



Applied Math

Basic Calculations 2



Course Objectives

1. Perform basic math operations with signed numbers.
2. Demonstrate the understanding of exponents.
3. Demonstrate the understanding of roots.
4. Perform basic math operations with grouping symbols.
5. Demonstrate an understanding of the order in which combined operations are performed.



Key Terms (Define the following)

exponent - _____

root - _____



Principles

Rules for Signed Numbers:

1. When subtracting a negative number, change the number to positive and the operation to plus.
2. When adding a negative to a positive, subtract the digits and use the sign of the largest number in the answer.
3. When subtracting a positive number from a negative number, add the digits and add a negative to the answer.
4. When multiplying or dividing a negative and a positive, the answer is negative.
5. When multiplying or dividing a negative and a negative, the answer is a positive.

Converting to Scientific Notation

1. Move the decimal so that the base number is between 0 and 10.
2. Add a positive power of 10 for each decimal place to the left or a negative power of 10 for each decimal place to the right.

Order of Operations Rules:

1. Operations are calculated in the following order:
 - 1st – parentheses
 - 2nd - exponents and roots
 - 3rd – multiplication and division
 - 4th – addition and subtraction
2. Operations of the same level (1st, 2nd, 3rd, or 4th) are performed left to right.



Questions

1. What is the temperature change if a process changes from -30°F to -150°F ?

What is the final temperature if the process drops another 23°F ?

2. Suppose packaging is using a 40 gal drum instead of the normal 35 gal drum, but the price per drum remains the same. This changes the price per gallon from $\$2.00$ to $\$1.75$. What is the loss per drum sold?

Calculate the loss if 10,000 were sold before someone realized the wrong size drums were being used.

3. What is the volume of a cylinder that is 10ft tall with a radius of 6ft?

$r =$ _____

$\pi =$ 3.14

$h =$ _____

$$V_{\text{cylinder}} = \pi r^2 \times h$$

4. a. Express 6^{-2} as a fraction.

- b. Express 2,100,000 in scientific notation.

- c. Express 0.000074 in scientific notation.

5. Use order of operations to solve the following.

a. $7^2 + 3 \times 8$

b. $(7^2 + 3) \times 8$