Activities/ Resources for Outcomes

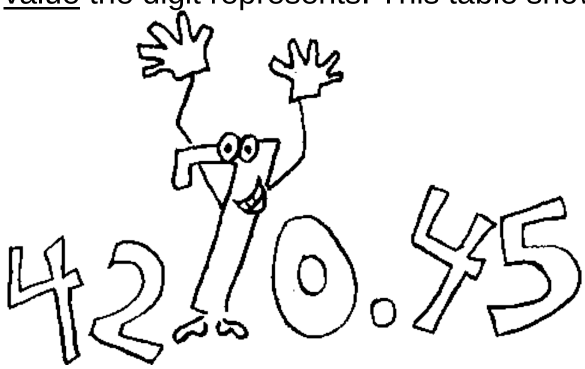
Activities/ Resources for Introduction and Unit I

Whole Numbers and their basic properties…

The whole numbers are the counting numbers and 0. The whole numbers are 0, 1, 2, 3, 4, 5, .

Place Value

The position, or place, of a digit in a number written in standard form determines the actual value the digit represents. This table shows the place value for various positions:



Place (underlined)	Name of Position
$1\ 00\underline{0}$	Ones (units) position
$1\ 0\underline{0}0$	Tens
$1\ \underline{0}00$	Hundreds
$\underline{1}\ 000$	Thousands
$1\ 0\underline{0}0\ 000$	Ten thousands
$1\ \underline{0}00\ 000$	Hundred Thousands
$\underline{1}\ 000\ 000$	Millions
$1\ 0\underline{0}0\ 000\ 000$	Ten Millions
$1\ \underline{0}00\ 000\ 000$	Hundred millions
$\underline{1}\ 000\ 000\ 000$	Billions

Example:

The number 721040 has a 7 in the hundred thousands place, a 2 in the ten thousands place, a one in the thousands place, a 4 in the tens place, and a 0 in both the hundreds and ones place.

Expanded Form

The expanded form of a number is the sum of the values of each digit of that number.

Example:

9836 = 9000 + 800 + 30 + 6.

Ordering

Symbols are used to show how the size of one number compares to another. These symbols are < (less than), > (greater than), and = (equals.) For example, since 2 is smaller than 4 and 4 is larger than 2, we can write: 2 < 4, which says the same as 4 > 2 and of course, 4 = 4.

To compare two whole numbers, first put them in standard form. The one with more digits is greater than the other. If they have the same number of digits, compare the most significant digits (the leftmost digit of each number). The one having the larger significant digit is greater than the other. If the most significant digits are the same, compare the next pair of digits from the left. Repeat this until the pair of digits is different. The number with the larger digit is greater than the other.

Example: 402 has more digits than 42, so 402 > 42.

Example: 402 and 412 have the same number of digits. We compare the leftmost digit of each number: 4 in each case. Moving to the right, we compare the next two numbers: 0 and 1. Since 0 < 1, 402 < 412.

Rounding Whole Numbers

To round to the nearest ten means to find the closest number having all zeros to the right of the tens place. Note: when the digit 5, 6, 7, 8, or 9 appears in the ones place, round up; when the digit 0, 1, 2, 3, or 4 appears in the ones place, round down.

Examples:

Rounding 119 to the nearest ten gives 120.
Rounding 155 to the nearest ten gives 160.
Rounding 102 to the nearest ten gives 100.
Similarly, to round a number to any place value, we find the number with zeros in all of the places to the right of the place value being rounded to that closest in value to the original number.

Examples:

Rounding 180 to the nearest hundred gives 200.
Rounding 150,090 to the nearest hundred thousand gives 200,000.
Rounding 1,234 to the nearest thousand gives 1,000.
Rounding is useful in making estimates of sums, differences, etc.

Example:

To estimate the sum 119360 + 500 to the nearest thousand, first round each number in the sum, resulting in a new sum of 119000 + 1000. Then add to get the estimate of 120000.

Commutative Property of Addition and Multiplication

Addition and Multiplication are commutative: switching the order of two numbers being added or multiplied does not change the result.

Examples:

$100 + 8 = 8 + 100$
$100 \times 8 = 8 \times 100$

Associative Property

Addition and multiplication are associative: the order that numbers are grouped in addition and multiplication does not affect the result.

Examples:

$(2 + 10) + 6 = 2 + (10 + 6) = 18$
$2 \times (10 \times 6) = (2 \times 10) \times 6 = 120$

Distributive Property

The distributive property of multiplication over addition: multiplication may be distributed over addition.

Examples:

$10 \times (50 + 3) = (10 \times 50) + (10 \times 3)$
$3 \times (12+99) = (3 \times 12) + (3 \times 99)$

The Zero Property of Addition

Adding 0 to a number leaves it unchanged. We call 0 the additive identity.

Example: $88 + 0 = 88$

The Zero Property of Multiplication

Multiplying any number by 0 gives 0.

Example:

$88 \times 0 = 0$
$0 \times 1003 = 0$

The Multiplicative Identity

We call 1 the multiplicative identity. Multiplying any number by 1 leaves the number unchanged.

Example: $88 \times 1 = 88$

Order of Operations

The order of operations for complicated calculations is as follows:

1) Perform operations within parentheses.
2) Multiply and divide, whichever comes first, from left to right.
3) Add and subtract, whichever comes first, from left to right.

Example:

$1 + 20 \times (6 + 2) \div 2 =$
$1 + 20 \times 8 \div 2 =$
$1 + 160 \div 2 =$
$1 + 80 =$
$81.$

Times Table

X	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

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7 X 9=	**8 X 2=**	**7 X 3=**	**7 X 8=**	**9 X 7=**	**9 X 4=**
8 X 4=	**8 X 9=**	**8 X 7=**	**3 X 6=**	**7 X 9=**	**6 X 7=**
8 X 2=	**7 X 6=**	**4 X 7=**	**6 X 2=**	**3 X 5=**	**6 X 7=**
6 X 5=	**8 X 7=**	**3 X 9=**	**8 X 3=**	**7 X 4=**	**8 X 6=**
9 X 8=	**7 X 8=**	**8 X 6=**	**4 X 7=**	**8 X 4=**	**3 X 8=**
6 X 7=	**4 X 10=**	**6 X 7=**	**8 X 4=**	**3 X 8=**	**9 X 8=**
5 X 3=	**4 X 8=**	**4 X 7=**	**8 X 8=**	**7 X 6=**	**4 X 7=**
4 X 6=	**9 X 8=**	**7 X 6=**	**8 X 3=**	**7 X 9=**	**9 X 5=**
7 X 6=	**8 X 2=**	**4 X 7=**	**6 X 3=**	**7 X 5=**	**9 X 8=**
8 X 9=	**6 X 7=**	**7 X 4=**	**3 X 8=**	**4 X 9=**	**8 X 2=**