

- **Sequences**
- **Digits**

- A **sequence** is an ordered list of numbers.
- A sequence has a counting pattern or rule. It can go up or down.
- Subtract to find the rule.

**Example:** 4, 8, 12, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

$$\begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array} \quad \begin{array}{r} 8 \\ - 4 \\ \hline 4 \end{array}$$

Now we know to count up by 4s to find the next terms.

4, 8, 12, 16, 20, 24, ...      Rule: Count up by 4s.

**Practice:**

Subtract to find the rule. Write the next three numbers in each sequence.

1. 4, 7, 10, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

Rule: Count \_\_\_\_\_ by \_\_\_\_\_.

2. 2, 4, 6, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

Rule: Count \_\_\_\_\_ by \_\_\_\_\_.

3. 6, 10, 14, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

Rule: Count \_\_\_\_\_ by \_\_\_\_\_.

4. 2, 7, 12, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

Rule: Count \_\_\_\_\_ by \_\_\_\_\_.

5. 23, 19, 15, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

Rule: Count \_\_\_\_\_ by \_\_\_\_\_.

6. 18, 16, 14, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, ...

Rule: Count \_\_\_\_\_ by \_\_\_\_\_.

How many digits are in each of these numbers?

7. 65,890 \_\_\_\_\_

8. 751,293,576,002 \_\_\_\_\_

**• Even and Odd Numbers**

- Counting numbers: 1, 2, 3, 4, 5, 6, ...
  - **Whole numbers** are the counting numbers and the number 0: 0, 1, 2, 3, 4, 5, 6, ...
  - All whole numbers are either even or odd:
    - Even** numbers: 0, 2, 4, 6, 8, ...
    - Odd** numbers: 1, 3, 5, 7, 9, ...
  - Look at the last digit in numbers greater than 9 to decide if the number is even or odd.
    - 536 even
    - 537 odd
  - Even numbers can be put into 2 equal groups.
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**Practice:**

Is each number odd or even?

1. 4 \_\_\_\_\_
2. 17 \_\_\_\_\_
3. 34,900 \_\_\_\_\_
4. 802 \_\_\_\_\_
5. 785,327 \_\_\_\_\_
6. 1,975,354 \_\_\_\_\_
7. Tam separated gift bags for her party guests. She placed them into two equal piles. Was the number of gift bags Tam separated an even number or an odd number? \_\_\_\_\_
8. Draw an example of an odd number of items below. Show how you can tell it is an odd number. (*Hint*: Circling pairs may help.)

### • Using Money to Illustrate Place Value

- Using money amounts can help you understand place value, because \$100, \$10, and \$1 bills can represent “hundreds,” “tens,” and “ones.”
- The bills on the place-value template below show the **expanded form** of 312.



- The expanded form for 312 is:  
3 hundreds + 1 ten + 2 ones

### **Practice:**

1. Which digit in 387 shows the number of tens? \_\_\_\_\_
2. Use digits to write the number “5 hundreds plus 7 tens.” \_\_\_\_\_
3. How much money is two \$100 bills plus nine \$10 bills plus four \$1 bills? You may use play money to help find the answer. Remember to write the dollar sign.  
\_\_\_\_\_
4. Write  $200 + 60 + 4$  in standard form. \_\_\_\_\_

Write the expanded form of the following numbers.

5. 789 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_
6. 115 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_
7. 432 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_
8. 548 \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

**• Comparing Whole Numbers**

- We often use symbols to show how we compare two numbers. The symbol we use tells us if one number is greater than, less than, or equal to the other.
- Remember, the small end points to the smaller number.

$3 < 4$  Three is **less than** 4.

$4 > 3$  Four is **greater than** 3.

$3 = 3$  Three is equal to 3.

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**Practice:**

1. Write the numbers 432, 234, and 342 in order from least to greatest.

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

Complete each comparison by writing the proper comparison symbol in the circle.

2.  $48 \bigcirc 84$

3.  $110 \bigcirc 101$

4.  $215 \bigcirc 251$

Write each comparison using symbols.

5. Fifteen is less than seventeen. \_\_\_\_\_  $\bigcirc$  \_\_\_\_\_

6. Thirty-four is greater than thirty. \_\_\_\_\_  $\bigcirc$  \_\_\_\_\_

Fill in the blanks with the proper comparison word.

7. One hundred twenty-two is \_\_\_\_\_ than one hundred twenty-four.

8. Two hundred three is \_\_\_\_\_ than two hundred thirty.

**• Naming Whole Numbers and Money**

- When naming whole numbers, never use the word “and”.  
302 → three hundred two
  - Use hyphens when writing the numbers 21 to 99 (except those numbers that end with zero).  
64 → sixty-four
  - When naming money, use “and” between the dollars and cents.  
\$217.94 → two hundred seventeen dollars and ninety-four cents
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**Practice:**

1. Use words to name \$479.05.

\_\_\_\_\_ dollars and \_\_\_\_\_ cents.

