Basic Math Skills Supplement

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RCCTA Resource Center for
CareerTech Advancement

Objective Sheet

| **Unit Objective** | After completing this unit, the student should be able to solve basic math problems and read English and metric rules. The student should demonstrate these competencies by completing the assignment sheets and by scoring a minimum of 85 percent on the Written Test. |

Specific Objectives

After completing this unit, the student should be able to:

1. Match terms associated with math and measuring to their correct definitions.

2. Match symbols used in math problems with their names.

3. Label the place values of a whole number.

4. Add whole numbers to solve problems.

5. Add Whole Numbers. (Assignment Sheet 1)

6. Subtract whole numbers to solve problems.

7. Subtract Whole Numbers. (Assignment Sheet 2)

8. Multiply whole numbers to solve problems.

9. Multiply Whole Numbers. (Assignment Sheet 3)

10. Divide whole numbers to solve problems.

11. Divide Whole Numbers. (Assignment Sheet 4)

12. Distinguish among types of fractions.

13. Reduce fractions to lowest terms.

14. Reduce Fractions to Lowest Terms. (Assignment Sheet 5)

15. Convert fractions and mixed numbers.

16. Convert Fractions and Mixed Numbers. (Assignment Sheet 6)

17. Add fractions to solve problems.

18. Add Fractions. (Assignment Sheet 7)

19. Subtract fractions to solve problems.

20. Subtract Fractions. (Assignment Sheet 8)

Objective Sheet

21. Multiply fractions to solve problems.

22. Multiply Fractions. (Assignment Sheet 9)

23. Label place values in a decimal number.

24. Add decimal numbers to solve problems.

25. Add Decimal Numbers. (Assignment Sheet 10)

26. Subtract decimal numbers to solve problems.

27. Subtract Decimal Numbers. (Assignment Sheet 11)

28. Multiply decimal numbers to solve problems.

29. Multiply Decimal Numbers. (Assignment Sheet 12)

30. Divide decimals to solve problems.

31. Divide Decimal Numbers. (Assignment Sheet 13)

32. Convert decimal fractions to common fractions.

33. Convert Fractions and Percentages. (Assignment Sheet 14)

34. Solve percentage problems.

35. Solve Percentage Problems. (Assignment Sheet 15)

36. Match metric prefixes with their values.

37. Solve problems about English-Metric conversion charts.

* Permission to duplicate this supplement is granted.

Information Sheet

Objective 1

Terms and definitions associated with math and measuring

a. **Whole number (integer)**—Any of the natural numbers, both positive and negative, that represents a complete item

Example: 25 is a whole number as opposed to $^3/_4$, a fraction or part of a whole.

b. **Digit**—Any one of the ten symbols, 0 to 9, by which all numbers can be expressed

c. **Fraction**—Part of a whole; represents one or more equal parts of a unit

Examples:
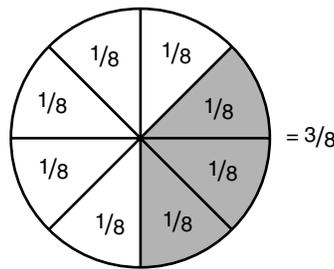
Figure 1   Figure 2
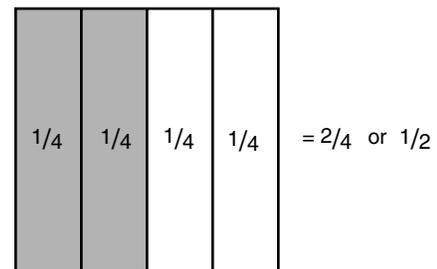
d. **Decimal**—Fraction with an unwritten denominator of 10 or some power of 10; indicated with a point before the number

Examples: $0.1 = {}^1/_{10}$ $0.06 = {}^6/_{100}$ $0.003 = {}^3/_{1000}$

e. **Addition**—Process of totaling two or more numbers to find another number called a sum

Examples: $3 + 5 + 9 = 17$

f. **Subtraction**—Opposite operation of addition

Examples: $8 - 4 = 4$ as apposed to $4 + 4 = 8$

g. **Multiplication**—Abbreviated process of adding a number to itself a specified number of times

Examples: $6 \times 3 = 18$ as apposed to $6 + 6 + 6 = 18$

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h. **Division**—Opposite operation of multiplication

Example: 16 ÷ 2 = 8 as apposed to 8 x 2 = 16

i. **Percent**—One part in a hundred; reckoned on the basis of a whole divided into one hundred parts

j. **Ratio**—Relationship in quantity, amount, or size between two or more things

k. **Proportional**—Being relatively equal in size or quantity

Example: 1:1:3 = 0.5:0.5:1.5

l. **Meter**—Metric unit used to measure length

m. **Liter**—Metric unit used to measure capacity

Objective 2

Interpretations of symbols and words used in math problems

a. Symbols

- Plus sign (addition)   +

- Minus sign (subtraction)   –

- Times sign (multiplication)   X

- Division sign   ÷

- Division frame $\overline{)}$

- Equal sign   =

- Decimal point   .

- Percent symbol   %

- Ratio symbol   :

- Pi symbol π

b. Words

- The word "is" means "equals."

Example: 3 + 5 is 8 (3 + 5 = 8)

- The word "and" between two numbers usually means to add them together.

Example: 2 and 5 is 7 (2 + 5 = 7)

- The word "less" or "less than" between two numbers means to subtract them.

  Example: 8 less 5 is 3 (8 − 5 = 3)

- The word "by" indicates a multiplication problem.

  Example: 4 by 3 is 12 (4 x 3 = 12)

* The word "into" means to divide the numbers.

  Example: 3 into 12 is 4 (3 $\overline{)12}$ = 4)

Objective 3

Place values of whole number

✔ **Note**: The position of a digit in a number shows how much that digit is worth. These positions are called *place values.*

Example:

```
                                    Units (Ones)───────┐
                                 Tens──────────┐        │
                            Hundreds───────┐   │        │
                        Thousands──────┐   │   │        │
                  Ten Thousands────┐   │   │   │        │
            Hundred Thousands───┐  │   │   │   │        │
               Millions──────┐  │  │   │   │   │        │
                             X,  X  X   X,  X   X        X
```

```
                      4,   3   0   6,   9   2   4
        Millions──────────┘    │   │    │   │   │
  Hundred Thousands───────────┘    │    │   │   │
      Ten Thousands────────────────┘    │   │   │
         Thousands─────────────────────┘    │   │
            Hundreds────────────────────────┘   │
                 Tens───────────────────────────┘
        Units (Ones)────────────────────────────┘
```
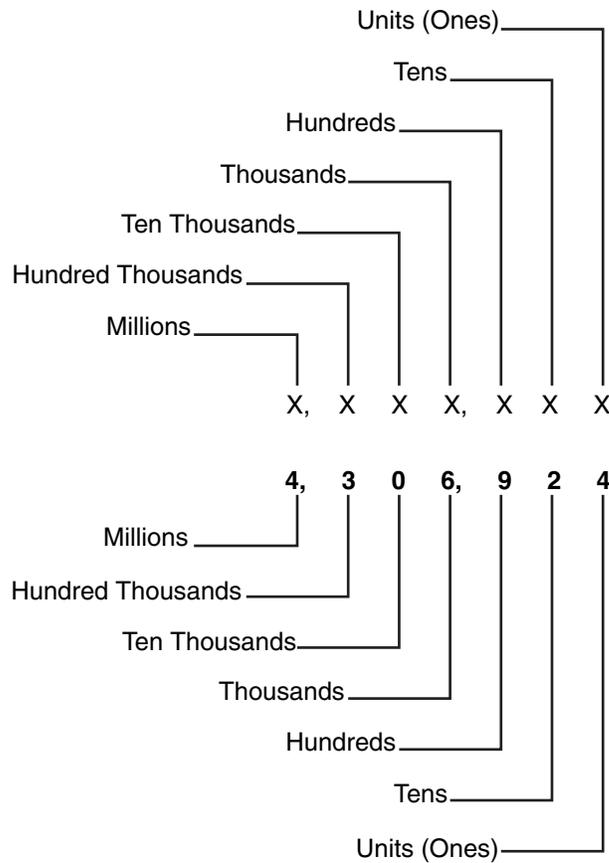
✔ **Note**: The number in this example is four million, three hundred six thousand, nine hundred twenty-four.

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Objective 4

Adding whole numbers

a. Set up problem by writing units under the units place, tens under the tens place, and so on.

Example: Add whole numbers 1632, 17, 550.

```
  1632
    17
+ 550
```

b. Add each column separately, beginning at top of units column.

```
Example:    1632        1632
              17          17
          + 550       + 550
              9          99
```

c. If the sum of any column is two or more digits, write the units digit in your answer and carry the remaining digit(s) to the top of next column to the left.

```
Example:                1  ←——— Carry remaining digit.
                1632    1632
                  17      17
Write units   + 550    + 550
digit  ——→     199      199
```

d. Add any carried digit(s) above the column with that column.

```
Example:    1     Carried Digit
         1632
           17
       + 550
         2199
```

Objective 5   **Add Whole Numbers. (Assignment Sheet 1)**

Objective 6   **Subtracting whole numbers**

a. Set up problem by writing units under the units place, tens under the tens place, and so on.

   ✔ **Note**: Top number in the problem (original number} is almost always larger than the bottom number (subtracted number).

Example: Subtract 91 from 123.

```
  123    Original Number
– 91    Subtracted Number
```

b. Subtract each column separately, beginning at bottom of units column.

Example:
```
 123
– 91  ↑
   2
```

c. If a digit in the subtracted number is larger than the digit above it, "borrow" 1 from the top digit in the next column to the left, decreasing that digit by one and increasing the digit being subtracted by ten.

Example:
```
 123
– 91
  32
```

d. If there is nothing to borrow in the next column (column contains a zero), first borrow for that column for its next left column.

Example:
```
 906        906        906        906
– 318      – 318      – 318      – 318
             8          88        588
```

e. Check your subtraction by adding your answer to the subtracted number.

Example: Problem   Check

```
 271  ↑ Original Number          107    Answer
– 164  ↑ Subtracted Number      +164    Subtracted Number
 107    Answer                   271    Original Number
```

✔ **Note**: If you have solved the problem correctly, your check answer should be the same as the original number.

Objective 7 **Subtract Whole Numbers. (Assignment Sheet 2)**

Objective 8 **Multiplying whole numbers**

a. Set up problem by writing larger number (original number) above the smaller number (multiplier), writing units under the units place, tens under the tens place, and so on.

✔ **Note**: You will get the correct answer (product) no matter which number is placed above the other, but the faster method places the larger above the smaller.

Example: Multiply the number 53 by 4.

```
 53    Original Number
x 4    Multiplier
```

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b.   If the multiplier contains only one digit, multiply each digit in the original number by it, working from right to left.

- Multiply units digit in original number by multiplier.

- Write answer units digit and insert necessary carry digit above next left column in original number as required.

      Example: **1**
                    53
                     ↑
                    x 4
                     2

- Multiply tens digit by multiplier and add carried digit as required.

      Example: **1**
                    53
                     ↑
                    x 4
                    212

c.   If the multiplier contains more than one digit, find partial products.

- Multiply each digit in original number by each digit in multiplier, moving from right to left.

- Align partial products so that right-hand digit of each is directly under its corresponding digit in the multiplier.

- When multiplying a double digit number, use a zero as a placeholder

      Example: Multiply the numbers 174 x 42.

	1		**1**	**1**	**2**
174	174	174	174	174	174
↑	↑	↖	↑	↑	↖
x 42	x 42	x 42	x 42	x 42	x 42
8	48	348	348	348	348
			60	960	6960

                        ↑   ↑   ↑
                  First Partial   Place   Second Partial
                  Product   Holder   Product

d. Add the partial products.

    Example: 174
              x 42
              ——
               348
            + 6960
            ———
              7308   Answer (Product)

Objective 9

Multiply Whole Numbers. (Assignment Sheet 3)

Objective 10

Dividing whole numbers

a. Set up problem by writing original number (number to be divided) inside a division frame, and by writing divisor (number you are dividing by) outside frame.

    Example: How many times will 34 go into 3347?

                Divisor 34)‾3347‾   Original Number

b. Determine how many times the divisor will go into the first digit of the original number. If it will not, write a zero in the answer space directly above the first digit. Then determine how many times the divisor will go into the first two numbers of the original number.

