



2. The number 6 is called a *perfect number* because its factors (1, 2, and 3) add up to 6:  $(1 + 2 + 3 = 6)$ .



Are there other perfect numbers?

Use paper and pencil or technology to investigate the numbers from 1 to 100.

If the factors of a number add up to less than the number, it is called *deficient*. For example, 8 is a deficient number. The factors of 8 are  $1 + 2 + 4 = 7$ .

If the factors of a number add up to more than the number, it is called *abundant*. For example, 12 is an abundant number. The factors are  $1 + 2 + 3 + 4 + 6 = 16$ .

Identify the deficient and abundant numbers in your list.

3. Before calculators and computers were invented, accountants used a trick to check their calculations. It was called *casting out nines*.

Research casting the nines on the Internet or in the library to find out how it works.

Show 1 example for addition, subtraction, multiplication, and division.

Are there any cases where casting out nines does not work?

4. You have 25 cards numbered from 1 to 25, and arranged in a  $5 \times 5$  square.

Flip over every card that is divisible by 1.

Then, flip every card that is divisible by 2.

Continue to flip every card that is divisible by 3, 4, 5, etc. until you have flipped the cards divisible by 25.

Which cards will be face up when you're done?

Repeat the experiment for 36 cards. What is the pattern?