Name _____ Date _____ Class _____

Math Skills LESSON 1

Solve for Pressure

Pressure is the amount of force per unit area applied to an object's surface. To calculate pressure, divide the applied force by the surface area over which the force is applied.

$$P = \frac{F}{A}$$

where P = pressure, F = force, and A = surface area.

If pressure and surface area are given, you can calculate the applied force:

$$F = PA$$

Pressure is measured in Pascals (Pa), force is measured in Newtons (N), and surface area can be measured in square meters (m^2). One Pa is equal to one N/m^2.

What is the pressure applied by a force of **930** N over an area of **3** m^2?

Step 1 Identify the variables given in the problem.

$F = \mathbf{930}$ N

$A = \mathbf{3}$ m^2

Step 2 Identify what you need to find.

The question asks for pressure. Use the formula with pressure on the left side.

Step 3 Insert the known values into the formula and solve. Convert units, if needed.

$$P = \frac{\mathbf{930}\ \text{N}}{\mathbf{3}\ \text{m}^2}$$

$P = \mathbf{310}$ $N/m^2 = \mathbf{310}$ Pa

Practice

1. What is the pressure applied by a force of 2,460 N over an area of 12 m^2?

2. A sculpture applies a pressure of 2,000 Pa over a display stand with a surface area of 2.25 m^2. What is the force applied by the sculpture on the display stand?

3. A container of liquid has a surface area of 18 m^2 and an interior pressure of 53 Pa. What is the force applied by the liquid on the container?

4. A child applies a force of 250 N on a water raft that has an area of 0.8 m^2. What is the pressure applied on the raft?

Name _____ Date _____ Class _____

Content Practice A LESSON 1

Pressure and Density of Fluids

Directions: *Complete the cause and effect chart with the correct statements in the space provided.*

Atmospheric pressure decreases.
Layers of material form.
Pressure decreases.
Pressure increases.
The fluid applies pressure.
Underwater pressure decreases.

Cause	Effect
The surface area over which a force is applied increases.	1.
A mountain climber moves from a lower elevation to a higher elevation.	2.
Oil is stirred into vinegar.	3.
A scuba diver slowly surfaces after swimming 8 feet under water for 25 m.	4.
Helium flows from a metal container to the inside of a spherical shaped balloon.	5.
Pressure is applied to a surface area that has decreased in size.	6.