    ✔ **Note**: Continue trying to divide the original number by the divisor until a set of digits can be divided. Remember to write a zero each time the set of digits cannot be divided.

    Example: 0
               34)‾3347‾   34 goes into 3 zero times.

                  00
               34)‾3347‾   34 goes into 33 zero times.

                 009
               34)‾3347‾   34 goes into 334 nine times.

c. Multiply the divisor by the answer (digit above frame); write this answer under the digit(s) that divisor went into, and subtract.

    Example: 34   Multiply divisor (34) by
                x 9   answer (9).
                ——
               306

                 009
               34)‾3347‾
               − 306
               ———
                  28

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d. Bring down next unused digit from original number, and place it to the right of the subtracted difference (remainder)—even if the remainder is zero.

Example:
```
      009
 34)3347
     306↓
     287
```

e. Determine how many times the divisor will go into this new number; write your answer in the answer space above the digit that was brought down.

Example
```
     0098
 34)3347
    3060
     287
```

f. Multiply the divisor by the last digit you wrote in the answer; write this product under the digits that divisor went into, and subtract.

Example:
```
      34     Multiply divisor (34) by
     x 8     answer (8).
     272
```

```
     0098
 34)3347
    3060       Write product under 287,
     287       the digits that divisor
   − 272       went into, and subtract.
     15
```

g. Continue this process until all numbers in original number are used.

h. Write any remaining subtracted difference as a remainder.

Example:
```
     0098
 34)3347
    3060
     287
   − 272
     15     Remainder
```

i.   Check your answer by multiplying your answer times the divisor and adding the remainder to this number.

✔ **Note**: If you have solved the problem correctly, your check answer should be the same as your original number.

Example	98	Answer
	x 34	Divisor
	392	
	294	
	3332	
	+ 15	Remainder
	3347	Check Answer (Same as Original Number)

Objective 11   **Divide Whole Numbers. (Assignment Sheet 4)**

Objective 12   **Distinguishing among types of fractions**

a.   **Proper**—Top number of fraction (numerator) is smaller than bottom number of fraction (denominator).

Examples: $\frac{7}{8}$ Numerator
                     Denominator

b.   **Improper**—Top number of fraction (numerator) is larger than bottom number of fraction (denominator,) or the same as the bottom number.

Examples: $\frac{9}{8}$ $\frac{16}{16}$

c.   **Mixed numbers**—Contain a whole number and a proper fraction.

Examples: 9 $\frac{1}{2}$, 1 $\frac{7}{8}$, 4 $\frac{3}{4}$

Objective 13   **Reducing fractions to lowest terms**—Divide the numerator and denominator by the largest whole number that will go into each evenly.

Examples: Reduce $\frac{4}{16}$ to its lowest terms.

$$\frac{4}{16} \quad \frac{4 \div 4}{16 \div 4} \quad \frac{1}{4}$$

✔ **Note**: The fraction $\frac{1}{4}$ is reduced to its lowest term because the numerator (1) and the denominator (4) cannot be divided by the same number.

Objective 14   **Reduce Fractions to Lowest Terms. (Assignment Sheet 5)**

Information Sheet

| **Converting mixed numbers and improper fractions**

    a.   Converting mixed numbers to improper fractions

- Multiply the whole number by the denominator of the fraction.

  Example: Convert 4 $^3/_8$ to an improper fraction.

          8 x 4 = 32

- Add your answer to the numerator.

  Example: 32 + 3 = 35

- Place this sum over the original denominator.

  Example: $\frac{35}{8}$ Improper Fraction

    b.   Converting improper fractions to mixed numbers

- Divide the numerator by the denominator.

  Example: Convert $^{18}/_{15}$ to a mixed number.

  $$\begin{array}{r} 01 \\ 15\overline{)18} \\ \underline{15} \\ 3 \end{array} \quad \text{Remainder}$$

- Place the remainder over the denominator.

  Example: $\frac{3}{15}$ Remainder / Denominator

- Reduce this fraction if necessary.

  Example: $\frac{3}{15} = \frac{3 \div 3}{15 \div 3} = \frac{1}{5}$

- Add the reduced fraction to the whole number obtained by dividing the numerator by the denominator.

  Example: $1 + \frac{1}{5} = 1\frac{1}{5}$ Mixed Number

| **Convert Fractions and Mixed Numbers. (Assignment Sheet 6)**

Objective 17	**Adding fractions**

a.   Like fractions

✔ **Note**: Like fractions are those having the same, or common, denominators.

Example: $^1/_4$ and $^2/_4$, $^5/_8$ and $^5/_8$, and $^1/_{16}$ and $^3/_{16}$

• Add the numerators.

• Place sum of numerators over common denominator.

• Convert to mixed numbers and reduce as required.

Example: Add $^1/_4$ and $^2/_4$.

$$\frac{1}{4} + \frac{2}{4} = \frac{1+2}{4} = \frac{3}{4}$$

Example: Add $^5/_8$ and $^5/_8$.

$$\frac{5}{8} + \frac{5}{8} = \frac{5+5}{8} = \frac{10}{8} = 10 \div 8 = 1\frac{2}{8} = 1\frac{1}{4}$$

Example: Add $^1/_{16}$ and $^3/_{16}$.

$$\frac{1}{16} + \frac{3}{16} = \frac{1+3}{16} = \frac{4}{16} = \frac{4 \div 4}{16 \div 4} = \frac{1}{4}$$

b.   Unlike fractions

Examples: $^{11}/_{12}$ and $^3/_9$, $^1/_8$ and $^3/_4$

• Change to like fractions.

— Find the lowest number into which each denominator can be divided evenly (lowest common denominator).

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— Multiply the numerators and denominators of each fraction by the number of times its denominator can be divided into the lowest common denominator.

Example: Add $^{11}/_{12}$ and $^3/_9$.

36 is lowest number into which both 12 and 9 can be divided evenly.

$36 \div 12 = 3$

$36 \div 9 = 4$

$$\frac{11}{12} = \frac{11 \times 3}{12 \times 3} = \frac{33}{36}$$

$$\frac{3}{9} = \frac{3 \times 4}{9 \times 4} = \frac{12}{36}$$

Example: Add $^1/_8$ and $^3/_4$.

8 is lowest number into which both 8 and 4 can be divided evenly.

$8 \div 8 = 1$

$8 \div 4 = 2$

$^1/_8$ remains as $^1/_8$ because 8 is the common denominator.

$$\frac{3}{4} = \frac{3 \times 2}{4 \times 2} = \frac{6}{8}$$

• Add like fractions and reduce or convert to mixed numbers as required.

Example: Add $^{11}/_{12}$ and $^3/_9$

$$\frac{11}{12} = \frac{33}{36} \text{ and } \frac{3}{9} = \frac{12}{36}$$

$$\frac{33}{36} + \frac{12}{36} = \frac{33 + 12}{36} = \frac{45}{36} = \frac{5}{4} = 1\frac{1}{4}$$

Example: Add $^1/_8$ and $^3/_4$

$$\frac{1}{8} \text{ remains } \frac{1}{8} \text{ and } \frac{3}{4} = \frac{6}{8}$$

$$\frac{1}{8} + \frac{6}{8} = \frac{1 + 6}{8} = \frac{7}{8}$$

c.   Mixed numbers

• Add whole numbers.

• Add fractions, first finding common denominators if necessary, and reduce or convert to mixed numbers as necessary.

• Add the sums of steps 1 and 2.

Example: Add 3 $\frac{1}{8}$ and 7 $\frac{3}{8}$

Add whole numbers:
3 + 7 = 10

Add fractions and reduce:

$\frac{1}{8} + \frac{3}{8} = \frac{1+3}{8} = \frac{4}{8} = \frac{1}{2}$

Add the sums of steps 1 and 2:

$10 + \frac{1}{2} = 10\frac{1}{2}$

Example: Add 4 $\frac{2}{3}$ and 1 $\frac{5}{6}$
Add whole numbers:
4 + 1 = 5

Find common denominator:

$\frac{2}{3} + \frac{5}{6} = \frac{4}{6} + \frac{5}{6}$

Add fractions, convert to mixed number, and reduce:

$\frac{4}{6} + \frac{5}{6} = \frac{9}{6} = 1\frac{3}{6} = 1\frac{1}{2}$

Add the sums of steps 1 and 2:

$5 + 1\frac{1}{2} = 6\frac{1}{2}$

Objective 18   **Add Fractions. (Assignment Sheet 8)**

Information Sheet

Objective 19	**Subtracting fractions**

a. Like fractions

- Subtract smaller numerator from larger numerator.

    Example: Subtract $^1/_{16}$ from $^7/_{16}$.

    $$7 - 1 = 6$$

- Place subtraction answer over common denominator.

    Example: $\frac{6}{16}$

- Reduce to lowest terms as required.

    Example: $\frac{6}{16} = \frac{3}{8}$

b. Unlike fractions

- Change to like fractions.

    Example: Subtract $^1/_2$ from $^3/_4$.

    $^3/_4$ remains the same because 4 is the common denominator.

    $$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$

- Subtract as for like fractions.

    $$\frac{3}{4} - \frac{2}{4} = \frac{3 - 2}{4} = \frac{1}{4}$$

- Reduce to lowest terms as required.

c. Mixed numbers

- Convert mixed numbers to like fractions.

    Example: Subtract $3 \, ^1/_2$ from $5 \, ^1/_8$.

    $$5\frac{1}{8} - 3\frac{1}{2} =$$

    $$5\frac{1}{8} - 3\frac{4}{8} =$$

- Borrow a one from the original whole number if needed, convert the one to a like fraction, and add it to the smaller fraction.

  ✔ **Note**: This step is needed only if the like fraction in the original number is smaller than the like fraction in the subtracted number.

  Example:

  $$5\,\tfrac{1}{8} - 3\,\tfrac{4}{8} = (4\,\tfrac{8}{8} + \tfrac{1}{8}) - 3\,\tfrac{4}{8}$$

  $$= 4\,\tfrac{9}{8} - 3\,\tfrac{4}{8}$$

- Subtract whole number from whole number and like fraction from like fraction.

  Example: $4\,\tfrac{9}{8} - 3\,\tfrac{4}{8} = 1\,\tfrac{5}{8}$

Objective 20

Subtract Fractions. (Assignment Sheet 8)

Objective 13

Multiplying fractions

a. Convert mixed numbers to improper fractions if necessary.

b. Multiply numerators by numerators and denominators by denominators.

c. Write the product of the numerators over the product of the denominators.

d. Convert improper fractions to mixed numbers and reduce as required.

