supplies: None

Prepare Ahead of Time:

Copy Materials
Create decks of cards
(*students can do this too*)

Options for Lesson: Have students play bingo using fractions, percents, and decimals, using the Additional Resources Content section's cards. For advanced students, begin to add decimals to the comparisons as well. Instead of using the cards for a game of war, have students line up based on a single card they are given as a class.

*Lessons are aligned to meet the education objectives and goals of most states. For more information on your state objectives, contact your local Board of Education or Department of Education in your state.



Teacher Notes

In this lesson, students compare and order percentages and fractions. Students learn why it is essential to convert numbers to the same form when comparing and ordering. Students will practice converting both percentages and fractions to decimals. Students get to battle a partner to see who can collect the most cards in a hands-on game. Use this lesson with another percent, decimal, and fraction lessons to practice their skills.

Compare Fractions, Percentages, and Decimals

When you want to compare two numbers, they must be in the same form.

Think of it this way – each number form speaks a different language. To ‘communicate,’ they have to be speaking the same language.

In this case, we convert the percentage and the fraction into a decimal to speak the same ‘language’ and be easily compared.

Converting a Fraction to a Decimal

To change a fraction to a decimal, divide the numerator by the denominator either using long division or a calculator.

$$\frac{7}{8} \longrightarrow 8 \overline{)7.000} = 0.875$$

Converting a Percent to a Decimal

To change a percent to a decimal, write the percent as a fraction and then divide the numerator by the denominator either using long division or a calculator.

You can also take the percent and move two decimal places to the left to quickly find the decimal form.

$$73\% \longrightarrow \frac{73}{100} \longrightarrow 0.73$$

You may be wondering why we don’t just convert the percentage to a fraction or the fraction to a percent and then compare. It seems like it would be easier, but often times it isn’t!

Remember that to compare two fractions, they must have the same denominator. Doing this can take more time than converting to a decimal.

Compare Fractions, Percentages, and Decimals

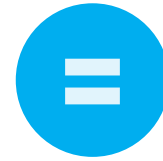
Don't forget the three basic symbols used to compare numbers!



Greater than



Less than



Equal to

Let's try out our new comparing skills!

Compare $\frac{3}{8}$ and 14%.

Convert to a Decimal:

$\begin{array}{r} .375 \\ 8 \overline{) 3.000} \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$	$\frac{3}{8} \rightarrow \text{Dividend}$ $\frac{3}{8} \rightarrow \text{Divisor}$ $\frac{3}{8} = \mathbf{0.375}$	$14\% = \frac{14}{100} = 0.14$
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The answer is $\frac{3}{8} > 14\%$ because 0.375 is greater than 0.14.

There are times when you may be working with **improper fractions**.

Compare $\frac{5}{4}$ and 90%.

$$\frac{5}{4} = 5 \div 4 = 1.25$$
$$90\% = \frac{90}{100} = 0.9$$

The answer is $\frac{5}{4} > 90\%$ because 1.25 is greater than 0.9.

You may also find yourself working with **percentages that are over 100**.

Compare $\frac{2}{3}$ and 136%.

$$\frac{2}{3} = 2 \div 3 = 0.67$$
$$136\% = \frac{136}{100} = 1.36$$

The answer is $\frac{2}{3} < 136\%$ because 0.67 is less than 1.36.



Activity

Name _____ Date _____



Instructions: Each player flips over a card, and whoever has the highest card wins both cards. Students can make cards or go to <https://digitallesson.com/games/GameFDPBingo.pdf>

Player One	Player Two	Winner!



Instructions: Your school took a survey of different activities students wanted to do in gym class.

Football	$\frac{4}{5}$
Soccer	34%
Dodgeball	87%
Track	$\frac{2}{3}$
Volleyball	$\frac{1}{8}$

Which activity did more students want to do? Circle and explain your answer.

- Football or Volleyball _____
- Dodgeball or Track _____

Which activity did fewer students want to do?

- Soccer or Dodgeball _____
- Track or Volleyball _____

Write the activities in descending order.



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Football	$\frac{4}{5}$
Soccer	34%
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Volleyball	$\frac{1}{8}$

Which activity did more students want to do? Circle and explain your answer.

- Football or Volleyball $0.8 > 0.125$
- Dodgeball or Track $0.87 > 0.67$

Which activity did fewer students want to do?

- Soccer or Dodgeball $0.34 < 0.87$
- Track or Volleyball $0.67 > 0.125$

Write the activities in descending order.

Dodgeball (0.87), Football (0.8), Track (0.67), Soccer (0.34), Volleyball (0.125)

Dodgeball > Football > Track > Soccer > Volleyball



Homework

Name _____ Date _____

Instructions: Answer the following problems using $<$, $>$, or $=$.

$\frac{1}{4}$ 23%	$\frac{9}{10}$ 90%
$\frac{6}{7}$ 84%	12% $\frac{1}{9}$
102% $\frac{11}{12}$	$\frac{6}{5}$ 73%
100% $\frac{8}{8}$	$\frac{3}{4}$ 77%
$\frac{2}{4}$ 51%	10% $\frac{2}{8}$
170% $\frac{10}{5}$	$\frac{1}{11}$ 11%
18% $\frac{1}{6}$	$\frac{10}{12}$ 80%



Instructions: Answer the following problems using $<$, $>$, or $=$.

$$\frac{1}{4} > 23\%$$

$$\frac{9}{10} = 90\%$$

$$\frac{6}{7} > 84\%$$

$$12\% > \frac{1}{9}$$

$$102\% > \frac{11}{12}$$

$$\frac{6}{5} > 73\%$$

$$100\% = \frac{8}{8}$$

$$\frac{3}{4} < 77\%$$

$$\frac{2}{4} < 51\%$$

$$10\% < \frac{2}{8}$$

$$170\% < \frac{10}{5}$$

$$\frac{1}{11} < 11\%$$

$$18\% > \frac{1}{6}$$

$$\frac{10}{12} > 80\%$$