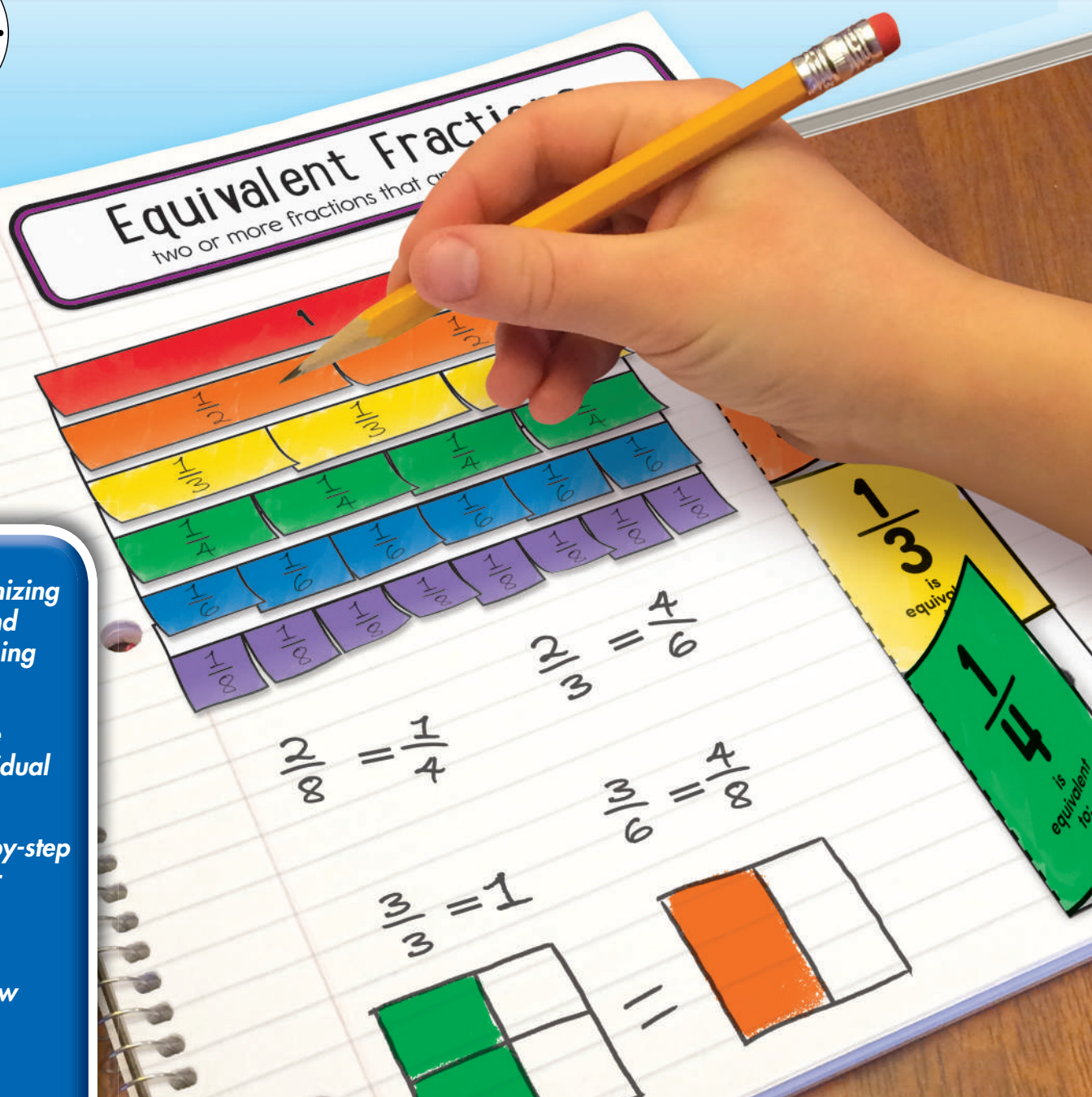


Interactive Notebooks

Grade
4

MATH



- Ideal for organizing information and applying learning
- Perfect for addressing the needs of individual learners
- Includes step-by-step instructions for each page
- Great for introducing new math topics

