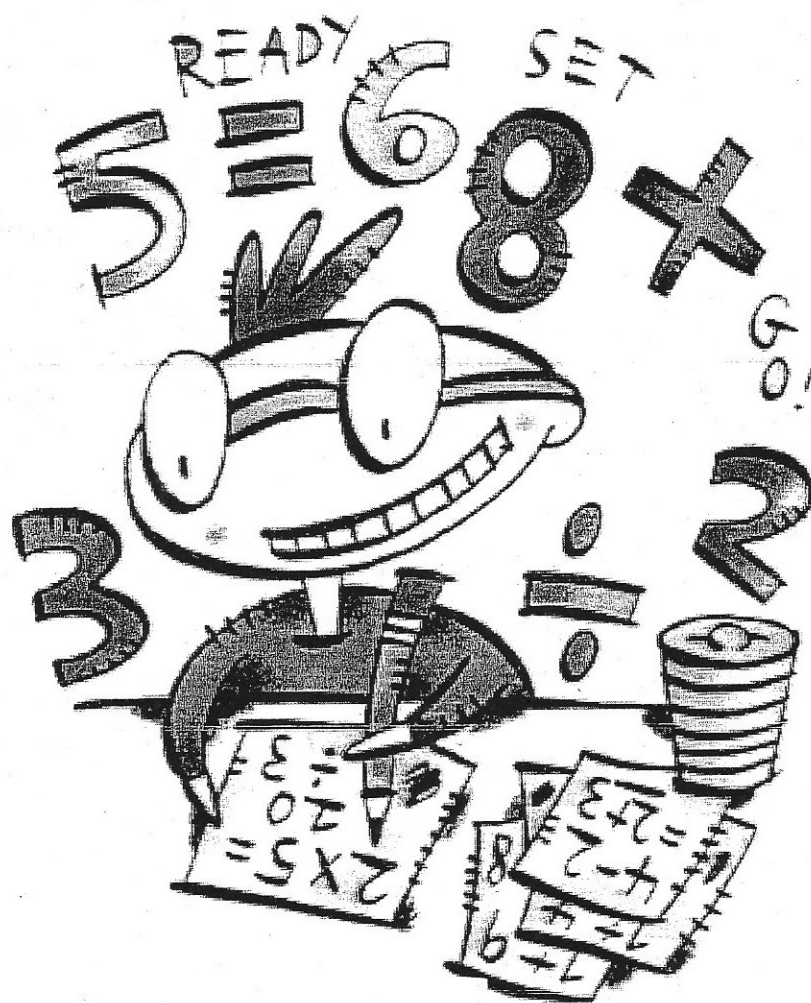


# 3<sup>rd</sup> Grade Student/Parent Mathematics Resource



Explanation of Concepts, Examples,  
Important Vocabulary and Reinforcement  
Games for Units of Study

## Numbers & Operations in Base Ten (Place Value and Rounding)

### Place Value

- Model (concretely or pictorially) whole numbers through 1,000. (Example: Extend place value understanding beyond standard algorithm or procedure. Students should be able to explain and reason about the answers they get when they round as a result of a deep understanding of place value. (\*Students can use a number line, hundreds chart, Base 10 blocks, etc... to explain.)
  - Read numbers through 10,000 from a place value model.
  - Write numbers through 10,000 in standard, expanded, and written form.
  - Identify place value through 100,000 and identify the number of hundred thousands, thousands, hundreds, tens, and ones in a given number.
  - Identify the place value position or the value of the digit in a number.
  - Compare, order, and sequence whole numbers through 10,000.
  - Use symbols  $<$ ,  $=$ ,  $>$  correctly.
  - Create, describe, and extend number patterns.

### Rounding

- Round numbers to the nearest ten and hundreds. (Example: Extend place value understanding beyond standard algorithm or procedure. Students should be able to explain and reason about the answers they get when they round, as a result of a deep understanding of place value. (\*Students can use a number line, hundreds chart, etc... to explain.)
  - Use visual representations such as a number line or hundreds chart to model rounding of numbers.
  - Identify the actual/possible numbers when given the rounded number.
  - Use compatible numbers and rounding to estimate sums.
  - Use estimation as a strategy for determining the reasonableness of an answer in computation.

