

Prime and Composite Numbers



Quick Review

- ▶ You can make only 1 rectangle with 7 tiles.

7 has 2 factors: 1 and 7

7 is a **prime number**.

A prime number is a number greater than 1 that has exactly 2 factors: 1 and itself.



$$1 \times 7 = 7$$

- ▶ You can make 3 different rectangles with 12 tiles.



$$1 \times 12 = 12$$

12 has 6 factors: 1, 2, 3, 4, 6, and 12

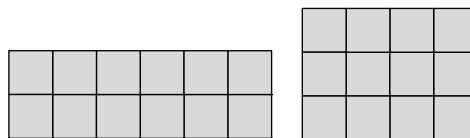
The factors that are prime numbers are 2 and 3.

12 is a **composite number**.

A composite number is a number with more than 2 factors.

A composite number can be written as a product of prime factors:

$$12 = 2 \times 2 \times 3$$



$$2 \times 6 = 12$$

$$3 \times 4 = 12$$

Try These

- List all the factors of each number.

a) 15 _____ b) 18 _____ c) 27 _____

d) 34 _____ e) 8 _____ f) 5 _____

- Tell if each number in question 1 is prime or composite.

a) _____ b) _____ c) _____

d) _____ e) _____ f) _____

- Write 2 numbers less than 50 that have exactly 3 factors.

Practice

1. Play this game with a partner.

You will need 6 number cubes, each labelled 1 to 6.

- Each player's turn lasts until the total rolled on the number cubes is a prime number.

The object of the game is to roll a prime number total using the least number of rolls.

- On each roll, you may choose to use from 2 to 6 number cubes. The number of rolls needed to reach a prime number is your score for that round.
- The player with the lower score at the end of 5 rounds wins.

2. Three numbers between 80 and 100 are prime numbers.

What numbers are they? _____

3. Eight numbers between 31 and 41 are composite numbers.

What numbers are they? _____

4. Use the table to sort the numbers from 30 to 50.

	Odd	Even
Prime		
Composite		

Stretch Your Thinking

Write the ages of 6 relatives.

Tell whether each age is a prime number or a composite number.

Investigating Factors



Quick Review

- ▶ When we find the same factors for 2 numbers, we find **common factors**.

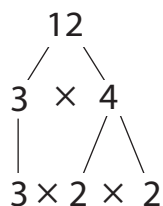
The factors of 12 are: 1, 2, 3, 4, 6, 12

The factors of 16 are: 1, 2, 4, 8, 16

The common factors of 12 and 16 are 1, 2, and 4.

- ▶ Here are 2 ways to find the factors of 12 that are prime numbers.

- Draw a factor tree.



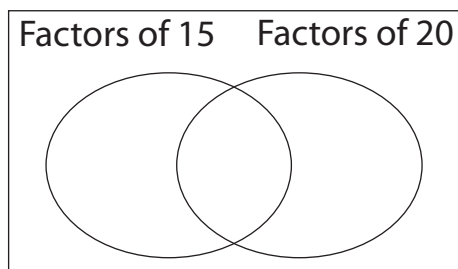
- Use repeated division by prime numbers.

$$\begin{array}{r} 6 \\ 2 \overline{)12} \\ \underline{2} \\ 3 \\ 2 \overline{)6} \\ \underline{2} \\ 1 \\ 3 \overline{)3} \\ \underline{3} \\ 0 \end{array}$$

The factors of 12 that are prime numbers are 2 and 3.

Try These

1. Use the Venn diagram to show the factors of 15 and 20.
What are the common factors? _____



2. Find all the factors of each number.
 - a) 36 _____
 - b) 45 _____
 - c) 60 _____

Practice

1. Find the common factors of each pair of numbers.

a) 30, 50 _____

b) 16, 42 _____

2. Find the factors of each number that are prime.

a) 45

b) 32

c) 70

Factors that are prime:

____, ____

Factor that is prime:

Factors that are prime:

____, ____, ____

Stretch Your Thinking

Draw 3 different factor trees for 72.