SPH3U0

Review of Scientific Notation

ANSWERS

Date: _____

Any quantity can be expressed using a power of ten. As you move the decimal point, you multiply by 10 as many times as necessary to make the numbers equal. Consider the following examples:

$325 = 32.5 \times 10 = 3.25 \times 10^1$
$325 = 3.25 \times 10 \times 10 = 3.25 \times 10^2$
$325 = 0.325 \times 10 \times 10 \times 10 = 3.25 \times 10^3$
Because $10^0 = 1$ we can also express 325 as 325×10^0.

A number in **scientific notation** has two parts. The number in front of the "x 10" is called the coefficient. The power to which 10 is raised is called the exponent.

3.25×10^3
coefficient exponent

The coefficient must have one and only one digit in front of the decimal point.

There are three rules for using scientific notation:
Rule 1: To express a number in scientific notation, you move the decimal point to the position such that there is one nonzero digit to the left of the decimal point.
Rule 2: If the decimal point is moved to the **left,** the exponent is **positive**. (i.e. numbers greater than 0!)
Rule 3: If the decimal point is moved to the **right**, the exponent is **negative**. (i.e. decimal numbers!)

Practice:

Convert the following numbers into scientific notation:

1) 3,400 3.4×10^3
2) 0.000023 2.3×10^{-5}
3) 101,000 1.01×10^5
4) 0.010 1.0×10^{-2}
5) 45.01 4.501×10^1
6) 1,000,000 1×10^6
7) 0.00671 6.71×10^{-3}
8) 4.50 4.50

Convert the following numbers into standard notation:

9) 2.30×10^4 23000
10) 1.76×10^{-3} 0.00176
11) 1.901×10^{-7} 0.0000001901
12) 8.65×10^{-1} 0.865
13) 9.11×10^3 9,110
14) 5.40×10^1 54.0
15) 1.76×10^0 1.76
16) 7.4×10^{-5} 0.000074

SPH3U0 Skill Review: Rearranging Equations Date: ANSWERS

Goal: To be able to isolate one variable in an equation algebraically in terms of the other variables.

Hint: • You must do the same action on both sides of the equal sign.

Original Equation	Show Work	Final Equation
$\frac{AB}{C} = \frac{DE}{F}$	$\frac{AB}{C} \times \frac{DE}{F}$ cross multiply	$F = \frac{CDE}{AB}$
$AB = C$		B = $B = \frac{C}{A}$
$\frac{A}{B} = \frac{C}{D}$		C = $C = \frac{AD}{B}$
$\frac{A}{B} = \frac{C}{D}$		D= $D = \frac{CB}{A}$
$PV = nRT$		R = $R = \frac{PV}{nT}$
$n_1c_1 = n_2c_2$		n2 = $n_2 = \frac{n_1c_1}{n_2}$
$a = \frac{v_2 - v_1}{\Delta t}$		Δt = $\Delta t = \frac{v_2 - v_1}{a}$
$a = \frac{v_2 - v_1}{\Delta t}$		v_1= $v_1 = v_2 - a\Delta t$
$\Delta d = \frac{1}{2}a\Delta t^2$		Δt= $\Delta t = \sqrt{\frac{2\Delta d}{a}}$
$v = 331.6 + 0.6T$		T = $T = \frac{v - 331.6}{0.6}$