GRADE 10 ESSENTIAL
UNIT X – PRIOR STUDIES
PRIME NUMBERS

Name:_____
Date: _____

Prime numbers are like the basic chemical elements! Water is **H2O**; two Hydrogens and an Oxygen.

Prime numbers cannot be made up of other numbers multiplied together. ie: They have no **factors** other than themselves.

Prime numbers will never occur in the multiplication tables since prime numbers cannot be made by multiplying any different numbers different than themselves together.
    Example: 13 is only 13 * 1. No other numbers multiply to make 13.

So the list of prime numbers when you think about it would be:

    2, 3, 5, 7, 11, 13, ………. [you list a few more…….]

Can you list a lot more off the top of your head? (hint: the numbers are **NOT** in the multiplication tables)

Try the sieve method below! (You know how to use a sieve with the cat litter to filter out the poop!)

By the way prime numbers are the key to encryption and PIN codes, and internet, and genetics, etc. If you ever find a pattern to the prime numbers let me know; we would be trillionaires the next morning!

Find some of the first few prime numbers by following the instructions overleaf.

Many mathematicians have spent a lifetime studying prime numbers! Volumes of books about them.

Cross out the one (1) in the list below

In the list below cross out everything that is divisible by **2** (except 2 itself)(ie: all 'multiples' of 2)

Then cross out all the numbers divisible by **3** (all multiples of 3), except itself

Then cross out all the numbers divisible by **4** (which of course you already did when you crossed out numbers divisible by 2)

Then cross out the numbers divisible by **5** (except 5 itself)

Divisible by **6** was *already done* with the 2 and with the 3

Now **7**, ………**8** was done already with the multiples of 2. Multiples of **9** were done with the threes. **10** was done with the twos (in fact **all even numbers** were done with the twos). So just cross all even numbers! (ie: ending in 0, 2, 4, 6, 8)

Keep going. What is **left over** is the **PRIME** numbers. **Composite** numbers (*composed* of other number factors) were the ones crossed out

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	101	102	103	104
105	106	107	108	109	110	111	112	113	114	115	116	117
118	119	120	121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140	141	142	143
144	145	146	147	148	149	150	151	152	153	154	155	156
157	158	159	160	161	162	163	164	165	166	167	168	169
170	171	172	173	174	175	176	177	178	179	180	181	182
183	184	185	186	187	188	189	190	191	192	193	194	195

This method is based on that done 2,500 years ago by a Greek fellow: **Eratosthenes.**

I want to party this dude!