Feb.18th, 2016

Unit 2 Day 4
2-4 Divisibility, Prime Factors, Perfect Squares

Divisibility Tests:

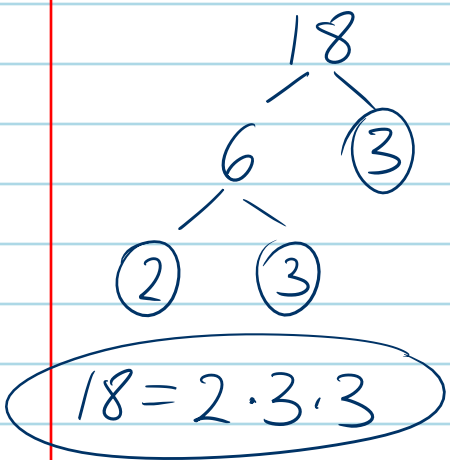
2	ends w/ a 2, 4, 6, 8, 0
3	sum of digits is divisible by 3 ex. 582 ✓ (15)
4	last 2 digits are divisible by 4 576 ← 76
5	ends w/ 0 or 5
6	check if 2 and 3 are factors.
9	sum of digits is divisible by 9.
10	ends w/ 0.

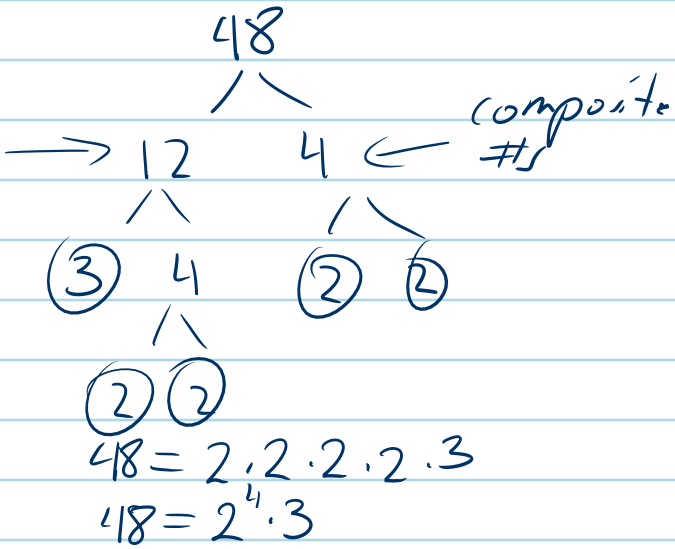
$2 \cdot 5 = 10$
factors, product

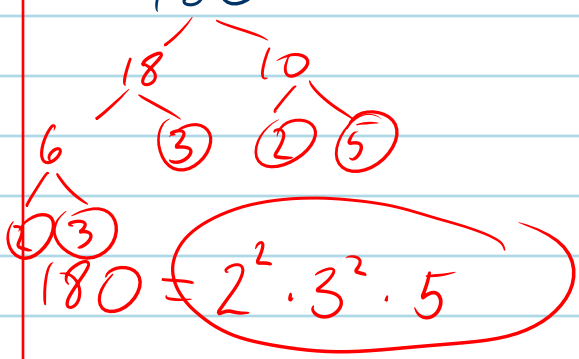
* Every whole # has a unique set of prime factors.

$12 = 2 \cdot 2 \cdot 3$

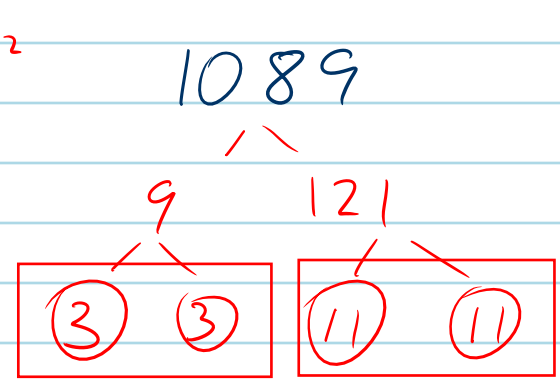
Prime #: Only 1 and itself are factors.







$1089 = 3^2 \cdot 11^2$



$$\begin{array}{r} 121 \\ 9\overline{)1089} \\ \underline{9\downarrow} \\ 18 \\ \underline{18\downarrow} \\ 09 \\ \underline{9} \\ 0 \end{array}$$

Find $\sqrt{1089} = \sqrt{3^2 \cdot 11^2} = 3 \cdot 11 = 33$

Evaluate

1) $\sqrt{57 \cdot 57}$
$= \sqrt{57^2}$
$= 57$

2) $\sqrt{38^2}$
$= 38$

3) $\sqrt{x^4} = \sqrt{x^2 \cdot x^2}$
$= x^2$

4) $\sqrt{x^2} = x$

$\sqrt{9} = 3$ $\quad \sqrt{16} = 4$ $\quad \sqrt{25} = 5$ $\quad \sqrt{71^2} = 71$
$\sqrt{3^2} = 3$ $\quad \sqrt{4^2} = 4$ $\quad \sqrt{5^2} = 5$ $\quad \sqrt{37.2^2} = 37.2$
$\sqrt{36} = 6$ $\quad \sqrt{49} = 7$ $\quad \sqrt{91^2} = 91$
$\sqrt{6^2} = 6$ $\quad \sqrt{7^2} = 7$

Prime factors reveal the secret to perfect squares. If all prime factors have an even # of terms, it is a perfect square (P.S.)

If a P.S., evaluate. Otherwise, simplify!

5) $\sqrt{2 \cdot 2 \cdot 3 \cdot 3 \cdot 7 \cdot 7}$
$= \sqrt{2^2 \cdot 3^2 \cdot 7^2}$
$= 2 \cdot 3 \cdot 7 = 42$

6) $\sqrt{2^4 \cdot 5^2}$
$= \sqrt{2^2 \cdot 2^2 \cdot 5^2}$
$= 2^2 \cdot 5$
$= 20$

7) $\sqrt{2 \cdot 3 \cdot 7 \cdot 3 \cdot 7}$
$= \sqrt{2 \cdot 3 \cdot 3 \cdot 7 \cdot 7}$
$= 3 \cdot 7\sqrt{2} = 21\sqrt{2}$

Practice 2-4