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ABSTRACT

This teacher guide is part of the materials prepared for an individualized program for ninth-grade algebra and basic mathematics students. Materials written for the program are to be used with audiovisual lessons recorded on tape cassettes. For an evaluation of the program, see ED 086 545. In this guide, the teacher is provided with objectives for each topic area and guided to materials written for a given topic. Three short criterion tests are included for each topic covered. The work in this package reviews writing fractions as decimal numbers and presents problems on addition and subtraction of decimal numbers. This work was prepared under an ESEA Title III contract. (JP)

# BASIC MATH I

## PACKAGE 01-07

## ADDITION AND SUBTRACTION USING DECIMAL NUMERALS

Prepared by

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# Addition And Subtraction
# Using
# Decimal Numerals

Decimal numerals give us another way to name fractions. Often, calculations done with decimal fractions are easier than the same calculations performed with the fractional numerals of arithmetic. For instance, it is not necessary to find a least common denominator when adding and subtracting decimals.

The Goal of package 01-07 is:

For you to be able to add and subtract decimal numerals accurately, and to be able to use those skills to solve applied problems.

PACKAGE OBJECTIVES:

1. Given a problem involving writing fractional numerals from decimal numerals or decimal numerals from fractional numerals, solve it.
2. Given a decimal numeral, round it to the nearest tenth, hundredth, or thousandth.
3. Given a problem involving the addition of decimal numerals, write the sum, and solve related applied problems.
4. Given a problem involving subtraction of decimal numerals, write the difference and solve related applied problems.

I. U. #01-07-01

Decimal Numerals

You will need to recall:

That our number system is a base 10 system. That is, we start to count over again every ten numerals, thus we count:

0, 1, 2, 3, 4, 5, 6, 7, 8, 9,
10, 11, 12, 13, 14, 15, 16, 17, 18, 19,
20, 21, 22, 23, etc.

Because of this it is very convenient to use decimal numerals, in which the first digit to the right of the decimal point names the tenths, the second the hundredths, the third the thousandths, etc. This idea should become more apparent as you study this package.

OBJECTIVES:

1. Given either of the two word names like five hundred thirty-three and sixteen hundredths, or five three three point one six, write the decimal numeral.

2. Given a decimal numeral, write two word names for it.

3. Given a fractional numeral convert it to a decimal numeral.

4. Given a decimal numeral less than one convert it to a fractional numeral.

5. Given a mixed numeral convert it to a decimal numeral.

6. Given a decimal numeral greater than one convert it to a mixed numeral.

7. Given a problem involving writing fractional numerals from decimals or decimal numerals from fractional numerals, solve it.

ACTIVITITES:

1. Study pages 207 - 209 and do margin exercises 1 - 35. (Objectives 1 - 7)

2. Do exercise set 1, odd problems, pages 217, 218. (Objectives 1 - 7)

Criterion Test 01-07-01-01

1. Write as a decimal numeral.

(a) twenty-four and seventy-six hundredths

(b) Three six five point zero two three

2. Write two word names for.

67.253

3. Convert to a decimal numeral.

(a) $\frac{5}{10}$ (b) $\frac{63}{100}$

4. Convert to a fractional numeral.

(a) .025 (b) .15

5. Convert to a decimal numeral.

$35\frac{317}{1000}$

6. Convert to a mixed numeral.

25.625

7. (a) Write as a decimal.

$\frac{13}{100}$

(b) Write as a fractional numeral.

.20

Criterion Test 01-07-01-02

1. Write as a decimal.

   (a) seven hundred thirty-two and sixteen hundredths

   (b) six seven three point nine six five

2. Write two word names for.

   123.456

3. Convert to a decimal numeral.

   (a) $\frac{71}{100}$ (b) $\frac{213}{1000}$

4. Convert to a fractional numeral.

   (a) .75 (b) .76

5. Convert to a decimal numeral

   $24\frac{511}{1000}$

6. Convert to a mixed numeral.

   17.45

7. (a) Write as a decimal.

   $\frac{427}{1000}$

   (b) Write as a fractional numeral.

