

## 5.2 Prime and Composite Numbers

Prime Numbers - are greater than 1 and have

only 2 factors (1 and itself)

$\Rightarrow 2, 3, 5, 7, 11, 13, 17, 19, 23, \dots$

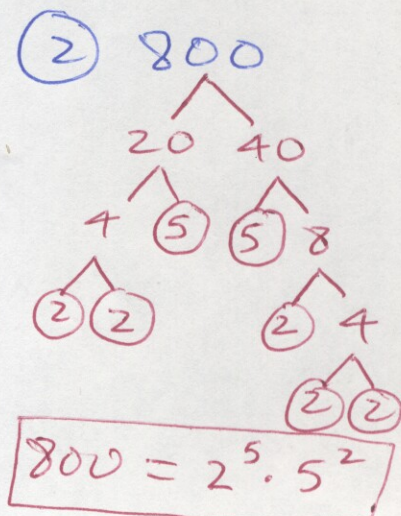
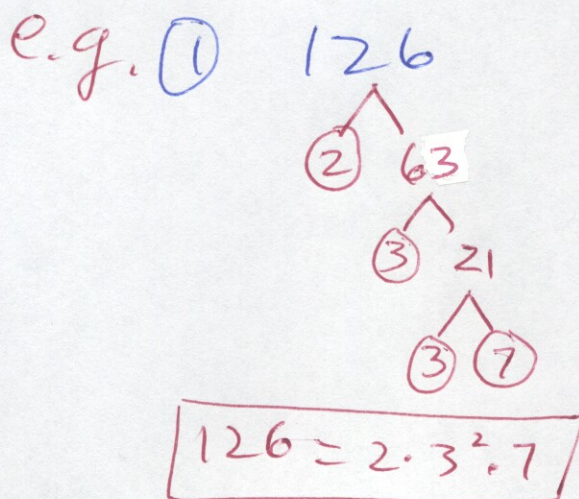
Composite Numbers - have

More than 2 factors.

$\Rightarrow 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, \dots$

$\Rightarrow$  The Fundamental  
Theorem of Arithmetic

Every Natural number has a Unique Prime factorization.



## 5.3 GCF & LCM

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GCF - Greatest Common Factor

LCM - Least Common Multiple

With fractions we often need a common denominator, we seek the LCD - Least Common Denominator (= LCM of Denominators)

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e.g. ③ Determine the GCF & LCM for 300 and 648.

First prime factor:

$$300 = 2^2 \cdot 3^1 \cdot 5^2, \quad 648 = 2^3 \cdot 3^4$$

$$\Rightarrow \boxed{\text{GCF} = 2^2 \cdot 3^1 = 12} \quad (\text{taking the smaller powers})$$

$$\Rightarrow \boxed{\text{LCM} = 2^3 \cdot 3^4 \cdot 5^2 = 16,200} \quad (\text{taking the larger powers})$$

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④ What is the LCD for  $\frac{5}{124}$  &  $\frac{15}{84}$ ?

LCD = LCM of 124 and 84.

Prime factors:  $124 = 2^2 \cdot 31$ ,  $84 = 2^2 \cdot 3 \cdot 7$

$$\Rightarrow \text{LCD} = \text{LCM}(124, 84)$$

$$= 2^2 \cdot 3 \cdot 7 \cdot 31 = \boxed{2604}$$

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