Example: Multiply $^{1}/_{2}$ by $^{3}/_{4}$.

$$\tfrac{1}{2} \times \tfrac{3}{4} = \tfrac{1 \times 3}{2 \times 4} = \tfrac{3}{8}$$

Example: Multiply $1\ ^{1}/_{4}$ by $^{1}/_{2}$.

$$1\tfrac{1}{4} \times \tfrac{5}{4} \quad \text{Convert to improper fraction.}$$

$$\tfrac{5}{4} \times \tfrac{1}{2} = \tfrac{5 \times 1}{4 \times 2} = \tfrac{5}{8}$$

Objective 22

Multiply Fractions. (Assignment Sheet 9)

Information Sheet

Objective 23 | **Place values of decimal numbers**

Tenths

Hundredths

Thousandths

Ten Thousandths

Hundred Thousandths

Millionths

X. X X X X X X

Example: 0. 9 2 7 1 8 5

Millionths

Hundred Thousandths

Ten Thousandths

Thousandths
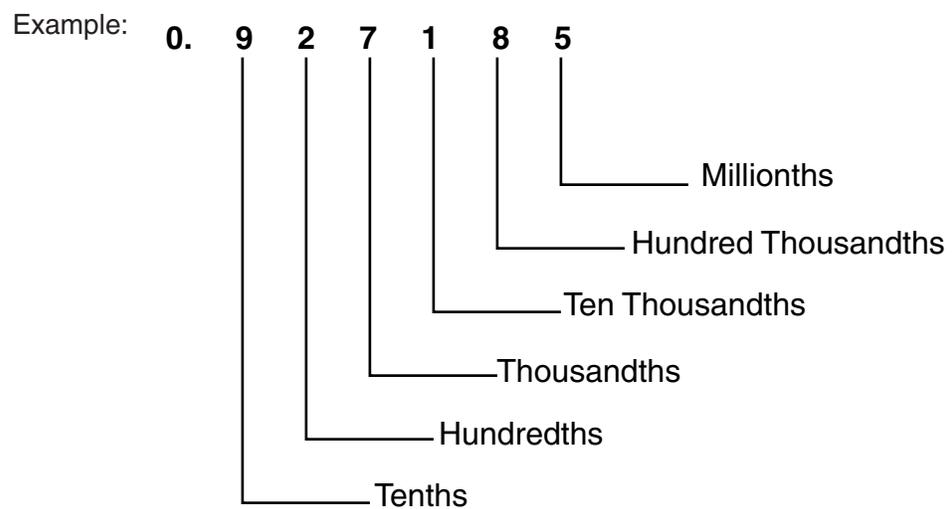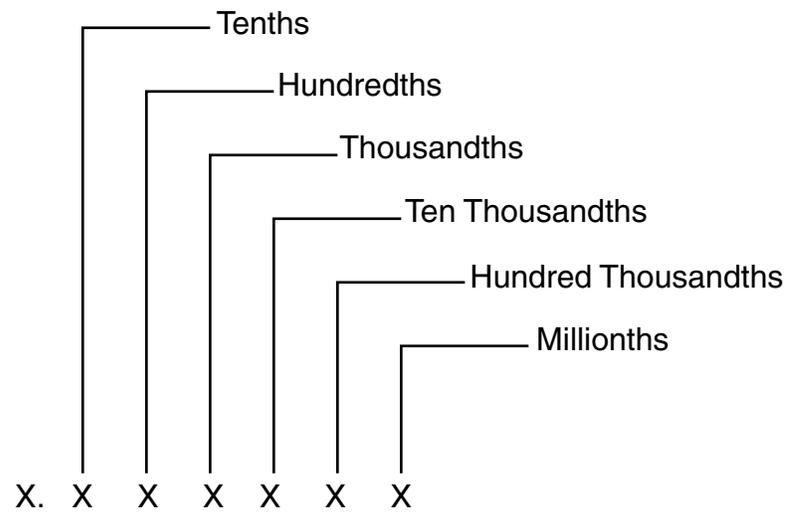
Hundredths

Tenths

✔ **Note**: The number in the example is read as nine hundred twenty-seven thousandths, one hundred eighty-five millionths.

Objective 24	**Adding decimal numbers**

    a.   Set up problem as for addition of whole numbers, aligning decimal points directly under each other.

    ✔ **Note**: Zeros may be added to ensure that units line up under units, tens under tens, and so on. Whole numbers have an understood decimal point to the right of the units digit: 7 is 7., 75 is 75., and 754 is 754.

    Example: Add 0.857, 2.1, 753, and 370.057.

```
      0.857              000.857
      2.1                002.100
    753                  735.000
 + 370.057             + 370.057
```

    b.   Add each column of numbers as for whole numbers.

    c.   Locate the decimal point in the answer by placing it directly under the decimal points above.

    Example:
```
    000.857
    002.100
    753.000
  + 370.057
   1126.014  Answer
```

Objective 25	**Add Decimal Numbers. (Assignment Sheet 10)**
Objective 26	**Subtracting decimal numbers**

    a.   Set up problem as for subtraction of whole numbers, aligning decimal points directly under each other.

    Example: Subtract 1.397 from 8.120.

```
     8.120     Original Number
   − 1.397     Subtracted Number
```

    b.   Subtract each column of numbers as for whole numbers.

    c.   Locate the decimal point in the answer by placing it directly under the decimal points above.

    d.   Check your subtraction by adding your answer to the subtracted number.

    ✔ **Note**: If you have solved the problem correctly, your check answer should be the same as the original number.

    Example:
```
     8.120     Original Number
   − 1.397     Subtracted Number
   + 6.723     Answer (Difference)
     8.120     Check Answer
```

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Objective 27	**Subract Decimal Numbers. (Assignment Sheet 11)**
Objective 28	**Multiplying decimal numbers**

> a. Set up problem and multiply as for multiplication of whole numbers.
>
> ✔ **Note**: Do not align the decimal points in columns when setting up multiplication problems for decimal numbers.
>
> Example: Multiply 27.935 by 7.07.
>
> ```
>        27.935     Original Number
>      x   7.07     Multiplier
>        195545
>       955450
>      19750045
> ```
>
> b. Add the number of decimal placed to the right of the decimal points in the multiplier and original number.
>
> Example: 27.935   3   Decimal Places
>   x 7.07   + 2   Decimal Places
>   5   Total Decimal Places
>
> c. Locate the decimal point in answer by beginning at far right digit and counting off as many places to the left as the total decimal places found in step B.
>
> Example:
> ```
>        27.935
>      x   7.07
>        195545
>       1955450
>      197.50045    5 Decimal Places
> ```

Objective 29	**Multiply Decimal Numbers. (Assignment Sheet 12)**
Objective 30	**Dividing decimal numbers**

> a. Set up problem as for division of whole numbers.
>
> Example: Divide 0.25 by 0.005.
>
> Divisor 0.005$\overline{)0.25}$ Original Number
>
> b. Move the decimal point in the divisor to the right of the far right digit in the divisor.
>
> Example: 0.005.$\overline{)0.25}$

c. Move the decimal point in the original number to the right by the same number of decimal places that you moved the decimal point in the divisor, adding zeros to the original number if necessary.

Example: 0.005.)0̅.̅2̅5̅0̅.

✔ **Note**: If you are dividing a decimal number into a whole number, remember that whole numbers have an understood decimal point to the right of the units digit.

Example: 0.03 9 becomes 0.03. 9.00.

d. Place a decimal point in the answer space directly above the repositioned decimal point in the original number.

Example: 0.005.)0̅.̅2̅5̅0̅.

e. Divide as for whole numbers.

Example: 0005.)0̅2̅5̅0̅. 50.
                025
                 00

f. Check your division by multiplying the original divisor (before decimal point was moved) by your answer and adding any remainder to this number.

✔ **Note**: If you have solved the problem correctly, your check answer should be the same as the original number.

Example: 0.005   Divisor
            x   50   Answer
            0.250   Check Answer (Same as Original Number)

Objective 31 | **Divide Decimal Numbers. (Assignment Sheet 13)**

Objective 32 | **Converting Fractions**

a. Converting decimal fractions to common fractions

• Remove the decimal point.

• Place number over its respective denominator (10's, 100's, 1000's).

• Cancel zeros when possible.

Information Sheet

- Reduce to lowest terms.

    Example: Convert .25 to a common fraction

    .25 = 25

    $$= \frac{25}{100}$$

    $$= \frac{1}{4}$$

    Example: Convert .520 to a common fraction

    .520 = 520

    $$= \frac{520}{1000}$$

    $$= \frac{52}{100}$$

    $$= \frac{13}{25}$$

b. Converting common fractions to decimals and percentages

- Fractions to decimals—Divide the numerator by the denominator.

    Example: Convert $5/8$ to a decimal.

    $\frac{5}{8}$ Numerator
           Denominator

    $$\begin{array}{r} 0.625 \\ 8{\overline{\smash{)}\,5.000}} \\ \underline{4\,8} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

- Fractions to percentages—Divide the numerator by the denominator.

    ✔ **Note**: Percent means that a number is a fraction of 100.

    — Convert the fractions to decimals by dividing numerator by denominator.

    — Move the decimal point in the answer two places to the right.

— Place the percent symbol after the number.

Example: Convert $^7/_{33}$ to a percentage.

$$\frac{7}{33}\quad\text{Numerator}\atop\text{Denominator}$$

$$\begin{array}{r} 0.2121 = 21.21\% \\ 33\overline{)7.0000} \\ \underline{6\ 6} \\ 40 \\ \underline{33} \\ 70 \\ \underline{66} \\ 40 \\ \underline{33} \\ 7 \end{array}$$

c. Converting percentages to fractions and decimal numbers

- Percentages to fractions

  — Drop the percent symbol.

  — Place the number over 100.

  — Reduce to lowest terms if necessary.

  Example: Convert 38% to a fraction

  $$38\% = 38$$

  $$= \frac{38}{100}$$

  $$= \frac{19}{50}$$

- Percentages to decimals

  — Drop the percent symbol.

  — Move the decimal point two places to left.

  Example: Convert 74% to a decimal

  $$74\% = 74$$

  $$= 0.74$$

Objective 33 | **Convert Fractions and Percentages. (Assignment Sheet 14)**

Information Sheet

Objective 34	**Solving percentage problems**

Note: Percentage problems may involve solving for the percent ("16 is what percent of 80?"), the part ("What number is 20% of 80?"), or the whole ("16 is 20% of what number?").

    a.   Write the unknown as "X".

        ✔ **Note**: The unknown may be the percent, the part, or the whole.

        Example: 16 is what percent of 80?

                16 is X percent of 80.

    b.   Write the percent (known or unknown) as a fraction with a denominator of 100.

        Example: 16 is $\frac{X}{100}$ percent of 80.

    c.   Write the part and the whole as a fraction, writing the part as the numerator and the whole as the denominator.

        Example: $\frac{16}{80}$ $\frac{\text{Part}}{\text{Whole}}$

    d.   Set up the equation by writing the two fractions with an equal sign between them.

        Example: $\frac{X}{100} = \frac{16}{80}$

    e.   Solve the equation by multiplying the numerator of each fraction by the denominator of the other.

        ✔ **Note**: This process is known as *cross multiplying.*

        Example: $\frac{X}{100} = \frac{16}{80}$

                $80X = 1600$

    f.   Divide each side of the equation by the multiplier of X.

        Example: $80X = 1600$

                $X = 20\%$

                16 is 20% of 80.

Objective 35	**Solve Percentage Problems. (Assignment Sheet 15)**

| Objective 36 | **Values of prefixes associated with metric measurement** |

✔ **Note**: The basic units of measurement in the metric system are the meter (length), liter (capacity), and gram (mass or weight). Other units are named by adding the following prefixes to *meter*, *liter*, or *gram*. Since all measurement units in the metric system are power of 10, metric prefixes make measurements easily understood. A millimeter, for instance, is one thousandth of a meter.

<u>Prefix</u>   <u>Value</u>

a.   kilo- (k) . . . . .one thousand (1000)

b.   hecto- (h) . . . . .one hundred (100)

c.   deka- (da) . . . . .ten (10)

d.   deci- (d) . . . . .one tenth ($1/_{10}$)

e.   centi- (c) . . . . .one hundredth ($1/_{100}$)

f.   milli- (m) . . . . .one thousandth ($1/_{1000}$)

| Objective 37 | **English-metric conversion charts and how to use them** |

✔ **Note**: Because almost all overseas supplies used in American industry are measured on the metric system, the ability to convert metric to English measurement is becoming a common workplace requirement.

a.   English-metric conversion charts provide a handy conversion factor for converting metrics to English and English to metrics.

b.   To use an English-metric conversion chart, identify the English measurement, the metric form you want to convert it to, and then multiply the English measurement by the proper conversion factor.

Example: If you want to know what 10 inches would be in metric, multiply 10 x 25.4 (the conversion factor) to get 254 millimeters.

c.   To use an English-metric conversion chart, identify the metric measurement, the English form you want to convert it to, and then multiply the metric measurement by the proper conversion factor.

Example: If you want to know what 254 millimeters would be in English, multiply 254 x 0.04 to get 10 inches (the figure is actually 10.1, but it should be rounded off to 10).

Information Sheet

	When You Know	You Can Convert To	When You Multiply By the Conversion Factor
LENGTH	Inches	Millimeters (mm)	25.4000
	Millimeters	Inches	0.0400
	Inches	Centimeters (cm)	2.5400
	Centimeters	Inches	0.4000
	Inches	Meters (m)	0.0254
	Meters	Inches	39.3700
	Feet	Centimeters	30.5000
	Centimeters	Feet	4.8000
	Feet	Meters	0.3050
	Meters	Feet	3.2800
	Miles	Kilometers (km)	1.6100
	Kilometer	Miles	0.6200
AREA	Inches^2	Millimeters^2 (mm^2)	645.2000
	Millimeters^2	Inches^2	0.0016
	Inches^2	Centimeters^2 (cm^2)	6.4500
	Centimeters^2	Inches^2	0.1600
	Foot^2	Meters^2 (m^2)	0.0930
	Meters^2	Foot^2	10.7600

| **Objective 5** | **Assignment Sheet 1—Add Whole Numbers** |

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 18 of the 20 answers correctly per Assignment Sheet 1 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following addition problems.