Place Value

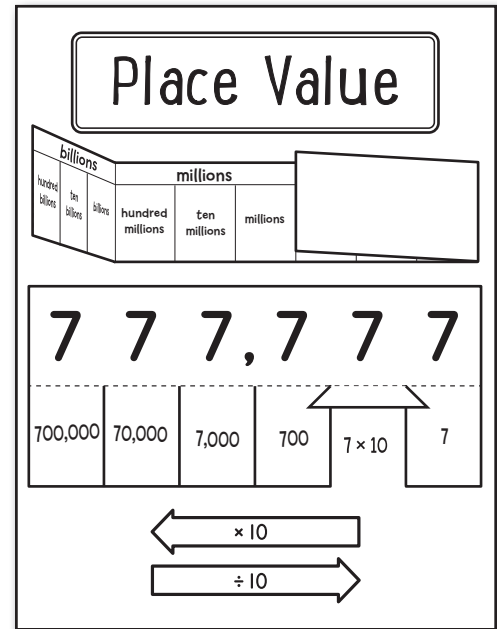
Introduction

Review simple place value with students. Distribute index cards with *ones*, *tens*, and *hundreds* written on them. For an irregular number of students, include cards with *thousands* and commas as well. Have students find other students to create the hundreds period in the correct order. Then, once students have correctly demonstrated the hundreds period, ask them to write digits on the back of their index cards to create a number with the value of 4 tens, 7 ones, and 2 hundreds. (Add a thousands value as needed.)

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Place Value pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the two blank rectangular pieces. Apply glue to the gray glue section and lay the right edge of the smaller piece on top to create a long rectangle with four sections of three.
4. Write the name of each period in the space at the top of each section. Then, write the name of each place in the rectangle below the period name. Fold the two outer sections in on the dashed lines. Apply glue to the back of the millions and thousands section and attach the piece to the page below the title.
5. Cut out the 777,777 piece. Cut on the solid lines to create six flaps. Apply glue to the back of the top section of the piece. Attach it to the page below the place value piece.
6. On the flap below each 7, write the value of the digit. Then, under each flap, write the value of each digit expressed as 7 multiplied by a factor of 10.
7. Cut out the two arrows. Glue the arrows to the page below the 777,777 piece to show the relationship between neighboring place values.



Reflect on Learning

To complete the left-hand page, write five numbers on the board from left to right: 34, 67, 97, 117, and 103. Have students figure out the number needed to add or subtract to the first number to get to the next number in the sequence. After finding all four numbers, students should write an explanation describing how place value can help solve for missing addends and subtrahends.

Place Value

Diagram illustrating multiplication and division by 10:

- Top arrow (pointing left): $\times 10$
- Bottom arrow (pointing right): $\div 10$

7	7	7,	7	7	7	7

Number Forms

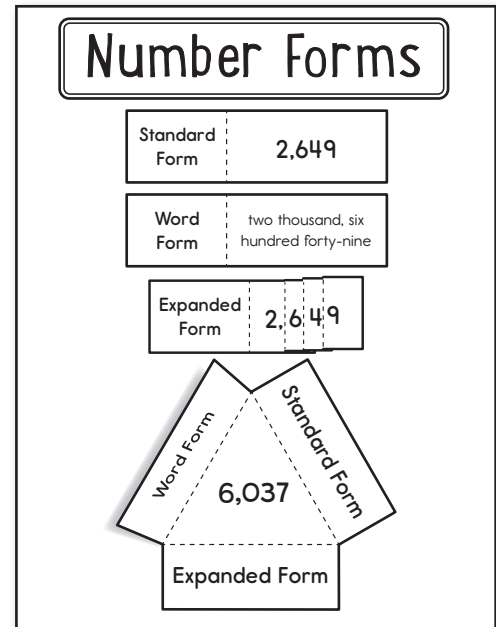
Introduction

Hand one student a piece of paper that says *Clap 2 times*. Hand a different student a piece of paper that says *Clap two times*. Let each student act out the sentence on his paper. Discuss with the class why the students did the same thing, even though their directions were slightly different. Explain that numbers can be written in several forms that all mean the same thing.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Number Forms pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Standard Form*, *Word Form*, and *Expanded Form* rectangles. Fold each piece along the dashed line near the title. Apply glue to the back of the left side of each rectangle and attach it to the page under the title.
4. To complete the *Expanded Form* piece, place the dashed line before the 6 after the comma in 2,000. Press down to flatten. Repeat with the dashed lines before the 4 and the 9, flattening as you go. The piece should show 2,649 when folded and $2,000 + 600 + 40 + 9$ when unfolded.
5. Write a short explanation of or helpful hint for each form under the flap formed by each rectangle.
6. Cut out the triangle piece with three flaps. Apply glue to the back of the triangle and attach it to the page. Write any number on the triangle. Write the different forms for that number under each corresponding flap. You may choose to have all students write the same number or allow them to choose their own numbers.



