

TEACHER'S GUIDE

MATH SERIES
PERCENTAGES: That Make Sense
22 Minutes

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FOR USE IN: Mathematics

LEVEL: Grades 7-9, Advanced Grade 6

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EDUCATIONAL OBJECTIVES:

To help students understand how to:

Convert percentages into decimals and fractions

Convert decimals and fractions into percentages

BACKGROUND INFORMATION:

Percentages are one of the most widely used forms of representing data in economics, industry, and everyday life. Therefore, the ability to use percentages is one of the key skills necessary for everybody. All students should be taught to understand formulas containing percentages, to convert fractions and decimals into percentages, to find quantities equal to given percentages, etc.

BEFORE SHOWING THE VIDEO:

The video contains several optional pauses where the students are presented with calculations to complete, while the VCR may be placed on pause. After the pause, correct answers are given. If the teacher plans to use these pauses, the students may be requested to have paper and pens available before starting the video. For a more intensive interaction between students and parts of the video, the teacher may wish to pause the tape after the presentation of a particular concept to inquire if the students have understood it; and/or ask the students before starting the video to signal the teacher to stop at any point for clarification. The video may also be shown in its entirety without pause either as an introduction or a review of the subject. It is always helpful if teachers are able to view the video before showing it to the class.

Some practical examples of the use of percentages might be discussed. For example:

- The percentage of a sales tax in your state, if any.
- The discount percentage off regular prices in a sale.
- The percentage change in the local school district's budget this year over last year.
- The percentage of inflation, or deflation, in retail prices for comparable periods.

It ought to be pointed out that everybody has seen such examples of percentages, and that the following video will explain what they mean.

CONTENT OF THE VIDEO:

Introducing percentages by showing examples of their widespread application in everyday life from: the percentage of cappuchinos to regular coffee that a coffee shop calculates it sells, to the percentage of sharks to all of the fish contained in an aquarium, our young guide then goes on to illustrate:

1. The meaning of a percentage as a number out of one hundred
2. Writing a percentage as a fraction out of 100
3. Reducing a fraction to its simplest form
4. Converting a percentage to a decimal number
5. Converting a decimal number to a percentage
6. Converting a fraction into a percentage
7. Calculating a percentage of a given quantity.

AFTER SHOWING THE VIDEO:

These are some exercises, which may be offered:

Some exercises can be offered.

1. If you had to represent 45% as a fraction, which of the following would be the best answer?

a) $\frac{4}{7}$, b) $\frac{45}{100}$, c) $\frac{20}{9}$, d) $\frac{9}{20}$. Explain your answer.

2. Convert these percentages into fractions: 32%, 60%, 25%, 4.5%.

3. Convert these percentages into decimals: 26%, 31%, 114%.

4. Convert the following decimals into percentages: 0.61, 0.3, 2.12

5. Convert the following fractions into percentages:

$$\frac{4}{5}, \text{ e) } \frac{3}{8}, \text{ f) } \frac{5}{7}$$

6. Lisa spent \$1000 while attending a conference. Among other things, she paid \$350 for her plane tickets. What percentage of her total expenses did she spend on the tickets?
7. There are 12 red and 13 blue pencils in a box. What percentage of all the pencils in the box, are red?
8. The cost of all purchases made by a family was equal \$500, and computer software constituted 24% of this sum. How much was spent on computer software?
9. The bill in the restaurant was equal to \$120. Given that the customer wants to leave 15% as a tip, how much should be left?

EXPLORING AND INVESTIGATING:

The following questions may be used to lead students into a more detailed discussion:

Explain why the following sentences are senseless:

- a) Ann spent 6 hours on-line, and she spent 150% of this time searching for interesting new games
 - b) John spent less than 0% of his money on candy
 - c) Kate had \$200; she spent 35% of this sum to purchase books. In particular, she spent \$80 on math books.
2. Write an essay entitled "A Day of Percentages" about a day in the life of a person in which he or she has at least 5 experiences involving percentages of dollar amounts, and in which it is important to understand how to convert the percentages into absolute dollar amounts, decimals, or fractions.

The Math Series consists of 10 videos:

ALGEBRA: A Piece of Cake Part 1

ALGEBRA: A Piece of Cake Part 2

SLOPES: That's a Bit Steep!

PERCENTAGES That Make Sense

LINEAR EQUATIONS and Their Graphs: Let's Get It Straight Part 1

LINEAR EQUATIONS and Their Graphs: Let's Get It Straight Part 2

INTEGER OPERATIONS: Into the Negative Zone Part 1 Adding and Subtracting

INTEGER OPERATIONS: Into the Negative Zone Part 2 Multiplying and Dividing

FACTORING IS FANTASTIC Part 1: Common Factors

FACTORING IS FANTASTIC Part 2: Quadratic Trinomials

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