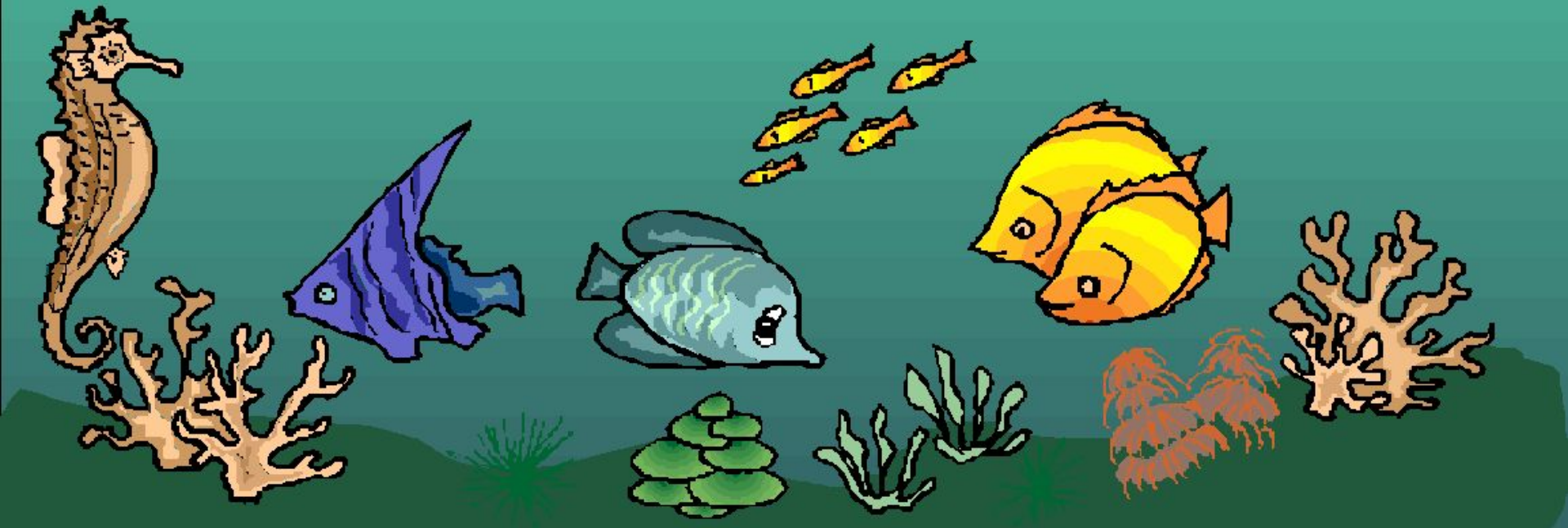# Greatest Common Factor

Greatest Common Factor (GCF)

- The greatest common factor is the largest factor that two numbers share.

- Let's find the GCF of 12 and 42. First, we need to make a list of factors for each number.

12

1 x 12

2 x 6

3 x 4

4 x 3

Factors of 12:

1, 2, 3, 4, 6, 12

42

1 x 42

2 x 21

3 x 14

4 x ??

5 x ??

6 x 7

7 x 6

Factors of 42:

1, 2, 3, 6, 7, 14, 21, 42

Common Factors: 1, 2, 3, 6

Greatest Common Factor: 6

What is the GCF of 18 and 27?

18
___
1 x 18

2 x 9

3 x 6

~~4 x ?~~

~~5 x ?~~

~~6 x 3~~

Factors of 18:

1, 2, 3, 6, 9, 18

Factors of 27:

1, 3, 9, 27

Common Factors:
1, 3, 9

GCF: 9

27
___
1 x 27

~~2 x ?~~

3 x 9

~~4 x ?~~

~~5 x ?~~

~~6 x ?~~

~~7 x ?~~

~~8 x ?~~

~~9 x 3~~

What is the GCF of 48 and 60?

48
1 x 48
2 x 24
3 x 16
4 x 12
6 x 8

60
1 x 60
2 x 30
3 x 20
4 x 15
5 x 12
6 x 10

Factors of 48:

1, 2, 3, 4, 6, 8, 12, 16, 24, 48

Factors of 60:

1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

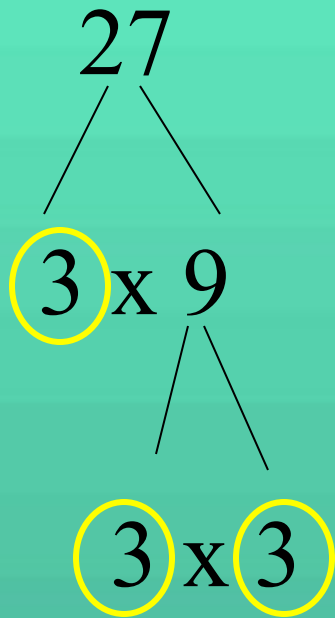Common Factors: 1, 2, 3, 4, 6, 12

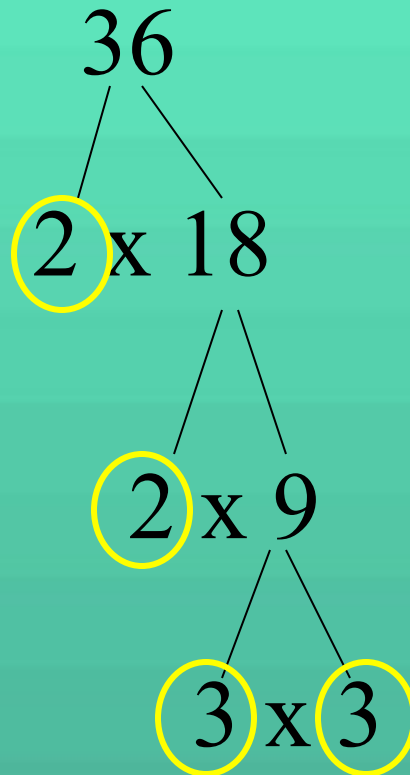GCF: 12

Using Prime Factorization

- Find the prime factorization of each number.

- Identify the common factors and multiply them.

Example: GCF of 27 and 36

27

3 x 9

3 x 3

Ans. 3x3x3

36

2 x 18

2 x 9

3 x 3

Ans. 2x2x3x3

- Both prime factorizations have 3x3 in common.

- Therefore, the GCF is 9.