Reflect on Learning

To complete the left-hand page, have students write the three forms for the number 1,700,831 as you say it aloud. Have students describe in their own words how they chose to handle the “missing” numbers in the thousands and ten thousands places.

Number Forms

Standard
Form

2,649

Word
Form

two thousand, six
hundred forty-nine

Expanded
Form

2,000 +

600 +

40 +

9

Word Form

Standard Form

Expanded Form

Comparing and Ordering Numbers

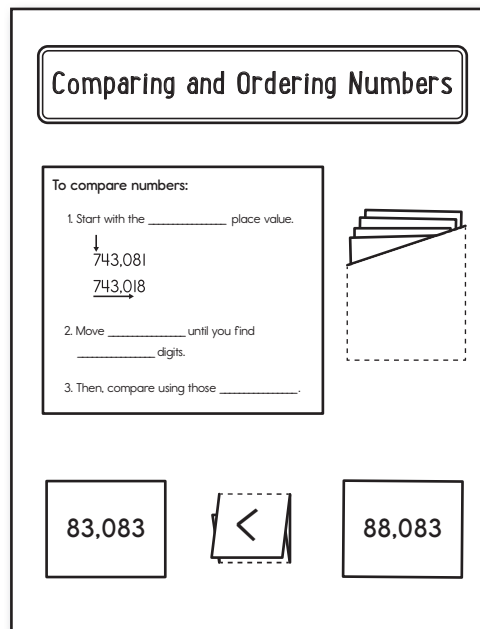
Introduction

Review the comparison symbols ($>$, $<$, and $=$). Discuss how to “read” a comparison sentence from left to right. Allow students to share their memory devices for greater than and less than, such as thinking of them as alligator mouths, or drawing dots on the ends and vertex of the greater than and less than symbols to show which side has more or less.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Comparing and Ordering Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *To compare numbers* piece and glue it to the top left of the page.
4. Complete the steps by filling in the blanks. (1. Start with the **greatest** place value. 2. Move **right** until you find **different** digits. 3. Then, compare using those **digits**.)
5. Cut out the piece with the equal sign. Fold the bottom and top flaps over the equal sign. Apply glue to the back of the middle section. Attach it to the center of the bottom half of the page so that the flaps open up and down.
6. Flip the top flap down and draw a less than symbol ($<$) on it. Flip the bottom flap up and draw a greater than symbol ($>$) on it.
7. Cut out the pocket. Fold it in half. Apply glue to the back of the tabs. Fold the tabs around the back to create a pocket. Apply glue to the back of the pocket. Attach it to the page beside the *To compare numbers* piece.
8. Cut out the number cards. Place one card on each side of the symbols piece. Unfold the flaps to create a true number comparison. Or, choose three or more cards to place in order from least to greatest or greatest to least. For more practice, write additional numbers on the backs of the cards. Store the cards in the pocket.



Reflect on Learning

To complete the left-hand page, write 304,627 and 340,627 on the board. Have students describe how the placement of the zero in each number affects the comparison.

Comparing and Ordering Numbers

88,083	83,083	106,761	=
891,745	891,145	16,761	

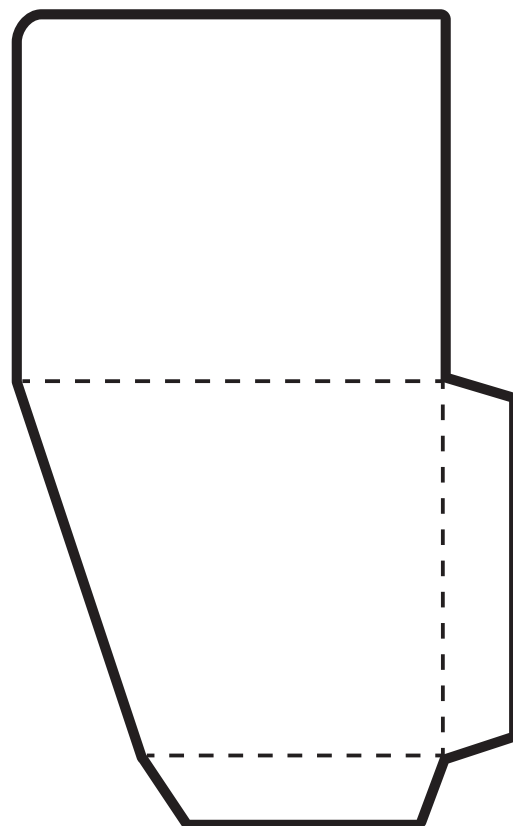
To compare numbers:

1. Start with the _____ place value.

↓
743,081
743,018
→

2. Move _____ until you find
_____ digits.

3. Then, compare using those _____.



Rounding Numbers

Each student will need a brass paper fastener to complete this page.