Examples: **1** ← Carried Digit   **11** ← Carried Digits

```
    5         67                    539
 + 10       + 25                    333
   15         92                  +  432
                                   1304
```

a.   Solve each of the following addition problems. Show your work.

```
1.      2      2.      8    3.     7    4.     1 5    5.      8 1
      + 9           + 8          + 6          + 8          + 2 7
```

```
6.      7      7.    5 5    8. 3 4 1    9.   4 7 2    10. 9 8 7 6
      3 8             8 8       4 2 8        5 6 4         5 4 3 2
     + 4 3          + 9 9      +7 6 9       + 8 8 1       +1 1 2 2
```

Assignment Sheet 1

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. A chef has 12 steaks. He has ordered and received 8 additional steaks. How many total steaks does he have?

   Total steaks = _____

2. A restaurant owner has a 34-employee restaurant, a 26-employee restaurant, a 9-employee restaurant, and a 15-employee restaurant. Find the total number of people he employes.

   Total employees = _____

3. Tonja ordered the following number of salt packets on different dates: 256, 62, 575, and 242. How many salt packets should she be billed for?

   Number of salt packets = _____

4. If a caterer is paid $480 for wait staff, $13 for drinks, $81 for food, and $35 for supplies, what was the total cost?

   Total cost = _____

5. For a major banquet, Bill worked 28 hours, Eliot worked 16 hours, and Shanedra worked 42 hours. What are the total hours worked on this job?

   Total hours worked = _____

6. In a kitchen drawer are 23 spatulas, 14 rolling pins, 11 whisks, and 5 ladles. How many utensils are in the drawer?

    Number of utensils in drawer = _____

7. There are 13 large boxes in the store room, 7 medium boxes, and 11 small boxes. How many boxes are in the store room?

    Number of boxes = _____

8. Chef Roberts spent all day cooking red sauce. The number of gallons of red sauce made was 65, 75, 69, 81, 57, and 76. What is the total number of gallons made?

    Number of gallons made = _____

9. A caterer decides to make his own linen tableclothes. At the fabric store, he bought 40 feet, 60 feet, 37 feet, and 145 feet of linen fabric. How many feet of linen did he buy?

    Total number of feet = _____

10. Several lengths of rolled dough measures 18 inches, 25 inches, 19 inches, and 46 inches. What is the total length of rolled dough (in inches)?

    Total number of inches = _____

Objective 7

Assignment Sheet 2—Subtract Whole Numbers

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	Rating
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 20 of the 24 answers correctly per Assignment Sheet 2 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following subtraction problems.

Examples: 12   Original Number   57   Original Number
            – 7   Subtracted Number   – 35   Subtracted Number
            + 5   Answer (Difference)   + 22   Answer (Difference)
             12   Check Answer   57   Check Answer
                  (Same as Original Number)

a.   Solve each of the following subtraction problems. Check your answer by
     adding the difference to the subtracted number. Show your work.

1.   9   2. 1 5   3.   7 5   4. 4 5 3   5. 7 4 2
      – 5   – 8   – 2 2   – 4 7   – 3 1 8

6. 9 8 1   7. 1 4 2 0   8. 3 4 5 9   9. 5 5 7 2 2   10. 9 8 6 7 9
  – 6 9 8   – 2 4 5   – 1 6 4 9   – 4 2 7 2   – 8 9 5 7

Assignment Sheet 2

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks. Check your answers by adding the difference to the subtracted number.

1. If a dining room needs 172 cloth napkins and it has 46, how many more napkins would the dining room need?

   Number of napkins needed = _____

2. If there are 18 cans of peaches on inventory and you use 6 of them, how many are left?

   Number of cans of peaches left = _____

3. Angela worked 33 hours on 2 major parties, and Henry worked 56 hours on similar parties. How many more hours did Henry work than Angela?

   Difference in hours worked = _____

4. In the first year of operation, a restaurant handled 1219 meals. During the second year, the meals increased to 2167. How many more meals did the restaurant do the second year?

   Difference in meals = _____

5. To install a new dishwasher takes 65 minutes. If you have already worked 27 minutes, how much longer will you need to work?

   Difference in minutes worked = _____

6. Mr. Perez, the instructor, has 240 recipe books in stock. If 98 are needed during the first semester course, how many are left for the second semester?

   Number of recipe books left = _____

7. If the average pounds of flour used in a month is 2100 lbs. and you used 2310 lbs., how much above average is the amount of flour you used?

   Pounds of flour used above average = _____

8. You can work only 13 hours this week. The following week you can work 6 hours. How many hours will he need to work on the third week if the job will take a total of 27 total hours?

   Additional hours required = _____

9. The deep-fat fryer uses 250 liters of oil per semester. There are only 127 liters of oil in the storage room. How many more liters will be needed for the semester?

   Liters needed = _____

Assignment Sheet 2

10. Determine the number of kilometers traveled by a culinary book salesperson for each of five weeks from the odometer readings below.

Week	1	2	3	4	5
Reading (start)	32,119	32,899	33,988	35,976	37,065
Reading (end)	32,899	33,988	35,976	37,065	39,001

Week 1 _____ km   Week 4 _____ km

Week 2 _____ km   Week 5 _____ km

Week 3 _____ km

Objective 9

Assignment Sheet 3—Multiply Whole Numbers

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	Rating
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 18 of the 20 answers correctly per Assignment Sheet 3 answers	_____

Basic Skills

Reading

Mathematics

Directions

Solve the following multiplication problems.

Examples:

```
                1  ← Carried Digit    11  ← Carried Digits
        8      53                    756
      x 7     x 4                  x 312
       56     212                   1512  ← First Partial Product
                                    7560  ← Second Partial Product
                                  226800  ← Third Partial Product
                                  235872  ← Product
```

a. Solve each of the following multiplication problems. Show your work.

```
1.      6      2.      9      3.   5 4     4.   7 2 1     5. 1 6 8 2
      x 7            x 8          x 6          x 4             x 5
```

```
6.    7 8      7. 4 5 3      8.  3 1 4     9. 2 1 4 3    10. 4 1 2 3
    x 2 6          x 4 7          x 5 2 7       x 2 3 5        x 1 3 2 4
```

Assignment Sheet 3

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. There are 4 eggs in a cake. How many eggs are in 8 cakes?

   Number of eggs = _____

2. The dishwasher holds 24 plates per load. How many plates are in 4 loads?

   Number of plates = _____

3. There are 500 cups in a box. How many are in 6 boxes?

   Number of cups = _____

4. If it takes 4 apples per pie, how many apples will be needed for 6 pies?

   Apples needed = _____

5. There are 16 culinarian students working on various projects. If each student works 8 hours, what are the total hours worked?

   Total hours worked = _____

6. If a can of pudding costs costs $6 per pound, how much will 58 pounds cost?

   Total cost of pudding = _____

7.   It takes 35 minutes to cook a pizza. How many minutes will it take to cook 9 pizzas of the same type?

Total minutes required = _____

8.   How many of the school's ovens can be used in the kitchen over the course of 9 hours, if 15 can be used in 1 hour?

Total ovens used = _____

9.   Figure the amount of time worked in 4 weeks by 12 bakers who work 30 hours each week.

Hours worked = _____

10. A truck travels 42 kilometers an hour for 6 hours daily for 19 days. Another truck travels 37 kilometers an hour for 6 hours daily for 23 days. A third truck travels 39 kilometers an hour for 6 hours daily for 22 days. What is the total kilometers of the three trucks?

Total kilometers = _____

Objective 11	## Assignment Sheet 4—Divide Whole Numbers

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 14 of the 16 answers correctly per Assignment Sheet 4 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following division problems.

Examples:

$$\text{Divisor}\ \overline{)\text{Original Number}} \qquad \begin{array}{r} \text{Answer} \end{array}$$

```
            Answer              324
Divisor )Original Number     3)972
                              9
                              7
                              6
                             12
                             12
```

```
    0111   Answer      Check:    111  Answer
51)5678                        x  51  Divisor
   51                            111
   570                           555
   510                          5661
    68                       +   17   Remainder
    51                         5678   Original Number
    17   Remainder
```

Assignment Sheet 4

a. Solve each of the following division problems. Check your answers by multiplying the divisor by the original number. Show your work.

1. $2\overline{)8}$

2. $6\overline{)48}$

3. $9\overline{)819}$

4. $4\overline{)1248}$

5. $13\overline{)39}$

6. $66\overline{)198}$

7. $84\overline{)5212}$

8. $124\overline{)345}$

9. $464\overline{)829}$

10. $746\overline{)2872}$

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. If a can of mayonnaise holds 5 pounds, how many cans can be filled from a 55-pound drum?

   Number of cans = _____

2. Catering Clark received $418 for a dinner event. He worked 19 hours on the job. How much did he make per hour?

   Amount earned per hour = _____

3. How many 4-egg pies can be made using a case containing 416 eggs?

   Number of 4-egg pies = _____

4. If Vonda serves 4 customers a day, how many days will it take her to serve 92 customers?

   Number of days = _____

5. New kitchen equipment cost $13,104. How much will the school's monthly payments be if the equipment is financed over a 14-month period?

   Monthly payments = _____

6. A host has 3,828 napkins. He gives away 116 each day. How many days' supply does he have?

   Number of days = _____

| **Objective 14** | ## Assignment Sheet 5—Reduce Fractions to Lowest Terms |

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 8 of the 10 answers correctly per Assignment Sheet 5 answers	_____

Basic Skills

Reading   Mathematics

Directions   Reduce the following fractions to their lowest terms.

Example: $\dfrac{9}{12} = \dfrac{9 \div 3}{12 \div 3} = \dfrac{3}{4}$ $\dfrac{12}{32} = \dfrac{12 \div 4}{32 \div 4} = \dfrac{3}{8}$

A.   4/8 = _____   F.   9/27 = _____

B.   8/16 = _____   G.   16/32 = _____

C.   2/2 = _____   H.   2/4 = _____

D.   4/16 = _____   I.   9/12 = _____

E.   12/48 = _____   J.   50/100 = _____

Objective 16

Assignment Sheet 6—Convert Fractions and Mixed Numbers

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	Rating
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 30 of the 35 answers correctly per Assignment Sheet 6 answers	_____

Basic Skills

Reading   Mathematics

Directions

Convert the following fractions and mixed numbers. Reduce to lowest terms when possible.

a. Distinguish among the following fractions by writing a "P" in the blanks before a proper fraction, an "I" before an improper fraction, and an "M" in the blanks before a mixed number.

_____ 1. $1/2$ _____ 9. $4/4$

_____ 2. $3\,7/8$ _____ 10. $9\,3/16$

_____ 3. $16/2$ _____ 11. $5\,1/2$

_____ 4. $3\,1/8$ _____ 12. $9/8$

_____ 5. $1/4$ _____ 13. $9/4$

_____ 6. $1/1$ _____ 14. $1/8$

_____ 7. $7/2$ _____ 15. $16\,3/4$

_____ 8. $8\,1/2$

Assignment Sheet 6

b. Convert each of the following mixed numbers to improper fractions. Reduce to lowest terms when possible.

1. $3 \frac{1}{4}$ = _____   6. $5 \frac{2}{4}$ = _____

2. $4 \frac{1}{2}$ = _____   7. $4 \frac{1}{4}$ = _____

3. $7 \frac{3}{4}$ = _____   8. $8 \frac{1}{2}$ = _____

4. $8 \frac{1}{2}$ = _____   9. $9 \frac{1}{4}$ = _____

5. $6 \frac{1}{8}$ = _____   10. $16 \frac{1}{2}$ = _____

c. Convert each of the following improper fractions to mixed numbers. Reduce to lowest terms when possible.

1. $\frac{7}{4}$ = _____   6. $\frac{11}{8}$ = _____

2. $\frac{9}{2}$ = _____   7. $\frac{75}{32}$ = _____

3. $\frac{6}{4}$ = _____   8. $\frac{5}{2}$ = _____

4. $\frac{15}{8}$ = _____   9. $\frac{15}{4}$ = _____

5. $\frac{19}{16}$ = _____   10. $\frac{33}{16}$ = _____

Objective 18 | ## Assignment Sheet 7—Add Fractions

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	Rating
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 17 of the 19 answers correctly per Assignment Sheet 7 answers	_____

Basic Skills

Reading

Mathematics

Directions

Adding like fractions:

✔ **Note**: In "like" fractions, the bottom number is the same in all fractions being added.