2. Use words to name 202.

\_\_\_\_\_

3. Use words to name 333.

\_\_\_\_\_

4. Use digits to write six hundred eighty-four.

\_\_\_\_ \_

5. Use digits to write nine hundred nine.

\_\_\_\_ \_

6. Use digits to write seven hundred thirty-eight dollars and ninety-one cents.

\$ \_\_\_\_ . \_\_\_\_

7. Use digits to write five hundred fifty-five dollars and twenty-five cents.

\$ \_\_\_\_ . \_\_\_\_

## • Adding Whole Numbers

- Addition keywords: sum, total, together
- Numbers that are added are called **addends**.
- The answer is called the **sum**.

$$\begin{array}{r} \text{addend} \\ + \text{addend} \\ \hline \text{sum} \end{array}$$

- To make column addition easier, look for sets of ten.

**Example:**

$$\begin{array}{r} 10 \quad \begin{array}{l} \diagup 7 \\ \diagdown 4 \end{array} \\ \quad \quad \begin{array}{l} \diagdown 3 \\ \diagup 6 \end{array} \\ \hline 20 \end{array} \quad \begin{array}{l} \diagdown \\ \diagup \end{array} 10$$

**Sets of 10**

$9 + 1 = 10$
$8 + 2 = 10$
$7 + 3 = 10$
$6 + 4 = 10$
$5 + 5 = 10$

- The **Commutative Property of Addition** says that we may add numbers in any order to find the sum.

$$5 + 6 = 6 + 5$$

- The **Identity Property of Addition** says that when zero is added to any number, the sum is identical to that number.

$$2 + 0 = 2 \quad 37 + 0 = 37$$

- An **algorithm** is a step-by-step way to get an answer. We can add, subtract, multiply, and divide numbers using algorithms.

Example of an addition algorithm:

1. Line up digits that have the same place value.
2. Add. Start with the ones place, and carry (exchange) when needed.

$$\begin{array}{r} \phantom{0}^1 \phantom{0}^1 \\ \$ 379 \\ + \$ 76 \\ \hline \$ 455 \end{array}$$

### **Practice:**

Find each sum. Show the sets of ten.

1.  $3 + 6 + 7 = \underline{\hspace{2cm}}$

2.  $5 + 1 + 4 + 6 = \underline{\hspace{2cm}}$

3.  $9 + 3 + 1 + 5 = \underline{\hspace{2cm}}$

4.  $8 + 4 + 2 + 6 = \underline{\hspace{2cm}}$

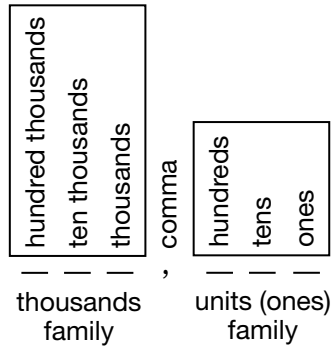
5.  $2 + 8 + 9 + 4 + 5 = \underline{\hspace{2cm}}$

6.  $9 + 4 + 2 + 5 + 8 = \underline{\hspace{2cm}}$

- **Writing and Comparing Numbers through Hundred Thousands**
- **Ordinal Numbers**

**Writing and Comparing Numbers through Hundred Thousands**

- The first six whole-number places:



- Count from the right. Insert a comma after every third digit: 54,321.

**Practice:**

Use words to name each number. (*Hint: Add commas.*)

1. 54890 \_\_\_\_\_

\_\_\_\_\_

2. 750243 \_\_\_\_\_

\_\_\_\_\_

3. 29204 \_\_\_\_\_

\_\_\_\_\_

4. 110100 \_\_\_\_\_

\_\_\_\_\_

5. 935832 \_\_\_\_\_

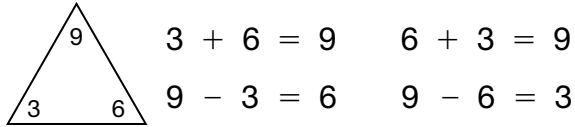
\_\_\_\_\_

Compare:

6. 32,789 ○ 39,320      7. 12,550 ○ 12,550      8. 197,235 ○ 197,335

### • Relationship Between Addition and Subtraction

- Subtraction keywords: difference, minus
- When you learn one **fact family**, you know four facts.



- Addition and subtraction are **inverse operations**, because one operation “undoes” the other.

### **Practice:**

Subtract.