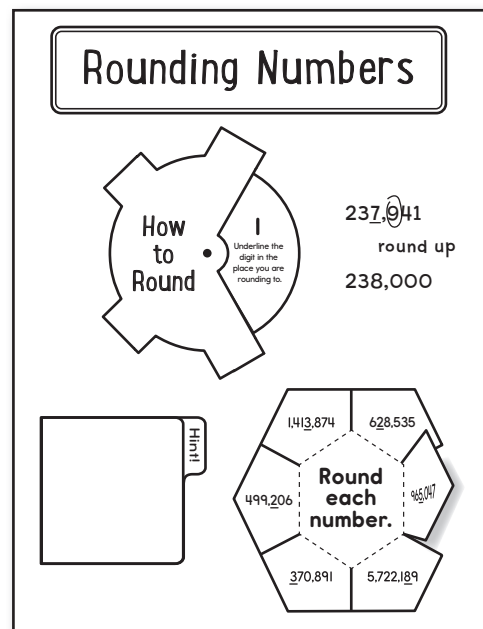
Introduction

Write on the board how many students are in the entire school. As a class, discuss situations when someone might need to know the exact number and when someone only needs to know about how many students there are.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Rounding Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the circular shapes. Place the *How to Round* piece on top of the circle with step-by-step directions. Push a brass paper fastener through the center dots of the circles to attach them. It may be helpful to create the hole in each piece separately first. Apply glue to the back of the *How to Round* piece tabs and attach it to the left side of the notebook page below the title. The brass paper fastener should not go through the page, and the step-by-step circle should spin freely.
4. Walk through the steps. Write an example to the right of the circle to show each step.
5. Cut out the *Hint!* mini file folder. Fold it in half along the dashed line. Apply glue to the back of the folder and attach it below the *How to Round* circle so that the folder opens to the left.
6. Write the numbers 0 to 9 in the roller coaster cars.
7. Cut out the flower piece. Cut on the solid lines to create six flaps. Apply glue to the back of the hexagon-shaped center and attach it to the right of the *Hint!* folder.
8. Choose a place value to round to for each petal. Underline the digit. Then, write the rounded number under the petal.