- Create and describe strategies for reaching solutions.

**Vocabulary:**

**Place Value:** Base 10 blocks, digits, ones, tens, hundreds, thousands, hundred thousands, standard notation, expanded notation, written notation, greater than, less than,  $>$ ,  $<$ ,  $=$ , estimate, trading, place value, regrouping

**Rounding & Regrouping:** flat, rod, unit, ones, tens, hundreds, thousands, hundred thousands, regroup, trade, operation, multiples, digit, facts, sum, difference, addends, mental math, rounding, estimate, number sentence, compare, plus, minus, ordering, equals, equation, number sentence, actual number, about, reasonable

# Greater Numbers

---

A period is a group of three digits in a number, starting from the right. A comma is used to separate two periods.

Thousands Period			Ones Period		
hundred thousands	ten thousands	thousands	hundreds	tens	ones
2	4	7,	3	6	2

Here are different ways to show 247,362.

**expanded form:**  $200,000 + 40,000 + 7,000 + 300 + 60 + 2$

**standard form:** 247,362

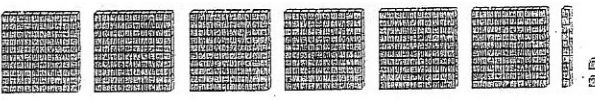
**word form:** two hundred forty-seven thousand, three hundred sixty-two

---

## Numbers in the Hundreds

---

Here are different ways to show 612.

**place-value blocks:** 

**expanded form:**  $600 + 10 + 2$

**standard form:** 612

**word form:** six hundred twelve

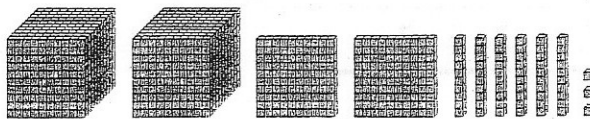
---

## Numbers in the Thousands

---

Here are different ways to show 2,263.

**place-value blocks:**



**expanded form:**  $2,000 + 200 + 60 + 3$

**standard form:** 2,263

**word form:** two thousand, two hundred sixty-three

# Place-Value Patterns

Here are three different ways to show 114.



$$114 = 1 \text{ hundred, } 1 \text{ ten, } 4 \text{ ones}$$



$$114 = 11 \text{ tens, } 4 \text{ ones}$$



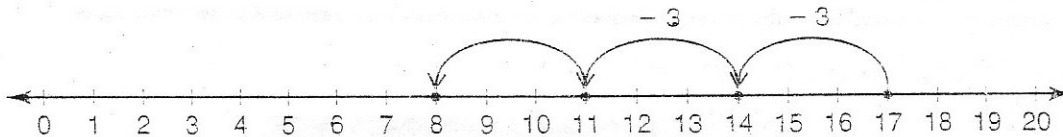
$$114 = 1 \text{ hundred, } 14 \text{ ones}$$

# Number Patterns

You can use a number line to find a number pattern.

Find the pattern. Find the next two numbers.

17, 14, 11, 8, \_\_\_\_\_, \_\_\_\_\_



A hundred chart can help you find  $39 - 12$  using place-value patterns. Start at 39 and move up one row to subtract 10. Then move two columns to the left to subtract 2 ones.  $39 - 12 = 27$ .

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

# Find a Rule

In	1	3	2	4	8	6
Out	0	2	1	3	7	

Each number in the top row, **In**, of the table is related to the number in the bottom row, **Out**, by the same rule. The rule in this table is **subtract 1**. A rule explains what to do to the numbers that you put **In**, like those on the top row of the table, to get the numbers that come **Out**.

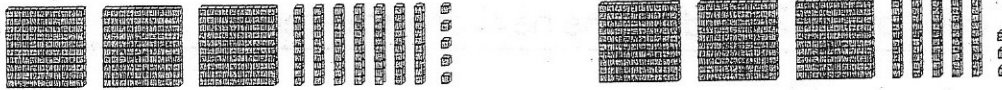
# Comparing Numbers

When you compare numbers, you use these symbols.