   .375

Criterion Test 01-07-01-03

1. Write as a decimal.

   (a) seven hundred and thirty-six hundredths

   (b) one six two point two nine two

2. Write two word names for.

   987.654

3. Convert to a decimal numeral.

   (a) $\frac{101}{1000}$ (b) $\frac{15}{1000}$

4. Convert to a fractional numeral.

   (a) .99 (b) .90

5. Convert to a decimal numeral.

   $13\frac{34}{100}$

6. Convert to a mixed numeral.

   13.2

7. (a) Write as a decimal.

   $\frac{5}{100}$

   (b) Write as a fractional numeral.

   6.2 5

Answers to Criterion Tests

Test 01-07-01-01

1. (a) 24.76 (b) 365.023

2. sixty-seven and two hundred fifty-three thousandths

   six seven point two five three

3. (a) .5 (b) .63

4. (a) $\frac{1}{40}$ (b) $\frac{3}{20}$

5. 35.317

6. $25\frac{5}{8}$

7. (a) .13 (b) $\frac{1}{5}$

Test 01-07-01-02

1. (a) 732.16 (b) 673.965

2. one hundred twenty-three and four hundred fifty-six thousandths

   one two three point four five six

3. (a) .71 (b) .213

4. (a) $\frac{3}{4}$ (b) $\frac{19}{25}$

5. 24.511

6. $17\frac{9}{20}$

7. (a) .427 (b) $\frac{3}{8}$

Answers to Criterion Tests (Cont.)

Test 01-07-01-03

1. (a) 700.36 (b) 162.292

2. nine hundred eighty-seven and six hundred fifty-four thousandths

   nine eight seven point six five four

3. (a) .101 (b) .015

4. (a) $\frac{99}{100}$ (b) $\frac{9}{10}$

5. 13.34

6. $13\ \frac{1}{5}$

7. (a) .05 (b) $6\ \frac{1}{4}$

I. U. #01-07-02

# Order and Rounding

OBJECTIVES:

1. Given two arithmetic numbers named by decimals identify the larger.

2. Given a decimal numeral, round it to the nearest tenth, hundredth, or thousandth.

ACTIVITIES:

1. Study pages 210 to 212, AAMA, and do margin exercises 36 - 86. (Objectives 1, 2)

2. Write odd numbered exercises in exercise set 2, pages 219, 220. (Objectives 1, 2)

Criterion Test 01-07-02-01

1. Identify the larger.

   (a) .6 , .58 (b) .001 , .0009

   (c) .75 , .0999 (d) .0999 , .1000

2. (a) Round to nearest tenth.

   25.25

   (b) Round to nearest thousandth.

   34.7464

Criterion Test 01-07-02-02

1. Identify the larger.

   (a) .259 , .295 (b) .202 , .220

   (c) .8 , .799 (d) .1 , .999

2. (a) Round to the nearest thousandth.

   35.93454

   (b) Round to the nearest hundredth.

   28.4545

   (c) Round to the nearest tenth.

   28.333

Criterion Test 01-07-02-03

1. Identify the larger.

   (a) .001 , .0009 (b) .01 , .09

   (c) .01 , .9 (d) .1 , .9

2. (a) Round to nearest tenth.

   35.765

   (b) Round to nearest hundredth.

   28.917

   (c) Round to nearest thousandth.

   19.1875

Answers to Criterion Tests

Test 01-07-02-01

1. (a) .6 (b) .001 (c) .75 (d) .1000

2. (a) 25.3 (b) 34.746

Test 01-07-02-02

1. (a) .295 (b) .220 (c) .8 (d) .999

2. (a) 35.935 (b) 28.45 (c) 28.3

Test 01-07-02-03

1. (a) .001 (b) .09 (c) .9 (d) .9

2. (a) 35.8 (b) 28.92 (c) 19.188

I. U. #01-07-03

# Addition with Decimals

You will need to recall:

Your basic addition combinations and how to add whole numbers when renaming is necessary.

OBJECTIVES:

1. Given a problem involving addition of decimal numerals, estimate the sum by rounding.

2. Given a problem involving addition of decimal numerals, write the sum.

ACTIVITIES:

1. Study pages 213, 214 and do margin exercises 87 - 103. (Objectives 1, 2)

2. Write exercise set 3, pages 221, 222, the odd numbered exercises. (Objectives 1, 2)

Criterion Test 01-07-03-01

1. (a) Estimate the sum by rounding to the nearest tenth.