Examples: Add $3/4$ and $3/4$.

    1.   Add the numerators.

        Example: $\dfrac{3 + 3 = 6}{4}$

    2.   Reduce to lowest terms if necessary.

        Example: $\dfrac{6}{4} = 1\dfrac{2}{4} = 1\dfrac{1}{2}$

Assignment Sheet 7

Adding unlike fractions:

✔ **Note**: In "unlike" fractions, the bottom number is different in the fractions being added.

Examples: Add $^1/_4$ and $^7/_8$.

1.   Change to equivalent fractions with lowest common denominator.

Example: $^7/_8$ remains the same, as 8 is lowest common denominator.

$^1/_4$ is multiplied by $^2/_2$, or $^1/_4 \times {}^2/_2 = {}^2/_8$.

2.   Add the numerators.

Example: $\underline{2} + \underline{7} = \underline{9}$
             8   8   8

3.   Change improper fraction to mixed number and reduce to lowest terms if necessary.

Example: $^9/_8 = 9 \div 8 = 1\ ^1/_8$ Answer

Adding mixed numbers:

Example: Add $3\ ^5/_8 + 7\ ^5/_8$.

1.   Add numerators

Example: $\dfrac{5 + 5}{8} = {}^{10}/_8$

2.   Change improper fraction to mixed number and reduce to lowest terms if necessary.

Example: $^{10}/_8 = 10 \div 8 = 1\ ^2/_8 = 1^1/_4$

3.   Add whole numbers and fractions.

Example: $3 + 7 + 1 + {}^1/_4 = 11\ ^1/_4$ Answer

a.   Add the following fractions. Show your work in the space provided below the problems. Reduce to lowest terms if necessary. Write your answers on the blanks beside the problems.

1. $^7/_{16} + {}^5/_{16} =$ _____   6. $^5/_8 + {}^5/_{32} =$ _____

2. $5/8 + 7/8 =$ _____   7. $3/4 + 5/32 =$ _____

3. $1/4 + 2/8 =$ _____   8. $7/8 + 6/16 =$ _____

4. $4/16 + 3/4 =$ _____   9. $9/16 + 3/4 =$ _____

5. $9/16 + 5/8 =$ _____   10. $4/4 + 25/32 =$ _____

b. Solve the following problems. Show your work in the spaces provided. Reduce to lowest terms if necessary. Write your answers on the blanks.

1. Add the lengths of two strings that are 6 $1/2$ inches and 8 $1/4$ inches.

    Total length in inches = _____

2. Carlos worked 4 $1/2$ hours before lunch and 3 $1/4$ hours after lunch. How many hours did Carlos work?

    Total hours worked = _____

3. Add the lengths of three kitchen tools that are 2 $1/8$ inches, 3 $1/4$ inches, and 1 $13/16$ inches.

    Total length in inches = _____

4. Three pieces of taffy can be stretched out to lengths of 6 $5/8$ inches, 6 $3/4$ inches, and 6 $1/4$ inches. What is the total length of the three pieces of taffy?

    Total length in inches = _____

Assignment Sheet 7

5. In learning to read an English rule, Taro located 4 $\frac{7}{8}$ inches on the rule, Gustav read 3 $\frac{15}{16}$ inches, and Li-Chen located 4 $\frac{1}{4}$ inches. How many total inches were located?

    Total inches = _____

6. Add three cheese segments 17 $\frac{15}{16}$ inches, 16 $\frac{3}{4}$ inches, and 25 $\frac{3}{8}$ inches.

    Combined segments in inches = _____

7. Three lengths of homemade noodles are 1 $\frac{11}{16}$ inches, 2 $\frac{3}{8}$ inches, and 2 $\frac{3}{4}$ inches. What is the combined length?

    Combined length in inches = _____

8. A container of milk has 1 $\frac{1}{2}$ liters in it. Sally adds 1 $\frac{3}{4}$ liters. How many liters are now in the container?

    Total liters of milk = _____

9. A busperson worked 5 $\frac{7}{8}$ hours, 3 $\frac{3}{4}$ hours, and 7 $\frac{7}{16}$ hours over three days. How many total hours did the busser work?

    Total hours worked = _____

Objective 20	**Assignment Sheet 8—Subtract Fractions**

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 38 of the 43 answers correctly per Assignment Sheet 8 answers	_____

Basic Skills

Reading   Mathematics

Directions

Subtracting like fractions:

Examples: Subtract $1/16$ from $7/16$.

1.   Subtract smaller numerator from larger numerator.

Example: $7 - 1 = 6$

2.   Place answer over common denominator.

Example: $6/16$

3.   Reduce to lowest terms if required.

Example: $6/16 = 3/8$ Answer

Subtracting unlike fractions:

Example: Subtract $1/2$ from $3/4$.

1.   Change to like fractions.

Example: $3/4$ remains the same because 4 is the common denominator.

$1/2$ is multiplied by $2/2$, or $1/2 \times 2/2 = 2/4$.

Assignment Sheet 8

2. Subtract as for like fractions and reduce to lowest terms if required.

Example: $^3/_4 - ^2/_4 = ^1/_4 =$ Answer

Subtracting mixed numbers:

Example: Subtract $3\ ^1/_2$ from $5\ ^1/_8$

1. Change mixed numbers to like fractions.

Example: $3\ ^1/_2 - 3\ ^4/_8$

2. Borrow a 1 from the original whole number if needed, and convert the 1 to a like fraction, and add it to the smaller fraction.

✔ **Note**: This step is needed only if the like fraction in the original number is smaller than the like fraction in the subtracted number.

Example: $5\ ^1/_8 - 1\ ^4/_8 = (4\ ^8/_8 + ^1/_8) - 3\ ^4/_8 = 4\ ^9/_8 - 3\ ^4/_8$

3. Subtract whole number from whole number and like fraction from like fraction, and reduce answer to lowest terms if required.

Example: $4\ ^9/_8 - 3\ ^4/_8 = 1\ ^5/_8$ Answer

Subtracting a fraction from a whole number:

Example: $4 - ^3/_{16}$

1. Borrow 1 from whole number.

Example: $4 - 1 = 3$

2. Change borrowed 1 to like fraction.

Example: $1 = ^{16}/_{16}$

3. Subtract as for like fractions and reduce answer to lowest terms if required.

Example: $3\ ^{16}/_{16} - ^3/_{16} = 3\ ^{13}/_{16}$ Answer

a. Subtract the proper fractions given below. Show your work in the spaces provided. Reduce to lowest terms if necessary. Write your answers on the blanks.

1. 3/4 – 3/16 = _____   6. 15/16 – 3/8 = _____

2. 7/8 – 1/4 = _____   7. 1/2 – 7/16 = _____

3. 30/32 – 3/4 = _____   8. 3/4 – 3/8 = _____

4. 25/32 – 5/8 = _____   9. 13/16 – 9/32 = _____

5. 7/8 – 2/16 = _____   10. 7/8 – 6/16 = _____

b. Subtract the following fractions from whole numbers. Show your work in the spaces provided. Reduce to lowest terms if necessary. Write your answers as a mixed number on the blanks.

1. 4 – 3/4 = _____

2. 7 – 15/16 = _____

3. 32 – 13/32 = _____

4. 175 – 4/5 = _____

5. 12 – 61/64 = _____

c. Subtract the following mixed numbers from whole numbers. Show your work in the spaces provided. Reduce to lowest terms if necessary. Write your answers on the blanks.

1. $2 - 1\,1/3 =$ _____

6. $14 - 6\,3/4 =$ _____

2. $3 - 1\,3/8 =$ _____

7. $5 - (3\,5/32 + 1\,9/32) =$ _____

3. $18 - 9\,7/8 =$ _____

8. $8 - (1\,1/4 + 5\,5/8 + 1/16) =$ ____

4. $3 - 1\,21/32 =$ _____

9. $4 - 3\,1/3 =$ _____

5. $27 - 1\,5/16 =$ _____

10. $42 - 3\,7/16 =$ _____

d. Subtract the following mixed numbers. Show your work in the spaces provided. Reduce to lowest terms if necessary. Write your answers on the blanks.

1. $1\,3/5 - 1\,1/5 =$ _____

6. $5\,1/4 - (1\,1/8 + 1\,7/8) =$ ____

2. $72\,6/16 - 22\,7/16 =$ ____

7. $12\,1/2 - (7\,1/4 + 3\,1/8) =$ __

3. $7\,5/6 - 2\,1/6 =$ _____

8. $4\,29/32 - 1\,19/32 =$ _____

4. $18\,7/8 - 9\,3/8 =$ _____

9. $5\,15/32 - 2\,31/32 =$ _____

5. $35\,5/8 - 8\,1/2$ _____

10. $8\,1/16 - 4\,7/8 =$ _____

e. Solve the following word problems. Show your work in the spaces provided. Reduce to lowest terms if necessary. Write your answers on the blanks.

1. Ross had a $7/8$-inch fork. He needed a $3/4$-inch fork. How much difference is there in the size of the forks?

   Differences in inches = _____

2. It took Anita $5^1/4$ hours to marinate a steak, but it took Don $4^1/2$ hours to marinate a similar cut. How much faster did Don's steak marinate than Anita's?

   Difference in hours = _____

3. A cabinet is to be installed $4^1/2$ inches from the floor. Two pieces of decorative baseboard will be installed under the cabinet. If one piece of baseboard is $1^5/8$ inches wide, how wide must the second piece be to touch the cabinet?

   Width of baseboard in inches = _____

4. Three pieces of dough are cut from a piece $35^1/2$ inches long. The lengths are $7^1/4$ inches, $11^3/8$ inches, and $6^1/2$ inches. If $3/8$ inch of dough is wasted in cutting, how much dough is left?

   Length of dough left in inches = _____

5.   A brick of cheddar cheese is $32^1/_2$ inches long. Short pieces of the following lengths are cut from it: $6^1/_2$ inches, $5^1/_4$ inches, $8^{13}/_{16}$ inches, and $10^9/_{16}$ inches. How much cheese is left?

   Amount of cheese left in inches = _____

6.   A sink has $16\ ^3/_{10}$ gallons of solvent in it. After using $9\ ^3/_4$ gallons, how many gallons will be left?

   Number of gallons = _____

7.   A container of bleach holds $4^1/_4$ liters. How much bleach is left after using $^1/_2$ liter to disinfect the floors?

   Liters of bleach left = _____

8.   A stick of butter is $^1/_2$ inch by 10 inches. If $1^3/_8$ inches are cut from its length, what will be the final length of the butter?

   Butter length in inches = _____

Supplement

Objective 22	**Assignment Sheet 9—Multiply Fractions**

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	Rating
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 9 of the 11 answers correctly per Assignment Sheet 9 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following multiplication problems.

Example:

$$\frac{2}{3} \times \frac{3}{4} \text{ becomes } \frac{2 \times 3}{3 \times 4} = \frac{6}{12} = \frac{1}{2}$$

a.   Multiply the following fractions. Convert mixed fractions where needed and reduce answers to lowest terms.

1. $\frac{1}{2} \times \frac{3}{4} =$ _____   5. $\frac{3}{8} \times \frac{5}{16} =$ _____

2. $1\frac{1}{2} \times 2\frac{1}{4} =$ _____   6. $\frac{1}{2} \times 6\frac{1}{2} =$ _____

3. $\frac{7}{8} \times \frac{2}{3} =$ _____   7. $1\frac{1}{3} \times 2\frac{1}{4} \times \frac{1}{2} =$ _____

4. $\frac{1}{4} \times \frac{1}{3} \times \frac{1}{2} =$ _____   8. $2\frac{3}{4} \times 6\frac{1}{8} =$ _____

Assignment Sheet 9

b. Solve the following word problems. Show your work in the space provided. Write your answers on the blanks.

1. A certain cleaning agent requires mixing $3/4$ gallon solvent and $1/4$ gallon water to make a gallon of cleaning agent. How much solvent should a worker use if she needs to mix only $1/3$ gallon of the cleaning agent?