$<$  is less than       $>$  is greater than       $=$  is equal to

You can compare numbers using place-value blocks, a number line, or by comparing digits that are in the same place.

Compare 375 and 353.



Both have the same number of hundreds.

375 has more tens, so  $375 > 353$ , or  $353 < 375$ .



375 is to the right of 353, so  $375 > 353$ . 353 is to the left of 375, so  $353 < 375$ , or 353 is less than 375. Both have the same number of hundreds. Seven tens is greater than five tens.

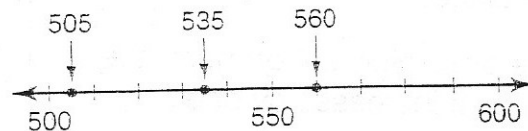
So,  $375 > 353$ , or  $353 < 375$ .



# Ordering Numbers

To order numbers from greatest to least or least to greatest, you can use a number line.

These numbers, in order from least to greatest, are 505, 535, and 560.



You can also use place value to order numbers. First, you compare pairs of numbers to find the greatest number. Then you compare the other numbers.

$630 > 305$   
Is 630 also greater than 555?

$630 > \underline{\hspace{2cm}}$

Yes, so 630 is greatest.

$555 > \underline{\hspace{2cm}}$   
So, 305 is least.

National Monument	Total Height
Statue of Liberty	305 ft
Washington Monument	555 ft
Gateway Arch	630 ft

# Rounding Numbers

You can use place value to round to the nearest ten or hundred.

Find the rounding place. If the digit in the ones or the tens place is 5, 6, 7, 8, or 9, then round to the next greater number. If the digit is less than 5, do not change the digit in the rounding place.

Round 17 to the nearest ten: 20

Explain. 7 is in the ones place. Round to the next greater ten.

Round 153 to the nearest ten. 150

Explain. Because 3 is in the ones place and 3 is less than 5, the digit in the tens place doesn't change.

Round 1,575 to the nearest hundred. 1,600

Explain. Because the 7 in the tens place is 5 or greater, round to the next greater hundred.

## Round to the Nearest Ten or Hundred

When you **round** a number, you find a number that tells you *about* how much or *about* how many.

Use place value to round 76 to the nearest ten.

**Step 1** Look at the digit to the right of the tens place.

- If the ones digit is 5 or more, the tens digit increases by one.
- If the ones digit is less than 5, the tens digit stays the same.

**Step 2** Write zero for the ones digit.

So, 76 rounded to the nearest ten is **80**.

76  
↑  
ones place

The digit in the ones place is 6.

$6 > 5$

So, the digit 7 in the tens place increases to 8.

**Think:** To round to the nearest hundred, look at the tens digit. So, 128 rounded to the nearest hundred is **100**.

128  
↑  
tens place

## PROBLEM-SOLVING SKILL

# Plan and Solve

---

**Hurdle Jumping** Rashid and Juan set up a 50 m hurdle race. They set one hurdle at 5 m, one at 45 m, and one at every 5 m in between. How many hurdles will the runners cross?

**Step 1: Choose a strategy.**

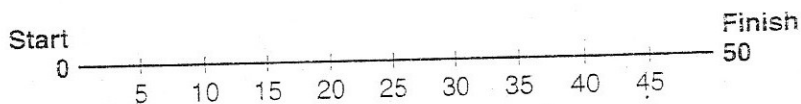
- **Show what you know:** Draw a picture, make an organized list, make a table or graph, use objects/act it out.
- **Look for a Pattern**
- **Try, Check, and Revise**
- **Use Logical Reasoning**
- **Solve a Simpler Problem**
- **Work Backward**
- **Write a Number Sentence**

**Step 2: Stuck? Don't give up. Try these.**

- Reread the problem.
- Tell the problem in your own words.
- Tell what you know.
- Identify key facts and details.
- Show the main idea.
- Try a different strategy.
- Retrace your steps.

**Step 3: Answer the question in the problem.**

What strategy can be used? Drawing a picture will help solve this problem.



The answer to the problem: The runners will cross 9 hurdles.

---