VOCABULARY

Calculators can solve a lot of problems, but vocabulary is one aspect of math with which a calculator can't help. Let's review some of the main terms.

A Note on Calculators

This chapter will deal mainly with concepts rather than operations. As mentioned in the previous chapter, we encourage you to use your calculator liberally but wisely. The operations discussed in this chapter will be those for which a calculator might be unhelpful or extra confusing.

Basics

Use the numbers below to answer questions 1 through 6 that follow. Check your answers against the Answer Key at the end of this chapter on page 259.

$$-81, -19, -9, -6, -\frac{1}{4}, -0.15, 0, 1.75, 2, 3, 12, 16, 81$$

1. List all the *positive numbers.* _____

2. List all the *negative integers.* _____

3. List all the *odd* integers. _____

4. List all the *even* integers. _____

5. List all the *positive*, *even* integers in *consecutive* order. _____

_____

6. List all the numbers that are neither *positive* nor *negative*. _____

_____

Now try these questions.

7. What is the *reciprocal* of $-\frac{1}{4}$? _____

8. What is the *opposite reciprocal* of 2? _____

9. When a number and its reciprocal are multiplied, what is the product?

_____

10. How many times does 2 go into 15 evenly? _____

11. In question 10, how much is left over? _____

12. What is 15 divided by 2? _____

Let's try it the other way. Use the following list of terms to answer questions 13 through 18.

Number, Integer, Positive, Negative, Even, Odd,
Consecutive, Reciprocal, Remainder

13. Which terms describe the number 6? _____

_____

14. Which terms describe the number $-\dfrac{1}{5}$? _____

_____

15. Which terms describe the number 0? _____

_____

16. When 14 is divided by 3, it has a _____ of 2.

17. The _____ of $-\dfrac{1}{4}$ is −4.

18. The numbers 2, 4, 6 are listed in _____ order, but the numbers 3, 1, 14 are not.

Factors and Multiples

Factors and multiples are all numbers that are divisible by other numbers. Start with examples, and the definitions will become easier.

> Example
> • The factors of 10 are 1, 2, 5, 10.
> • The first four positive multiples of 10 are 10, 20, 30, 40.

1. List the factors of 12. _____

2. List the first four multiples of 12. _____

3. List the factors of 30. _____

4. List the first four multiples of 30. _____

5. Is 12 a multiple or factor of 24? _____

6. Is 8 one of the factors of 64? _____

7. What is the greatest common factor of 27 and 45? _____

8. What is the greatest common factor of 9 and 36? _____

9. What is the least common multiple of 9 and 12? _____

10. What is the least common multiple of 24 and 48? _____

A Good Rule of Thumb
- The factors of a number are always equivalent to that number or *smaller*.
- The multiples of a number are always equivalent to that number or *larger*.
- A handy way to remember this is that **f**actors are **f**ew, and **m**ultiples are **m**any.

Prime

A prime number is any number with only two distinct factors:
1 and itself.

1. What are the single-digit prime numbers? _____

2. What is the only even prime number? _____

3. Is 1 a prime number? _____

The prime factorization of a number is the reduction of a number to
its prime factors. Find the prime factorization of a number by
using a factor tree. Consider this example:

```
        18
       /  \
      2    9
          / \
         3   3
```
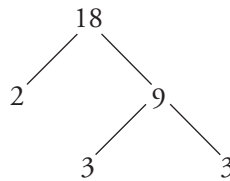
The prime factorization of 18 is $2 \times 3 \times 3$ or 2×3^2.

4. What is the prime factorization of 36?

5. What is the sum of all the prime factors of 36? _____

6. What is the product of all the distinct prime factors of 36? _____

Distinct = Different
The word *distinct* is important. It means different, so don't count any number twice. For example, 24 has 4 prime factors (2, 2, 2, 3) but only 2 *distinct* prime factors (2, 3).