

A1 Notes: Perfect Squares & Factor Trees.

Note Title

29/09/2014

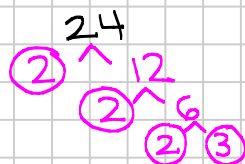
Prime Numbers: can only be divisible by itself & 1.

1, 2, 3, 5, 7, 11, 13, ...

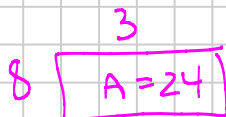
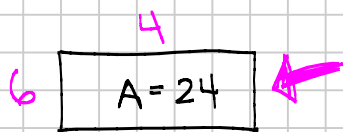
Prime Factorization: (aka Factor Trees)
break a number into its prime "pieces" factors.

if # is even $\div 2$, if # is odd $\div 3, 5, 7, \dots$

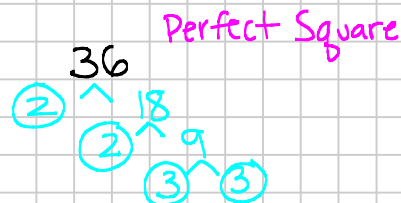
1.



$$24 = \underbrace{2 \times 2 \times 2}_{2^3} \times 3^1 \text{ exponents}$$



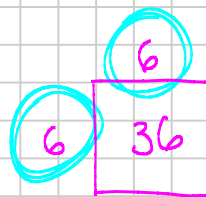
2.



$$36 = \underbrace{2 \times 2}_{2^2} \times \underbrace{3 \times 3}_{3^2}$$

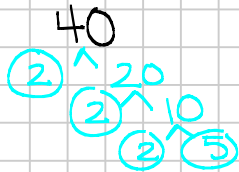
$$2^2 \times 3^2 = 6 \times 6$$

← when exponents are EVEN
Split into 2 equal groups



Prime Factorize. Is it a Perfect Square?

3.

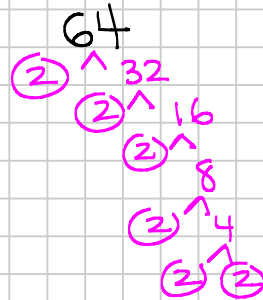


$$40 = \underbrace{2 \times 2 \times 2}_{2^3} \times 5^1$$

Not Perfect



4.

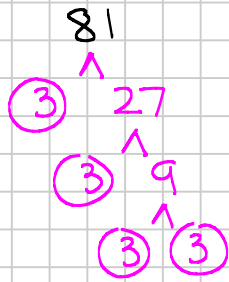


$$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

6 ← even with 1 # means $2^3 \times 2^3 = 8 \times 8$



5.



$$81 = 3 \times 3 \times 3 \times 3$$

$$= 3^4$$

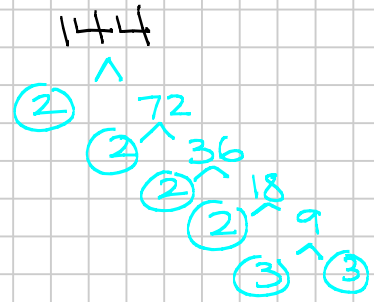
$$3^2 \times 3^2$$

$$9 \times 9$$

yes

$$\boxed{81}^9_9$$

6.



$$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$$

$$2^4 \times 3^2$$

$$2^2 \times 3^1 \times 2^2 \times 3^1$$

$$12 \times 12$$

yes

$$\boxed{144}^{12}_{12}$$

$$5^3 \times 2^1$$

$$5^3 \times 2^1$$