



MAT082 Basic Arithmetic

Catalog Description: Development of arithmetic skills as a foundation for other mathematics courses, stressing number and awareness and arithmetic processes.

Measurable Student Learning Outcomes

1. **(Application Level)** Perform basic operations of addition, subtraction, multiplication and division using whole numbers, fractions, and decimals.

| | | | | |
|----|------------------|-------------------------|--|----------------------|
| 1. | Add: | $4 + 10$ $+ 5.05$ | $\frac{2}{3} + \frac{1}{7}$ | 2.675 |
| 2. | Subtract: | $8 - 5$ $- 3.03$ | $\frac{5}{11} - \frac{1}{3}$ | 2.008 |
| 3. | Multiply: | $4 \cdot 5$ $- 5.18$ | $\frac{7}{11} \cdot \frac{1}{9}$ | 25.0256 |
| 4. | Divide | $\frac{540}{7}$ | $\frac{7}{\frac{12}{3}}$ $\frac{3}{20}$ | $\frac{4.45}{31.82}$ |

2. **(Application Level)** Apply the rules of ratios, proportions and percents to solve word problems.

1. What percentage of \$250 is 15\$?
2. Find the missing number in the proportion.

$$\frac{8}{7} = \frac{x}{35}$$

3. Write the ratio as a fraction in lowest terms.

\$60 to \$40

4. Find the part using the multiplication short-cut.

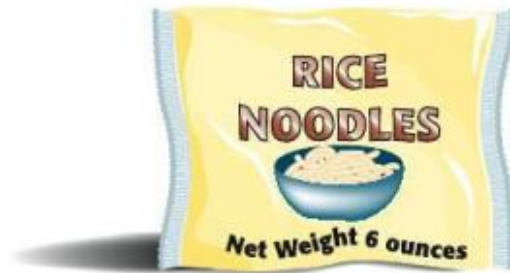
52.5% of 1640 trucks

3. **(Comprehension Level)** Estimate solutions to problems using a variety of methods.

1. Use front-end rounding and estimate the sum of the numbers. Then find the exact solution.

| | |
|------------------|---------------|
| <i>Estimate:</i> | <i>Exact:</i> |
| | 38.55 |
| | 7.716 |
| <u> </u> | <u>+ 0.6</u> |

2. The bag of rice noodles below makes 7 servings. At that rate, how many ounces of noodles do you need for 12 servings, to the nearest ounce?



3. Convert 0.04 to a fraction, and then convert it to a percent.

4. **(Application Level)** Apply methods of unit conversion in and between the metric and American systems to solve problems.

1. Make an approximate conversion from English to metric. Round your answer to the nearest tenth.

296 lb to kilograms

| |
|----------------------------------|
| 1 pound \approx 0.45 kilograms |
| 1 gram \approx 0.035 ounce |
| 1 gallon \approx 3.79 liters |
| 1 liter \approx 1.06 quarts |

2. Convert the measurement. Use unit fractions or the metric conversion line.

30,000 mg to g

5. **(Application Level)** Demonstrate appropriate order of operations.

1. Simplify using the order of operations.

$$2 \cdot 4^2 - \frac{8}{2}$$

2.
$$\frac{3}{10} \cdot \frac{1}{3} + \frac{7}{10} \cdot \frac{3}{14}$$

3.
$$\left(\frac{5}{8}\right)^2 - \left(\frac{1}{4} - \frac{1}{20}\right) \div \frac{8}{5}$$

6. **(Analysis Level)** Calculate the measures of central tendency (mean, median, mode).

1. The following temperatures were recorded for seven days in Seattle. Find the mean.

$59^\circ, 61^\circ, 72^\circ, 57^\circ, 72^\circ, 62^\circ, 58^\circ$

2. Use the table of deliveries to find the weighted mean.

| Deliveries each week | Frequency |
|----------------------|-----------|
| 5 | 1 |
| 8 | 4 |
| 11 | 5 |
| 20 | 1 |

3. Find the median for this list of numbers.

495, 406, 529, 515, 302, 601, 341, 535

4. Find the mode or modes for the following list of numbers.

70, 74, 74, 74, 77, 77, 70, 70, 68

7. **(Analysis Level)** Apply different problem solving strategies to application problems.

1. The amount (in dollars) 20 students paid for textbooks in the fall semester are given in the table.

| Class Intervals | Frequency | |
|-----------------|----------------------|----------------|
| 10 - 19.99 | <input type="text"/> | 21 42 26 55 25 |
| 20 - 29.99 | <input type="text"/> | 33 13 51 62 61 |
| 30 - 39.99 | <input type="text"/> | 22 45 61 56 33 |
| 40 - 49.99 | <input type="text"/> | 41 25 53 63 56 |
| 50 - 59.99 | <input type="text"/> | |
| 60 - 69.99 | <input type="text"/> | |

Fill in the correct frequencies in the frequency table based on the data.

2. Write the decimal 0.045 as a fraction. Then write it as a percent.