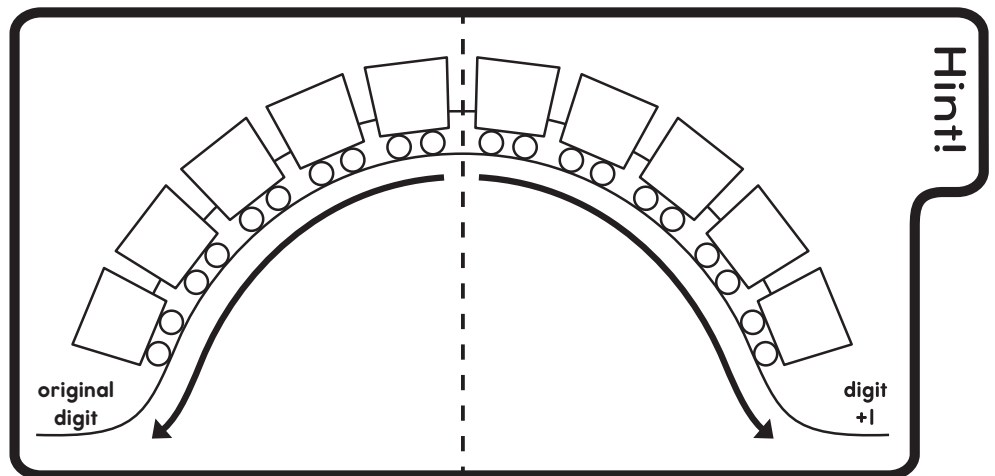
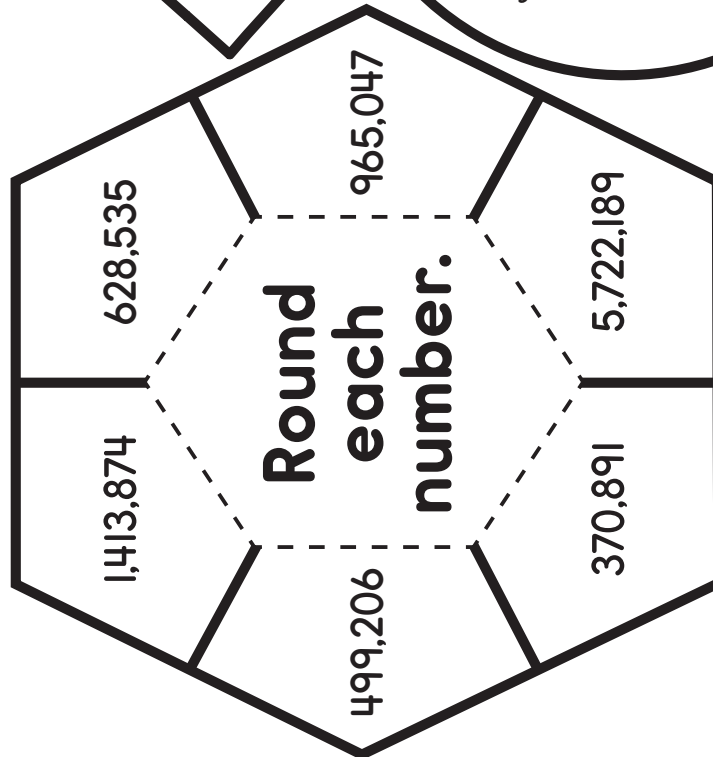
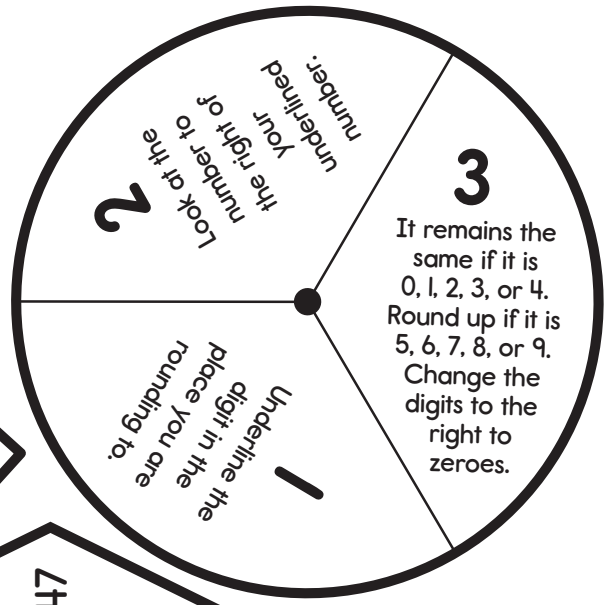


Reflect on Learning

To complete the left-hand page, have each student write any 6- or 7-digit number. Then, have students round the numbers to each place value through the hundred thousands or millions. Have students reflect on what they noticed about each rounded number.

Rounding Numbers

How
to
Round



Adding and Subtracting Whole Numbers

Introduction

Have students write their birth months and days as numbers. For example, September 9 would be 99, and May 28 would be 528. Then, have students write their four-digit birth years. Students should add the two numbers. Then, students should subtract them.

Creating the Notebook Page

Guide students through the following steps to complete the right-hand page in their notebooks.

1. Add a Table of Contents entry for the Adding and Subtracting Whole Numbers pages.
2. Cut out the title and glue it to the top of the page.
3. Cut out the *Add* and *Subtract* flaps. Fold along the dashed lines. Apply glue to the back of the narrow left and right sections and attach them side by side below the title.
4. On the top of each flap, write words and symbols related to addition or subtraction, such as *+*, *plus*, *addend*, *sum*, etc. Under each flap, write steps in your own words for adding or subtracting numbers. Refer back to the addition and subtraction problems created during the introduction as examples.
5. Cut out the four-flap book. Cut on the solid lines to create four flaps. Apply glue to the back of the center section. Attach it to the bottom of the page.
6. For each flap on the left side, choose two numbers from the center and write them on the top of the flap in an addition sentence. Solve and write the sum under the flap.
7. For each flap on the right side, choose two numbers from the center and write them on the top of the flap in a subtraction sentence. Solve and write the difference under the flap.

Adding and Subtracting Whole Numbers

together
+
in all
plus

sum
Add
addend

difference
how many more
-
minus

Subtract

204,302 + 245,111	346,782 204,302 265,914 813,528	813,528 - 265,914
772,018 + 153,058	772,018 347,490 245,111 153,058	772,018 - 346,782

Reflect on Learning

To complete the left-hand page, have students write large numbers from their lives such as street address numbers, zip codes, heights, the school's phone number, etc. Then, students should choose two of the numbers to add or subtract. Repeat with different pairings of numbers. Students should have at least two addition and two subtraction sentences.

Adding and Subtracting Whole Numbers

Add

Subtract

346,782

204,302

265,914

813,528

772,018

347,490

245,111

153,058