UNIT 1/REAL NUMBERS

1.1/RATIONAL NUMBERS AS DECIMALS

real rumbers
$\mathbb{R}$
any number that is not imaginary

natural numbers
$\mathbb{N}$
$1, 2, 3, 4, 5, \ldots$

whole numbers
$\mathbb{W}$
$0, 1, 2, 3, 4, 5, \ldots$

integers
$\mathbb{Z}$
$\ldots -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, \ldots$

numerator
the part of the fraction that is above the line

denominator
the part of the fraction that is below the line

rational numbers
$\mathbb{Q}$
a fraction or a decimal that terminates or repeats

1.2/UNDERSTAND IRRATIONAL NUMBERS

irrational numbers
$\mathbb{P}$ or $\mathbb{R} - \mathbb{Q}$
numbers that do not terminate or repeat
$\sqrt{3}$ and π

pi
π; represents the approximate number 3.1415…

radical
$\sqrt{\ }$; a symbol used to show square or n^{th} roots

radicand
$\sqrt{x}$; the term underneath or inside of the radical sign

square root
a number which produces a certain quantity when multiplied by itself

perfect square
a number that is the square of an integer

$\sqrt{1} = 1$	$\sqrt{4} = 2$	$\sqrt{9} = 3$	$\sqrt{16} = 4$	$\sqrt{25} = 5$	$\sqrt{36} = 6$
$\sqrt{49} = 7$	$\sqrt{64} = 8$	$\sqrt{81} = 9$	$\sqrt{100} = 10$	$\sqrt{121} = 11$	$\sqrt{144} = 12$
$\sqrt{169} = 13$	$\sqrt{225} = 15$	$\sqrt{400} = 20$	$\sqrt{900} = 30$	$\sqrt{1600} = 40$	$\sqrt{2500} = 50$

1.3/EVALUATE SQUARE ROOTS AND CUBE ROOTS

index
$\sqrt[n]{\ }$; the number on the outside of the radical; indicates the root of the radicand

cube root
a number which produces a certain quantity when multiplied by itself three times

perfect square
a number that is the cube of an integer

cube (action)
multiplying three of the same number, ex. $2 \times 2 \times 2$

cube (shape)
a three-dimensional object in which all six sides are made of squares

perfect cube
a number that is the cube of an integer

$\sqrt[3]{1} = 1$ $\sqrt[3]{8} = 2$ $\sqrt[3]{27} = 3$ $\sqrt[3]{64} = 4$ $\sqrt[3]{125} = 5$ $\sqrt[3]{216} = 6$
$\sqrt[3]{1000} = 10$
$\sqrt[3]{-1} = -1$ $\sqrt[3]{-8} = -2$ $\sqrt[3]{-27} = -3$ $\sqrt[3]{-64} = -4$ $\sqrt[3]{-125} = -5$ $\sqrt[3]{-216} = -6$
$\sqrt[3]{-1000} = -10$

1.6/USE PROPERTIES OF INTEGER EXPONENTS

$Know\ all\ squares\ up\ to\ 13, as\ well\ as\ 15, 20, 30, 40, and\ 50$
$1^3 = 3$ $2^3 = 8$ $3^3 = 27$ $4^3 = 64$ $5^3 = 125$ $6^3 = 216$
$10^3 = 1000$
$1^4 = 1$ $2^4 = 16$ $3^4 = 81$ $4^4 = 256$ $5^4 = 625$
$1^5 = 1$ $2^5 = 32$
$1^6 = 1$ $2^6 = 64$

power
x^y
a number expressed using exponents

base
the number that is multiplied when using an exponent

exponent
in a power, indicates the number of times a number is to be multiplied

multiplication property of exponents
when multiplying two like bases, add their exponents

raising an exponent by an exponent
when multiplying two like bases, add their exponents

division property of exponents
when multiplying two like bases, add their exponents

1.9/USE PROPERTIES OF INTEGER EXPONENTS

scientific notation

a method used to simplify very large or very small numbers