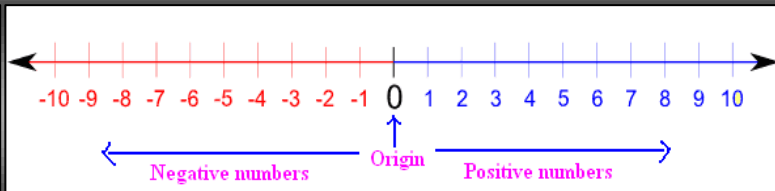
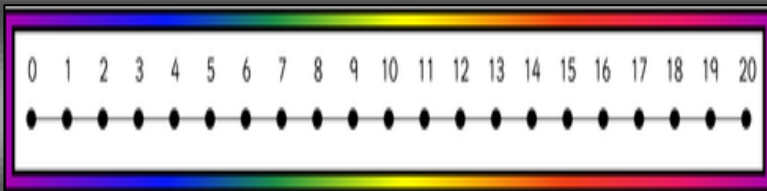


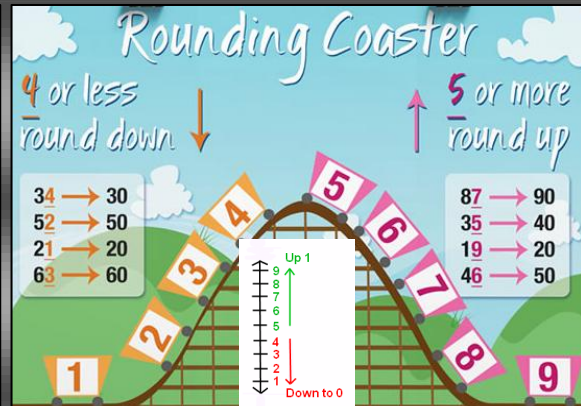
Math Essentials for K-8 Grade



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

PLACE VALUE CHART

BILLIONS	MILLIONS	THOUSANDS	ONES	DECIMALS
HUNDRED BILLIONS	HUNDRED MILLIONS	HUNDRED THOUSANDS	THOUSANDS	TENTHS
TEN BILLIONS	TEN MILLIONS	TEN THOUSANDS	HUNDREDS	HUNDREDTHS
BILLIONS	MILLIONS	THOUSANDS	TENS	THOUSANDTHS
			ONES	



PEMDAS

Left to Right Left to Right

$()$ x^2 x or $/$ $+$ or $-$
 Please Excuse My Dear Aunt Sally!

- 1. Parentheses
- 2. Exponents
- 3. Multiplication
- 4. Division
- 5. Addition
- 6. Subtraction

Steps to Long Division

Steps to Long Division	How to Remember the Steps
1: Divide	1: Does
2: Multiply	2: McDonald's
3: Subtract	3: Serve
4: Check/Compare	4: Cheese
5: Bring Down	5: Burgers

Multiplying Integers Rules

$+$	\times	$+$	$=$	$+$
$-$	\times	$-$	$=$	$+$
$+$	\times	$-$	$=$	$-$
$-$	\times	$+$	$=$	$-$

Addition: (Same denominators)	Addition: (Different denominators)
$\frac{A}{B} + \frac{C}{B} = \frac{A+C}{B}$	$\frac{A}{B} + \frac{C}{D} = \frac{AD}{BD} + \frac{BC}{BD} = \frac{AD+BC}{BD}$
Subtraction: (Same denominators)	Subtraction: (Different denominators)
$\frac{A}{B} - \frac{C}{B} = \frac{A-C}{B}$	$\frac{A}{B} - \frac{C}{D} = \frac{AD}{BD} - \frac{BC}{BD} = \frac{AD-BC}{BD}$
Multiplication:	Division:
$\frac{A}{B} \times \frac{C}{D} = \frac{AC}{BD}$	$\frac{A}{B} \div \frac{C}{D} = \frac{A}{B} \times \frac{D}{C} = \frac{AD}{BC}$

Property Name	Rule
Commutative Property of Addition	$A + B = B + A$
Commutative Property of Multiplication	$A * B = B * A$
Associative Property of Addition	$A + (B + C) = (A + B) + C$
Associative Property of Multiplication	$A * (B * C) = (A * B) * C$
Identity Property of Addition	$A + 0 = A$
Identity Property of Multiplication	$A * 1 = A$
Zero Property	$A * 0 = 0$

MATH TERMS

Check the vocabulary to determine which operation to use in word problems.

$+$ addition altogether plus increase total together more	$+$ combine and both join in all sum	$-$ subtraction deduct subtract minus how many difference decrease	$-$ deduct fewer remain left over less more reduce take away
\times multiplication multiply product multiple times triple	\times by factor area twice double of	$=$ equals is are	\div division split parts equal groups separate distribute average ratio

Story problems are tough. In math there are many ways of saying the same thing. This chart gives "clue" words that will aid students who are trying to decide which math operation to use in word problems.

- ### The Eight Mathematical Practices
1. I can solve problems without giving up.
 2. I can think about numbers in many ways.
 3. I can explain my thinking and try to understand others.
 4. I can show my work in many ways.
 5. I can use math tools and tell why I chose them.
 6. I can work carefully and check my work.
 7. I can use what I know to solve new problems.
 8. I can solve problems by looking for rules and patterns.

X	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144