   Amount of agent = _____

2. There are 296 chocolate chips per pound. How many chocolate chips are there in $1/4$ pound?

   Number of chocolate chips = _____

3. After completing a dinner party, a caterer has 8 $2/3$ feet of garland for table decoration left in two different colors. If one-half of the garland is green, how many feet of red garland are there?

   Number of feet of red garland = _____

Objective 25	**Assignment Sheet 10—Add Decimal Numbers**

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 35 of the 40 answers correctly per Assignment Sheet 10 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following decimal addition problems.

a.   Write the name of the place for each *underlined* digit.

_____   1.   867.4<u>3</u>   _____   4.   6.239<u>5</u>

_____   2.   6.3<u>7</u>892   _____   5.   0.47<u>6</u>

_____   3.   1.000<u>8</u>

b.   Write the name of the place for the last digit in each of the following numbers.

_____   1.   0.38   _____   4.   427.389

_____   2.   0.4678   _____   5.   44.67

_____   3.   321.9

Assignment Sheet 10

c. Underline the digit that is in the place named in italics.

1.	46.3826	*Hundredths*	11.	5230.867	*Thousandths*
2.	35.0038	*Ten thousandths*	12.	587.029	*Ones (units)*
3.	148.296	*Tenths*	13.	0.298	*Hundredths*
4.	6758.23	*Hundredths*	14.	329.768	*Tens*
5.	91.4082	*Thousandths*	15.	52.694	*Thousandths*
6.	204.37	*Tens*	16.	498.276	*Tenths*
7.	14.0079	*Ones (units)*	17.	0.5296	*Ten thousandths*
8.	208.097	*Hundredths*	18.	468.539	*Hundredths*
9.	5.23981	*Thousandths*	19.	324.06	*Tenths*
10.	502.967	*Tenths*	20.	567.8	*Ones (units)*

d. Set up the following groups of numbers in columns. Add each column, carrying when necessary and placing the decimal point correctly.

1. 0.024 + .165

2. 87.3 + 370

3. 15.127 + 3.4 + .0091 + 236.87

4. 195.7 + 83 + 9.006

5. .5280 + 435 + 179.50 + 1.9

e. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. Motoaki earned $22.50 in tips, and Maria earned $16.50. How much did they earn together?

    Total amount earned = _____

2. For a typical dinner of four, entrees cost $54.65, drinks cost $16.30, and the tax is $3.38. What is the total cost of the dinner?

    Total cost = _____

3. Octavia worked four days on a certain project. She worked 6.8 hours Monday, 7.4 hours Tuesday, 5.3 hours Wednesday, and 4.4 hours Thursday. How many total hours did she work?

    Total hours worked = _____

4. Frank was cleaning out the storage bin. He found three partially used bottles of solvent, each containing the following amounts: 6.7 liters, 12.0 liters, and .5 liters. How many total liters of solvent were stored?

    Total liters of solvent = _____

5. In one month, a restaurant budget has the following expenses: food costs, $286.96; taxes, $142.37; electric bill, $160.16; telephone, $116.27; and labor, $15,312.50. What was the restaurant's total monthly expenditure?

    Total monthly expense = _____

Objective 27	**Assignment Sheet 11—Subtract Decimal Numbers**

Name _____   Overall Rating _____

Date _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 12 of the 15 answers correctly per Assignment Sheet 11 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following decimal subtraction problems.

a. Set up each of the following problems in column form. Subtract and check your work. Remember, when you subtract decimals, the decimal points must be aligned.

1. 868.87 – 516.89 =   _____

2. 567 – 19.856 =   _____

3. 198 – 56.987 =   _____

4. 567.94 – 59.78 =   _____

5. $815.23 – $65.98 =   _____

6. $20.03 – $15.88 =   _____

7. 694.7 – 24.3 =   _____

8. 5,000 – 892.66 =   _____

9. $15 – $12.53 =   _____

10. $219.30 – $21.85 =_____

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. A local restaurant received $8438.64 in December, and paid out $5121.32 in January. How much profit did the restaurant make?

    Profit = _____

2. It takes 20.5 hours to finish a job. Sean has worked 6 hours. How much longer will it take him to finish the job?

    Hours required to finish job = _____

3. A length of rubber tubing 6.14 centimeters long was cut from a tube 8.98 centimeters in length. How much tubing was left?

   Centimeters of tubing left = _____

4. A water cooler holds 49.2 liters of water. After a day, workers have drunk 8.7 liters. How much water is left in the cooler?

   Liters of water in cooler = _____

5. You have a square pizza with a length of 27.5 inches, but the pan it's to be baked in is 55 inches long. How many more inches must the pizza dough be to fill the pan?

   Inches = _____

Supplement

Objective 29 | **Assignment Sheet 12—Multiply Decimal Numbers**

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	Rating
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 16 of the 18 answers correctly per Assignment Sheet 12 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following decimal multiplication problems.

Example: 16.11   2 Decimal Places
               x 2.2   1 Decimal Place
                3222
                3222
               35.422   3 Decimal Places in Answer

a.   Set up each of the following problems in column form and multiply. Locate the decimal point in the answer.

1.   2.64 x 3.1 =   _____

2.   120 x 0.33 =   _____

3.   2.25 x 0.51 =   _____

4.   35 x 8.5 =   _____

5.   26.4 x 3.8 =   _____

6. 7.02 x 0.92 = _____

7. 0.83 x 0.55 = _____

8. 28.2 x 0.9 = _____

9. 0.069 x 0.01 = _____

10. 7.52 x 3.01 = _____

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. A set of pots and pans is placed on sale for 25 percent off. By what amount is the price reduced if the regular price is $1349.80?

    ✔ **Note**: Twenty-five percent is the same as the decimal .25.

    Price reduction = _____

2. The average amount of a customer ticket is $41.25. During the month, the waiter handles 150 tickets. What is the average monthly amount?

    Total average cost = _____

Supplement

Objective 31	**Assignment Sheet 13—Divide Decimal Numbers**

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 13 of the 15 answers correctly per Assignment Sheet 13 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the following decimal division problems.

a.   Set up each of the following problems in column form and multiply. Locate the decimal point in the answer.

1. $4.5 \div 0.5 =$ _____

2. $4.96 \div 0.4 =$ _____

3. $19.8 \div 0.6 =$ _____

4. $10.71 \div 0.07 =$ _____

5. $0.225 \div 0.15 =$ _____

6. $1.7608 \div 0.0062 =$ _____

7. $0.48 \div 0.6 =$ _____

8. $0.125 \div 0.25 =$ _____

9. $0.9 \div 0.003 =$ _____

10. $1.16 \div 2.9 =$ _____

b. Solve the following word problems. Show your work in the spaces provided. Write your answers on the blanks.

1. What is the approximate cost per steak if the cost of twelve steaks is $103.68?

    Approximate cost = _____

2. How many hours did Jana work if she was paid a total of $681.75 at the rate of $22.50 per hour?

    Total hours = _____

3. How many jobs can be completed in 21.12 hours if the average job takes .066 hours?

    Number of jobs = _____

4. Curt spent $172.80 for equipment. What was the cost per piece if he bought eight pieces of equally priced equipment?

    Cost per piece = _____

5. A shipment of 114 identical tables has arrived at Mr. Kinski's shop. Mr. Kinski pays the carrier $544.98 for all of them. How much does 1 table cost?

    Cost of 1 table = _____

Objective 33	**Assignment Sheet 14—Convert Fractions and Percentages**

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 54 of the 60 answers correctly per Assignment Sheet 14 answers	_____

Basic Skills

Reading   Mathematics

Directions

Solve the conversion problems.

a.   Express each of the following fractions as a decimal.

1. $1/8 =$ _____

2. $1/4 =$ _____

3. $1/2 =$ _____

4. $3/4 =$ _____

5. $5/8 =$ _____

6. $1/16 =$ _____

7. $3/32 =$ _____

8. $7/8 =$ _____

9. $9/16 =$ _____

10. $15/16 =$ _____

b. Express each of the following fractions as a percentage.

1. $^1/_4$ = _____

2. $^1/_2$ = _____

3. $^7/_{10}$ = _____

4. $^3/_4$ = _____

5. $^2/_2$ = _____

6. $^1/_{10}$ = _____

7. $^7/_8$ = _____

8. $^5/_{10}$ = _____

9. $^1/_3$ = _____

10. $^5/_8$ = _____

c. Match the decimal numbers on the right with their correct equivalent fractions. Write the correct letters in the blanks.

_____	1.	$5\ ^6/_{10}$	a.	7.083
_____	2.	$1\ ^2/_{100}$	b.	5.006
_____	3.	$^{87}/_{1000}$	c.	78.3
_____	4.	$7\ ^{83}/_{1000}$	d.	0.087
_____	5.	$5\ ^6/_{100}$	e.	0.783
_____	6.	$5\ ^6/_{1000}$	f.	87.7
_____	7.	$78\ ^3/_{10}$	g.	5.6
_____	8.	$87\ ^7/_{10}$	h.	102.0
_____	9.	102	i.	5.06
_____	10.	$^{783}/_{1000}$	j.	1.02

d. Write decimal equivalents for each of the following fractions.

1. $63\ ^9/_{10} =$ _____

2. $5\ ^{93}/_{100} =$ _____

3. $5\ ^{93}/_{1000} =$ _____

4. $5\ ^{93}/_{10000}$ _____

5. $3\ ^{825}/_{1000} =$ _____

6. $38\ ^{95}/_{100} =$ _____

7. $38\ ^{95}/_{1000} =$ _____

8. $42\ ^3/_{10} =$ _____

9. $402\ ^3/_{10} =$ _____

10. $897\ ^{97}/_{100000} =$ _____

e. Express each of the following percentages as a fraction. Reduce to the lowest terms.

1. $50\% =$ _____

2. $25\% =$ _____

3. $33\ ^1/_3\% =$ _____

4. 36% _____

5. $28\% =$ _____

6. $14\ ^2/_7\% =$ _____

7. $21\% =$ _____

8. $75\% =$ _____

9. $66\ ^2/_3\% =$ _____

10. $70\% =$ _____

Assignment Sheet 14

f.   Express each of the following percentages as a decimal.

1.   47% = _____

2.   15% = _____

3.   33.3% = _____

4.   62%   _____

5.   75% = _____

6.   3% =   _____

7.   16.8% =_____

8.   9% =   _____

9.   10% = _____

10. 50% = _____

Objective 35	**Assignment Sheet 15—Solve Percentage Problems**

Name _____   Overall Rating _____

Date   _____

Evaluation Criteria	**Rating**
• Completed all problems and showed work	_____
• Labeled answers with correct unit of measurement	_____
• Computed a minimum of 25 of the 29 answers correctly per Assignment Sheet 15 answers	_____

Basic Skills

Reading   Mathematics

Directions   Calculate the answer to the following percentage problems.

a.   What does it mean to say 100 percent of the work is completed? _____

       _____

b.   There are usually 100 kitchen tools in the preparation area. Fourteen of
       them are missing.

       What percent of the tools is missing? _____

c.   If 14 of the kitchen tools are missing in the above problem, how many are

       present?_____

       What percent is present?_____

d.   There are 100 boxes in a carton. Twenty-five boxes are what percent of

       the boxes in the carton? _____

e.   There are 100 orders in process. Ninety-four have been completed.

       What percent of the orders have been completed? _____

f.   If 94 of the orders in the above problem have been completed, how many

       have not been? _____

       What percent has not been completed? _____

g. If 11 percent of the students in a school are absent, what percent are present? _____

h. If 6 percent of the cookies that a store had in stock were not sold, what percent were sold? _____

i. If 60 percent of the chefs in town had assistants, what percent did not have assistants? _____

j. Bill has a set of kitchen tools. Ten percent of his tools are a year old, and 40 percent are over a year old. What percent are less than a year old?

_____

k. Nicole has three types of spatulas-metal, rubber, and plastic. Eighty percent of her spatulas are metal, and 15 percent are plastic. What percent are rubber? _____

l. The Clarks spent 22 percent of their income for their business: 17 percent for tools, 15 percent for work clothes, and 8 percent for overhead. What percent was left for other things? _____

m. Hyun-lee has finished 75 percent of the job he is doing. What percent does he still have to do? _____

n. Marie has completed 40 percent of her training. What percent does she still have to do? _____

o. If you were told to complete 93 percent of the work, what percent would be left? _____

p. Solve each of the following percentage problems.

