

### 4.3 Greatest Common Divisor/Factor (GCF) and Least Common Multiple (LCM)

GCF--biggest factor/divisor that two or more numbers have in common

LCM--smallest multiple of two or more numbers

Example: For the numbers 8 and 12, the  $GCF(8,12) = 4$   
and  $LCM(8,12) = 24$ .

#### GCF Methods/Algorithms

We'll use the example  $GCF(45, 30)$ :

1. Standard (build-up)
2. Venn Diagram
3. Euclidean Algorithm
4. Area model (geometric version of Euclidean)
5. Layer Cake

LCM Methods/Algorithms

We'll use the example LCM(36, 60):

1. List
2. Prime Factorization
3. Venn Diagram
4. Area model, along with fact  
 $GCF(a,b) * LCM(a,b) = ab$
5. Layer cake

### LCM Methods/Algorithms

We'll use the example LCM(36, 60):

1. List
2. Prime Factorization
3. Venn Diagram
4. Area model, along with fact  
 $GCF(a,b) * LCM(a,b) = ab$

Examples:

1. Find GCF(840,3432)

2. Find LCM(264, 180)

3. Find GCF and LCM for 8424 and 2520

4. Find GCF and LCM for  $4^{100}$ ,  $50^{20}$  and  $20^{35}$

(From your homework:)

#### GCF and LCM Problems

1. Pencils come in packages of 18. Erasers that fit on top of these pencils come in packages of 24. What is the smallest number of pencils and erasers that you can buy so each pencil can be matched with an eraser? How many packages of each will you need?
2. Ko has a bag with 45 red candies and another with 75 green candies. She wants to make goody bags so that each goody bag contains the same number of red candies and the same number of green candies and so that she uses up all of the candies. What is the largest number of goody bags she can make this way? How many of each color candy will be in each goody bag?
3. Same has lots of 8-inch sticks he is placing end to end to make a line of sticks. Becky has 12-inch sticks that she is placing end to end as well. If they want their line of sticks to be the same length, how long could they be? What is the shortest such length?