   .34 + 2.07 + 1.33

   (b) Estimate the sum by rounding to the nearest hundredth.

   3.566 + 2.554 + 1.543

   (c) Estimate the sum by rounding to the nearest thousandth.

   1.5432 + 9.8675 + 5.5555

2. Add.

   (a)
   $$\begin{array}{r} 25.45 \\ 1.03 \\ \underline{20.09} \end{array}$$

   (b) 52.367 + 1.89 + 176.001

   (c) Solve.

   On a trip Joe bought the following amounts of gas: 10.8 gallons, 9.5 gallons, and 12.7 gallons. How much did he buy?

Criterion Test 01-07-03-02

1. (a) Estimate the sum by rounding to the nearest tenth.

   .04 + .05 + 1.06

   (b) Estimate the sum by rounding to the nearest hundredth.

   1.345 + 2.543 + 3.009

   (c) Estimate the sum by rounding to the nearest thousandth.

   5.4218 + 8.8888 + 7.5432

2. Add.

   (a) .445 + 544 + 12.102 (b) .012 + 21.05 + 5.111

   (c) Solve.

   A farmer used 25.3 bushels of seed corn on one field, 18.3 bushels on another, and 19.9 on another. How much did he use?

Criterion Test 01-07-03-03

1. (a) Estimate the sum by rounding to the nearest tenth.

   21.7395 + 21.01 + 21.8811

   (b) Estimate the sum by rounding to the nearest hundredth.

   21.7395 + 21.0100 + 21.8811

   (c) Estimate the sum by rounding to the nearest thousandth.

   21.7395 + 21.0100 + 21.8811

2. Add.

   (a) 21.7395 + 21.0100 + 21.8811

   (b) 100.001 + 2.21 + 3.100

   (c) Solve.

   Jack ran a mile run in 1.12 minutes the first quarter mile, 1.13 minutes the second quarter, 1.15 minutes the third quarter, and 1.14 minutes the last quarter mile. How many minutes did it take him to run the mile?

## Answers to Criterion Tests

Test 01-07-03-01

1. (a) 3.7 (b) 7.66 (c) 16.967

2. (a) 46.57 (b) 230.258 (c) 33.1 gallons

Test 01-07-03-02

1. (a) 1.2 (b) 6.90 (c) 21.854

2. (a) 556.547 (b) 26.173 (c) 63.5 bushels.

Test 01-07-03-02

1. (a) 64.6 (b) 64.63 (c) 64.631

2. (a) 64.6306 (b) 105.311 (c) 4.54 minutes

I. U. #01-07-04

# Subtraction With Decimals

You will need to recall:

How to find the difference between two whole numbers, renaming if necessary.

OBJECTIVES:

1. Given a problem involving subtraction with decimal numerals, write the difference, and solve related applied problems.

ACTIVITIES:

1. Study pages 215, 216, AAMA, and do margin exercises 104 - 119. (Objective 1)

2. Write the odd numbered exercises in exercise set 4, pages 225 - 228. (Objective 1)

Criterion Test 01-07-04-01

1. Write the difference.

   (a) 100.12 - .112 (b) 36.2 - 16.28

   (c) Solve.

   If Joe can run the 100 yard dash in 11.5 seconds and Tom can run it in 10.8 seconds, how much faster is Tom than Joe?

Criterion Test 01-07-04-02

1. Write the difference.

   (a) 1.409 - .999 (b) 10.045 - .329

   (c) Solve.

   A video cassette will record ten minutes of material. The three segments of a lesson are 2.5, 3.7, and 3.6 minutes long. How many minutes of playing time are left on the cassette?

Criterion Test 01-07-04-03

1. Write the difference.

   (a) 2.806 - .947 (b) 254.8 - 2.007

   (c) Solve.

   Albert's allowance is $5.00 per week. He spends $1.25 for lunch, $1.50 for a show, and $1.73 for gasoline. How much of his allowance does he have left?

Answers to Criterion Tests

Test 01-07-04-01

1. (a) 100.008 (b) 19.92 (c) .7 seconds

Test 01-07-04-02

1. (a) .410 (b) 9.716 (c) .2 minutes

Test 01-07-04-03

1. (a) 1.859 (b) 252.793 (c) $.52

THE END

Package 01-07