1. 3% of 72 is what number? _____

2. 5% of 18 is what number? _____

3. What number is 33 $\frac{1}{3}$% of 96? _____

4. 40% of 125 is what number? _____

5. 68% of 63.5 is what number? _____

6. What number is 12 $\frac{1}{2}$% of 140.8? _____

7. What number is 1% of 103? _____

8. What number is 37 $\frac{1}{2}$% of 152? _____

9. 50% of 32.8 is what number? _____

10. 7% of 163 is what number? _____

q. Solve the following percentage word problems.

1. There are 20 students in a class. Sixty percent of the students are boys. How many are boys. _____

2. One day 5 percent of the 20 students in Mr. Washington's class made perfect time completing a job. How many students made perfect time? _____

3. Chef McGill bought a new power mixer—regularly selling for $120—at a sale and saved 20 percent. How much money did he save? _____

4. The number of waitstaff at the meeting this year was 75 percent of what it was last week. Last year there were 800 waitstaff at the meeting. How many waitstaff were at the meeting this year?

    _____

Answers to Assignment Sheets

Assignment Sheet 1

Add Whole Numbers

a.

1.	11	5.	108	9.	1,197
2.	16	6.	88	10.	16,430
3.	13	7.	242		
4.	23	8.	1,538		

b.

1.	20	5.	86	9.	282
2.	84	6.	53	10.	108
3.	1135	7.	31		
4.	$609	8.	423		

Assignment Sheet 2

Subtract Whole Numbers

a.

1.	4	5.	424	9.	51,450
2.	7	6.	283	10.	89,722
3.	53	7.	1,175		
4.	406	8.	1,810		

b.

1.	126	4.	948	7.	210
2.	12	5.	38	8.	8
3.	23	6.	142	9.	123

10. Week 1 = 780 km
     Week 2 = 1089 km
     Week 3 = 1988 km
     Week 4 = 1089 km
     Week 5 = 1936 km

Assignment Sheet 3

Multiply Whole Numbers

a.

1.	42	5.	8,410	9.	503,605
2.	72	6.	2,028	10.	5,458,852
3.	324	7.	21,291		
4.	2,884	8.	165,478		

Answers to Assignment Sheets

b.

1.	32	5.	128	9.	1,440
2.	96	6.	$348	10.	15,042
3.	3,000	7.	315		
4.	24	8.	135		

Assignment Sheet 4

Divide Whole Numbers

a.

1.	4	5.	3	9.	1, R365
2.	8	6.	3	10.	3, R634
3.	91	7.	62, R4		
4.	312	8.	2, R97		

b.

1.	11	3.	104	5.	$936
2.	$22	4.	23	6.	33

Assignment Sheet 5

Reduce Fractions to Lowest Terms

a.	$1/2$	e.	$1/4$	i.	$3/4$
b.	$1/2$	f.	$3/8$	j.	$1/2$
c.	1	g.	$1/2$		
d.	$1/4$	h.	$1/2$		

Assignment Sheet 6

Convert Fractions and Mixed Numbers

a.

1.	P	5.	P	9.	I	13.	I
2.	M	6.	I	10.	M	14.	P
3.	I	7.	I	11.	M	15.	M
4.	M	8.	M	12.	I		

b.

1.	$13/4$	5.	$49/8$	9.	$37/4$
2.	$9/2$	6.	$11/2$	10.	$33/2$
3.	$31/4$	7.	$17/4$		
4.	$17/2$	8.	$17/2$		

c.

1.	$1\ 3/4$	5.	$1\ 3/16$	9.	$3\ 3/4$
2.	$4\ 1/2$	6.	$1\ 3/8$	10.	$2\ 1/16$
3.	$1\ 1/2$	7.	$2\ 11/32$		
4.	$1\ 7/8$	8.	$2\ 1/2$		

Assignment Sheet 7	**Add Fractions**

a.

1.	$3/4$	5.	$1\ 3/16$	9.	$1\ 5/16$
2.	$1\ 1/2$	6.	$25/32$	10.	$1\ 25/32$
3.	$1/2$	7.	$29/32$		
4.	1	8.	$1\ 1/4$		

b.

1.	$14\ 3/4$	5.	$13\ 1/16$	9.	$17\ 1/16$
2.	$7\ 3/4$	6.	$60\ 1/16$		
3.	$7\ 3/16$	7.	$6\ 13/16$		
4.	$19\ 5/8$	8.	$3\ 1/4$		

Assignment Sheet 8	**Subtract Fractions**

a.

1.	$9/16$	5.	$3/4$	9.	$17/32$
2.	$5/8$	6.	$9/16$	10.	$1/2$
3.	$3/16$	7.	$1/16$		
4.	$5/32$	8.	$3/8$		

b.

1.	$3\ 1/4$	4.	$174\ 1/5$
2.	$6\ 1/16$	5.	$11\ 3/64$
3.	$31\ 19/32$		

c.

1.	$2/3$	5.	$25\ 11/16$	9.	$2/3$
2.	$1\ 5/8$	6.	$7\ 1/4$	10.	$38\ 9/16$
3.	$8\ 1/8$	7.	$9/16$		
4.	$1\ 11/32$	8.	$1\ 1/16$		

d.

1.	$2/5$	5.	$27\ 1/8$	9.	$2\ 1/2$
2.	$49\ 15/16$	6.	$2\ 1/4$	10.	$3\ 3/16$
3.	$5\ 2/3$	7.	$2\ 1/8$		
4.	$9\ 1/2$	8.	$3\ 5/16$		

e.

1.	$1/8$	4.	10	7.	$3\ 3/4$
2.	$3/4$	5.	$1\ 3/8$	8.	$8\ 5/8$
3.	$2\ 7/8$	6.	$6\ 11/20$		

Answers to Assignment Sheets

<table>
<tr><td>**Assignment Sheet 9**</td><td colspan="6">**Multiply Fractions**</td></tr>
<tr><td></td><td colspan="6">a.</td></tr>
<tr><td></td><td>1.</td><td>$3/8$</td><td>4.</td><td>$1/24$</td><td>7.</td><td>$1\ 13/24$</td></tr>
<tr><td></td><td>2.</td><td>$3\ 3/8$</td><td>5.</td><td>$15/128$</td><td>8.</td><td>$16\ 27/32$</td></tr>
<tr><td></td><td>3.</td><td>$7/12$</td><td>6.</td><td>$3\ 1/4$</td><td></td><td></td></tr>
</table>

b.

1. $1/4$ gallon
2. 74 chocolate chips
3. $4^1/3$ feet of red garland

Assignment Sheet 10

Add Decimal Numbers

a.

1. Tenths
2. Hundredths
3. Hundred thousandths
4. Ten thousandths
5. Thousandths

b.

1. Hundredths
2. Ten thousandths
3. Tenths
4. Thousandths
5. Hundredths

c.

<table>
<tr><td>1.</td><td>46.3<u>8</u>26</td><td>8.</td><td>208.0<u>9</u>7</td><td>15.</td><td>52.69<u>4</u></td></tr>
<tr><td>2.</td><td>35.003<u>8</u></td><td>9.</td><td>5.23<u>9</u>81</td><td>16.</td><td>498.<u>2</u>76</td></tr>
<tr><td>3.</td><td>148.<u>2</u>96</td><td>10.</td><td>502.<u>9</u>67</td><td>17.</td><td>0.529<u>6</u></td></tr>
<tr><td>4.</td><td>6758.2<u>3</u></td><td>11.</td><td>5230.86<u>7</u></td><td>18.</td><td><u>4</u>68.539</td></tr>
<tr><td>5.</td><td>91.40<u>8</u>2</td><td>12.</td><td>58<u>7</u>.029</td><td>119.</td><td>324.<u>0</u>6</td></tr>
<tr><td>6.</td><td>2<u>0</u>4.37</td><td>13.</td><td>0.2<u>9</u>8</td><td>20.</td><td>56<u>7</u>.8</td></tr>
<tr><td>7.</td><td>1<u>4</u>.0079</td><td>14.</td><td>3<u>2</u>9.768</td><td></td><td></td></tr>
</table>

d.

1.	0.024 + 0.165 0.189	2.	87.3 + 370.0 457.3
3.	15.1270 03.4000 00.0091 + 236.8700 255.4061	4.	195.700 83.000 + 9.006 287.706
5.	000.5280 435.0000 179.5000 + 001.9000 616.9280		

e.

1. $39.00
2. $74.33
3. 23.9
4. 20.1
5. $16,018.26

Assignment Sheet 11

Subtract Decimal Numbers

a.

1. 351.98
2. 547.144
3. 141.013
4. 508.16
5. $749.25
6. $4.15
7. 670.4
8. 4,107.34
9. $2.47
10. $197.45

b.

1. $3317.32
2. 14.5
3. 2.84
4. 40.5
5. 27.5

Assignment Sheet 12

Multiply Decimal Numbers

a.

1. 8.184
2. 39.6
3. 1.1475
4. 297.5
5. 100.32
6. 6.4584
7. 0.4565
8. 25.38
9. 0.00069
10. 22.6352

Answers to Assignment Sheets

b.

1. $337.45
2. $6187.50

Assignment Sheet 13

Divide Decimal Numbers

a.

1.	9	5.	1.5	9.	300
2.	12.4	6.	284	10.	.04
3.	33	7.	0.8		
4.	153	8.	0.5		

b.

1.	$8.64	4.	$21.60
2.	30.3	5.	$4.78
3.	32		

Assignment Sheet 14

Convert Fractions and Percentages

a.

1.	0.125	5.	0.625	9.	0.5625
2.	0.25	6.	0.0625	10.	0.9375
3.	0.5	7.	0.09375		
4.	0.75	8.	0.875		

b.

1.	25%	5.	100%	9.	33.3%
2.	50%	6.	10%	10.	62.5%
3.	70%	7.	87.5%		
4.	75%	8.	50%		

c.

1.	g	5.	i	9.	h
2.	j	6.	b	10.	e
3.	d	7.	c		
4.	a	8.	f		

d.

1.	63.9	5.	3.825	9.	402.3
2.	5.93	6.	38.95	10.	897.00097
3.	5.093	7.	38.095		
4.	5.0093	8.	42.3		

e.

1.	$1/2$	5.	$7/25$	9.	$2/3$
2.	$1/4$	6.	$1/7$	10.	$7/10$
3.	$1/3$	7.	$21/100$		
4.	$9/25$	8.	$3/4$		

f.

1.	.47	5.	.75	9.	.10
2.	.15	6.	.03	10.	.50
3.	.333	7.	.168		
4.	.62	8.	.09		

Assignment Sheet 15

Solve Percentage Problems

a. All work completed
b. 14%
c. 86, 86%
d. 25%, 5%
e. 94%

f. 6, 6%
g. 89%
h. 94%
i. 40%
j. 50%

k. 5%
l. 38%
m. 25%
n. 60%
o. 7%

p.

1.	2.16	5.	43.18	9.	16.4
2.	0.9	6.	17.6	10.	11.41
3.	32	7.	1.03		
4.	50	8.	57		

q.
1. 12
2. 1
3. $24.00
4. 600

Practice Test

Name _____

Date _____ Score_____

Objective 1

Match the terms with their correct definitions.

1. Digit	6. Whole number	10. Proportional
2. Multiplication	(integer)	11. Division
3. Meter	7. Addition	12. Decimal
4. Liter	8. Fraction	13. Percent
5. Subtraction	9. Ratio	

_____ a. Process of totaling two or more numbers to find another number called a sum

_____ b. Fraction with an unwritten denominator of 10 or some power of 10; indicated with a point before the number

_____ c. Any one of the ten symbols, 0 to 9, by which all numbers can be expressed

_____ d. Opposite (inverse) operation of multiplication

_____ e. Part of a whole; represents one or more equal parts of a unit

_____ f. Any of the natural numbers, both positive and negative, that represents a complete item

_____ g. Abbreviated process of adding a number to itself a specified number of times

_____ h. Metric unit used to measure capacity

_____ i. One part in a hundred; reckoned on the basis of a whole divided into one hundred parts

_____ j. Metric unit used to measure length

_____ k. Being relatively equal in size or quantity

_____ l. Relationship in quantity, amount, or size between two or more things.

_____ m. Opposite (inverse) operation of addition

Practice Test

Match symbols used in basic math with their correct names. Write the correct numbers in the blanks.

