Algebra I
5-1
Factoring Integers

Factors - Two numbers in a multiplication.

$$(2)(3) = 6$$

Factors — Product

Prime Numbers - A number with exactly two factors, one and itself.

Composite Numbers - A number with more than two factors.

1 is called the identity.
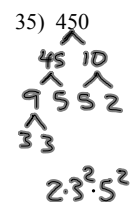
What is the smallest prime number? 2

2, 3, 5, 7, 11, 13, 17, 19, 23, 29...

List all factor pairs of each integer

3) 24 $\pm 1, 24$
        $\pm 2, 12$
        $\pm 3, 8$
        $\pm 4, 6$

Find the prime factorization of each number.

Prime Factorization - Make a tree.

25) 75

75
25 3
5 5
$3 \cdot 5^2$

35) 450
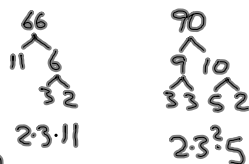
450
45 10
9 5 5 2
3 3
$2 \cdot 3^2 \cdot 5^2$

Greatest Common Factor - The least of each

Least Common Multiple - The most of each

Find the GCF and LCM of each group of numbers.

41) 66, 90

66
11 6
3 2
$2 \cdot 3 \cdot 11$

90
9 10
3 3 5 2
$2 \cdot 3^2 \cdot 5$

GCF $2 \cdot 3 = 6$
LCM $2 \cdot 3^2 \cdot 5 \cdot 11 = 990$

Find the GCF and LCM of each group of numbers.

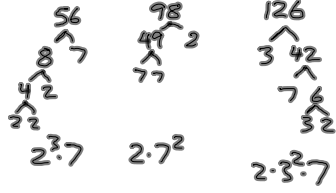$2^3 \cdot 3^4 \cdot 5^5 \cdot 7 \cdot 13 \cdot 17$ $2^5 \cdot 3^2 \cdot 7^3 \cdot 11 \cdot 13^2$

GCF $2^3 \cdot 3^2 \cdot 7 \cdot 13$ LCM $2^5 \cdot 3^4 \cdot 5^5 \cdot 7^3 \cdot 11 \cdot 13^2 \cdot 17$

Find the GCF and LCM of each group of numbers.

49) 56, 98, 126

56
8 ∧ 7
4 ∧ 2
2 2

$2^3 \cdot 7$

98
49 ∧ 2
7 7

$2 \cdot 7^2$

126
3 ∧ 42
7 ∧ 6
3 2

$2 \cdot 3^2 \cdot 7$

GCF $2 \cdot 7 = 14$

LCM $2^3 \cdot 3^2 \cdot 7^2 = 3528$

Pg 187
2-52 even