1.  $18 - 5 =$  \_\_\_\_\_      2.  $23 - 9 =$  \_\_\_\_\_      3.  $16 - 4 =$  \_\_\_\_\_

4. 
$$\begin{array}{r} 11 \\ - 4 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} 17 \\ - 7 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} 24 \\ - 11 \\ \hline \end{array}$$

Write two addition facts and two subtraction facts for each fact family.

7. 6, 4, 10    \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

8. 8, 9, 17    \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_



- **Practicing the Subtraction Algorithm**

- Subtraction algorithm:

Regroup from 2 tens.  
Subtract ones.

$$\begin{array}{r} \phantom{0}^1 \phantom{0}^{17} \\ \$ 7 \cancel{2} \cancel{7} \\ - \$ 3 6 9 \\ \hline 8 \end{array}$$

Regroup from 7 hundreds.  
Subtract tens.

$$\begin{array}{r} \phantom{0}^6 \phantom{0}^{11} \phantom{0}^{17} \\ \$ \cancel{7} \cancel{2} \cancel{7} \\ - \$ 3 6 9 \\ \hline \$ 3 5 8 \end{array}$$

As a shortcut, we can borrow across multiple places in one step.

$$\begin{array}{r} \phantom{0}^6 \phantom{0}^9 \\ \cancel{7} \cancel{0} \cancel{0} \\ - 3 0 7 \\ \hline 3 9 3 \end{array}$$

**Practice:**

Subtract. Remember to write the dollar sign in money problems.

1. 
$$\begin{array}{r} \$478 \\ - \$129 \\ \hline \end{array}$$

2. 
$$\begin{array}{r} 300 \\ - 247 \\ \hline \end{array}$$

3. 
$$\begin{array}{r} \$871 \\ - \$683 \\ \hline \end{array}$$

4. 
$$\begin{array}{r} \$600 \\ - \$583 \\ \hline \end{array}$$

5. 
$$\begin{array}{r} 205 \\ - 89 \\ \hline \end{array}$$

6. 
$$\begin{array}{r} \$627 \\ - \$374 \\ \hline \end{array}$$

7. 
$$\begin{array}{r} 123 \\ - 98 \\ \hline \end{array}$$

8. 
$$\begin{array}{r} \$352 \\ - \$269 \\ \hline \end{array}$$

9. 
$$\begin{array}{r} 290 \\ - 215 \\ \hline \end{array}$$

### • Missing Addends

- When we write a number sentence with an equal sign, we are comparing two expressions and saying they are equal, so a number sentence with an equal sign is often called an **equation**.

$$14 - 8 = 6$$

- To find a missing **addend**, subtract.

$$\begin{array}{r} 17 \\ 21 \\ 5 \end{array} \left. \vphantom{\begin{array}{r} 17 \\ 21 \\ 5 \end{array}} \right\} 43$$

$$\begin{array}{r} 57 \\ - 43 \\ \hline 14 = m \end{array}$$

$$\begin{array}{r} 17 \\ 21 \\ 5 \\ + 14 \\ \hline 57 \end{array}$$

$$\begin{array}{r} \text{Check: } 17 \\ 21 \\ 5 \\ + 14 \\ \hline 57 \end{array}$$

### **Practice:**

Find each missing addend.

1.  $43 + x = 62$

$$\begin{array}{r} 62 \\ - 43 \\ \hline = x \end{array}$$

$$\begin{array}{r} \text{Check: } 43 \\ + \\ \hline \end{array}$$

2.  $29 + t = 47$

$$\begin{array}{r} 47 \\ - 29 \\ \hline = t \end{array}$$

$$\begin{array}{r} \text{Check: } 29 \\ + \\ \hline 47 \end{array}$$

3.  $8 + 3 + 4 + 6 + q = 26$

$$\begin{array}{r} 8 \\ 3 \\ 4 \\ 6 \end{array} \left. \vphantom{\begin{array}{r} 8 \\ 3 \\ 4 \\ 6 \end{array}} \right\} \begin{array}{l} 26 \\ - \\ \hline = q \end{array}$$

$$\begin{array}{r} \text{Check: } \\ + \\ \hline 26 = q \end{array}$$

4.  $9 + 2 + 5 + 8 + p = 30$

$$\begin{array}{r} 9 \\ 2 \\ 5 \\ 8 \end{array} \left. \vphantom{\begin{array}{r} 9 \\ 2 \\ 5 \\ 8 \end{array}} \right\} \begin{array}{l} 30 \\ - \\ \hline = p \end{array}$$

$$\begin{array}{r} \text{Check: } \\ + \\ \hline 30 = p \end{array}$$

5.  $31 + g = 48$

$$g = \underline{\hspace{2cm}}$$

6.  $70 + 15 + r = 97$

$$r = \underline{\hspace{2cm}}$$