1. .   5.)   9. ÷
2. π   6. =   10. +
3. %   7. x
4. :   8. −

_____ a. Plus sign (addition)

_____ b. Pi sign

_____ c. Equal sign

_____ d. Division frame

_____ e. Ratio symbol

_____ f. Minus sign (subtraction)

_____ g. Percent symbol

_____ h. Times sign (multiplication)

_____ i. Decimal point

_____ j. Division sign

Objective 3

Label the place values in the whole number below.

2   5   6   7   8   4   9

g. _____

f. _____

e. _____

d. _____

c. _____

b. _____

a. _____

Objective 4 | Add whole numbers to solve the following problems.

a.	2	b.	5	c.	12	d.	142	e.	2345
	+ 9		7		17		759		9764
			+ 8		+ 99		+ 896		+ 8976

Objective 6 | Subtract whole numbers to solve the following problems.

a.	9	b.	35	c.	481	d.	684	e.	9867
	− 7		− 9		− 79		− 342		− 8748

Objective 8 | Multiply whole numbers to solve the following problems.

a.	7	b.	68	c.	735	d.	649	e.	8673
	x 5		x 9		x 68		x537		x 642

Objective 10 | Divide whole numbers to solve the following problems.

a. $4\overline{)48}$ b. $16\overline{)64}$ c. $38\overline{)608}$

d. $421\overline{)842}$ e. $317\overline{)4569}$ f. $530\overline{)80960}$

Objective 12 | Distinguish among types of fractions. Write a "P" in the blanks before the proper fractions, an "I" before improper fractions, and an "M" before mixed numbers.

_____ a. $1/2$ _____ e. $5\ 3/16$ _____ i. $1/4$

_____ b. $8\ 3/4$ _____ f. $10/32$ _____ j. $99/1$

_____ c. $8/8$ _____ g. $2/8$

_____ d. $15\ 3/8$ _____ h. $6\ 1/2$

Practice Test

Objective 13	Reduce the following fractions to lowest terms. Write your answers in the blanks.

_____ a. $4/8$ _____ e. $12/32$ _____ i. $12/16$

_____ b. $8/16$ _____ f. $4/16$ _____ j. $31/32$

_____ c. $7/16$ _____ g. $2/16$

_____ d. $8/32$ _____ h. $8/64$

Objective 15   Convert the following fractions and mixed numbers.

a. Convert to improper fractions. Reduce to lowest terms if possible. Write your answers in the blanks.

_____ (1) $3\ 1/2$

_____ (2) $4\ 2/4$

_____ (3) $3\ 6/8$

_____ (4) $12\ 4/8$

_____ (5) $13\ 13/32$

b. Convert the following improper fractions to mixed numbers. Reduce answers to lowest terms. Write your answers in the blanks.

_____ (1) $47/8$

_____ (2) $21/9$

_____ (3) $108/23$

_____ (4) $54/5$

_____ (5) $112/7$

Objective 17   Add fractions to solve the following problems. Convert to mixed numbers if necessary, and reduce to lowest terms. Write your answers in the blanks.

_____ a. $1/8 + 5/8$ _____ e. $4/8 + 2/4$ _____ i. $4\ 2/4 + 8\ 2/8$

_____ b. $1/16 + 15/16$ _____ f. $7/8 + 6/16$ _____ j. $5\ 1/8 + 6\ 2/16$

_____ c. $2/4 + 3/4$ _____ g. $2\ 1/8 + 7\ 1/4$

_____ d. $1/2 + 4/8$ _____ h. $3\ 2/4 + 16\ 1/8$

Objective 19

Subtract fractions to solve the following problems. Reduce to lowest terms. Write your answers in the blanks.

_____	a.	$^4/_8 - {^3/_8}$	_____	e.	$^3/_8 - {^1/_8}$	_____	i.

_____ a. $^4/_8 - {^3/_8}$ _____ e. $^3/_8 - {^1/_8}$ _____ i. $9\ ^2/_4 - 4\ ^1/_2$

_____ b. $^6/_8 - {^2/_8}$ _____ f. $^{14}/_{16} - {^7/_8}$ _____ j. $12\ ^6/_8 - 7^1/_8$

_____ c. $^9/_{16} - {^4/_{16}}$ _____ g. $2\ ^3/_4 - 1\ ^1/_4$

_____ d. $^3/_8 - {^1/_4}$ _____ h. $6\ ^1/_8 - 2\ ^1/_2$

Objective 21

Multiply fractions to solve the following problems. Reduce to lowest terms. Write your answers in the blanks.

_____ a. $^1/_2 \times {^3/_4}$ _____ e. $6\ ^3/_4 \times 8\ ^3/_4$

_____ b. $^3/_4 \times {^3/_8}$ _____ f. $7\ ^1/_8 \times 1\ ^1/_2$

_____ c. $^3/_2 \times {^1/_6}$ _____ g. $^{77}/_{16} \times 5$

_____ d. $^3/_4 \times 6\ ^1/_2$

Objective 23

Label the place values in the decimal number below.

0.0   8   7   1   6   4

f. _____

e. _____

d. _____

c. _____

b. _____

a. _____

Practice Test

Objective 24

Add decimal numbers to solve the following problems. Set up each problem and show your work. Write your answers in the blanks.

_____ a.   3.5 + 5.1 + 7

_____ b.   3.4 + 0.206 + 1.74

_____ c. $6.86 + $5.05 + $7.90 + $.82

_____ d.   57.78 + 0.22 + 0.003 + 74

_____ e.   6319 + 95.12 + 0.0713 + 321.07

Objective 26

Subtract decimal numbers to solve the following problems. Set up each problem and show your work. Write your answers in the blanks.

_____ a. $6.10 – $2.20

_____ b. $5.40 – $2.32

_____ c. $7.38 – $.63

_____ d.   0.835325 – 0.25

_____ e.   0.609375 – 0.359375

Objective 28	Multiply decimal numbers to solve the following problems. Set up each problem and show your work. Write your answers in the blanks.

_____ a.   2.6 x 4.7

_____ b.   0.119 x 0.05

_____ c.   0 x 0.08

_____ d.   7.392 x 92.07

_____ e.   9.5 x 0.76

Objective 30	Divide decimal numbers to solve the following problems. Set up each problem and show your work. Write your answers in the blanks.

_____ a.   5.32 ÷ 0.4

_____ b.   83.4 ÷ 0.6

_____ c.   7.75 ÷ 0.25

_____ d.   0.921 ÷ 0.3

_____ e.   0.0225 ÷ 0.15

_____ f.   24 ÷ 0.2

_____ g.   54 ÷ 0.09

_____ h.   63 ÷ 0.007

_____ i.   812 ÷ 0.058

_____ j.   4125 ÷ 0.040

Objective 32

a. Convert the following decimal fractions to common fractions. Write your answers in the blanks.

_____ (1)   .6

_____ (2)   .55

_____ (3)   .09

_____ (4)   .650

_____ (5)   .925

b. Convert the following percentages to fractions and decimal numbers. Write your answers in the blanks.

<u>Fraction</u>   <u>Decimal</u>

_____   _____   (1)   12%

_____   _____   (2)   30%

_____   _____   (3)   45%

_____   _____   (4)   72%

_____   _____   (5)   250%

Objective 34

Solve the following percentage problems. Write your answers in the blanks.

_____ a. If a manager paid a cook $150, which is 87 percent of the salary, how much more money would the cook have coming?

_____ b. If 12 percent of the dishes for a restaurant are stolen, how may dishes will be left of the 2100 stored in the facility?

_____ c. If a manager bought $24,000 worth of equipment and sold it for $30,000, what was the percentage of profit?

Objective 36

Match metric prefixes with their values. Write the correct numbers in the blanks.

1. kilo- (k)   3. hecto- (h)   5. milli- (m)
2. deka- (da)   4. centi- (c)   6. deci- (d)

_____ a. 100

_____ b. $1/1000$

_____ c. $1/100$

_____ d. $1/10$

_____ e. 10

_____ f. 1,000

Practice Test

Objective 37	Solve problems about English-Metric conversion charts and how to use them. Write the correct numbers in the blanks.

_____ a. If you knew that the conversion factors were 25.4 and you wanted to convert 12 inches to millimeters, you should:

       1.   Divide 25.4 by 12 to get 2.1 millimeters.
       2.   Multiply 12 by 25.4 to get 304.8 millimeters.

_____ b. If you need to convert meters into feet, you should:

       1.   Simply find the conversion factor on an English-metric conversion chart, then multiply the meters by the conversion factor.
       2.   Use an English-metric conversion chart to find the conversion factor for feet, then multiply the feet by the conversion factor.

_____ c. In cases, the conversion factor should be used to:

       1.   Multiply
       2.   Divide
       3.   Multiply or divide as the situation requires

*Permission to duplicate this test is granted.

Answers to Practice Test

Objective 1

a.	7	e.	8	i.	13	m.	5
b.	12	f.	6	j.	3		
c.	1	g.	2	k.	10		
d.	11	h.	4	l.	9		

Objective 2

a.	10	d.	5	g.	3	j.	9
b.	2	e.	4	h.	7		
c.	6	f.	8	i.	1		

Objective 3

a. Millions
b. Hundred thousands
c. Ten thousands
d. Thousands
e. Hundreds
f. Tens
g. Units

Objective 4

a.	11	d.	1,797
b.	20	e.	21,085
c.	128		

Objective 6

a.	2	d.	342
b.	26	e.	1,119
c.	402		

Objective 8

a.	35	d.	348,513
b.	612	e.	5,568,066
c.	49,980		

Objective 10

a.	12	d.	2
b.	4	e.	14, R131
c.	16	f.	152, R40

Objective 12

a.	P	d.	M	g.	P	j.	I
b.	M	e.	M	h.	M		
c.	I	f.	P	i.	P		

Objective 13

a.	$1/2$	d.	$1/4$	g.	$1/8$	j.	$31/32$
b.	$1/2$	e.	$3/8$	h.	$1/8$		
c.	$7/16$	f.	$1/4$	i.	$3/4$		

Answers to Practice Test

Objective 15

a. (1) $7/2$ (4) $25/2$
    (2) $9/2$ (5) $429/32$
    (3) $15/4$

b. (1) $5\,7/8$ (4) $10\,4/5$
    (2) $2\,1/3$ (5) 16
    (3) $4\,16/23$

Objective 17

a.	$3/4$	d.	1	g.	$9\,3/8$	j.	$11\,1/4$
b.	1	e.	1	h.	$19\,5/8$		
c.	$1\,1/4$	f.	$1\,1/4$	i.	$12\,3/4$		

Objective 19

a.	$1/8$	d.	$1/8$	g.	$1\,1/2$	j.	$5\,5/8$
b.	$1/2$	e.	$1/4$	h.	$3\,5/8$		
c.	$15/16$	f.	0	i.	5		

Objective 21

a.	$3/8$	e.	$59\,1/16$
b.	$9/32$	f.	$10\,11/16$
c.	$3/32$	g.	$24\,1/16$
d.	$4\,7/8$		

Objective 23

a. Tenths
b. Hundredths
c. Thousands
d. Ten thousandths
e. Hundred thousandths
f. Millionths

Objective 24

a.	15.6	d.	132.003
b.	5.346	e.	6735.2613
c.	$20.63		

Objective 26

a.	$3.90	d.	0.585325
b.	$3.08	e.	0.25
c.	$6.75		

Objective 28

a.	12.22	d.	680.58144
b.	0.00595	e.	7.22
c.	0.72		

Objective 30

a.	13.3	d.	3.07	g.	600	j.	103,125
b.	139	e.	0.15	h.	9,000		
c.	31	f.	120	i.	14,000		

Objective 32	a.	(1)	$3/5$	(4)	$13/20$
		(2)	$11/20$	(5)	$37/40$
		(3)	$9/100$		
	b.	(1)	0.12; $3/25$	(4)	0.72; $18/25$
		(2)	0.30; $3/10$	(5)	2.50; 2 $1/2$
		(3)	0.45; $9/20$		

Objective 34
a. $22.41
b. 1848 dishes
c. 20 percent

Objective 36
a. 3   d. 6
b. 5   e. 2
c. 4   f. 1

Objective 37
a. 2
b. 1
c. 1

careertech

RCCTA Resource Center for
CareerTech Advancement

https://www.okcareertech.org/educators/resource-center