Alg. I BE

Thursday 1-12-12

1. $5^2 = ?$
2. $\sqrt{25} = ?$
3. $(x+5)^2 = ?$ Careful! Use the definition of base and exponent
4. $\sqrt{x^2+10x+25} = ?$
5. List all the factors of 56.

BE Answers

1. 25
2. 5
3. $x^2+10x+25$
4. $x+5$
5.

(a positive integer) !

Prime number	A >1 NATURAL NUMBER THAT ONLY HAS factors of 1 AND itself.
factors	a AND b ARE factors of c if $a \cdot b = c$
	factors divide evenly into their product
	*Ⓜ "factories make products"

FTOA — Fundamental Theorem of Arithmetic

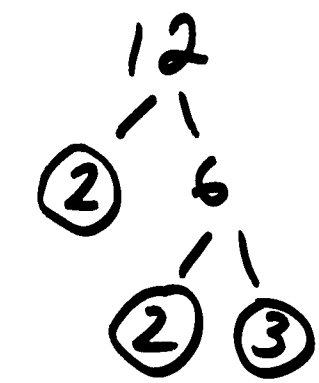
"EVERY integer > 1 CAN be expressed AS A unique product of prime factors"

Yikes!! This is almost like saying the prime numbers are the atoms of which all other numbers are made! Can they be this important? Why would 5 be more important than 6?

prime factorization — the process of finding all the prime factors of a number

use a factor tree

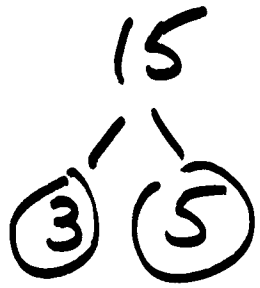
Ex



$2 \cdot 2 \cdot 3$ or $2^2 \cdot 3$

P.F. of 12

Ex



$3 \cdot 5$

P.F. of 15

Ex 19

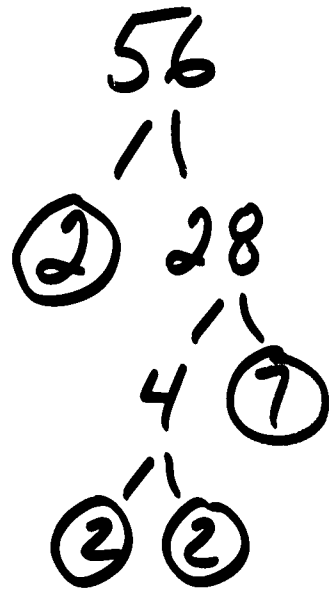
prime, only factors are 1, 19.

Note: 1 is NOT a prime or a composite number, it is a special case.

NOT-primes

There are some important uses for a P.F., one is finding all the factors of a number WITHOUT guess and check,

(Ex)



$2 \cdot 2 \cdot 2 \cdot 7$ P.F. Take all product combinations, use all 4 numbers each time

$2 \cdot 28$

$4 \cdot 14$

$8 \cdot 7$

The factors of 56 are (don't forget 1 AND 56)*:

1, 2, 4, 7, 8, 14, 28

Three common, and important, binomial • binomial patterns:

① $\boxed{(a+b)^2 = (a+b)(a+b) = a^2+2ab+b^2}$

Ex $(x+6)^2 = (x+6)(x+6) = x^2+12x+36$

Ex $(2x+1)^2 = (2x+1)(2x+1) = 4x^2+4x+1$

② $\boxed{(a-b)^2 = (a-b)(a-b) = a^2-2ab+b^2}$

Ex $(x-6)^2 = (x-6)(x-6) = x^2-12x+36$

Ex $(2x-1)^2 = (2x-1)(2x-1) = 4x^2-4x+1$

③ $= \boxed{(a-b)(a+b) = a^2-b^2}$

Ex $(x-6)(x+6) = x^2-36$

Ex $(2x-1)(2x+1) = 4x^2-1$

Summary: Ch. 8-8

$(a \pm b)^2 = a^2 \pm 2ab + b^2$

$(a+b)(a-b) = a^2 - b^2$

↓

Difference of Squares

Find each product without multiplying, just use the correct "pattern"

(Ex) $(x+3)(x-3) = x^2-9$

(Ex) $(x-1)(x+1) = x^2-1$

(Ex) $(2x-y)(2x+y) = 4x^2-y^2$

(Ex) $(x+3)(x+3) = x^2+6x+9$

or

$(x+3)^2$

(Ex) $(2x-8)(2x-8) = 4x^2-32x+64$

or

$(2x-8)^2$

- Homework:
  - Read Ch. 8-8
  - Pg 461 #5-10
  - Pg 477 #1, #4-9.