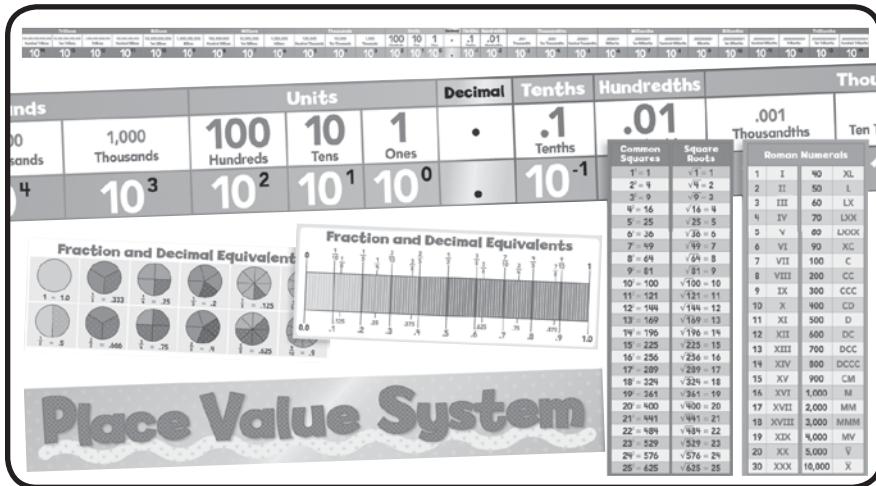


# Place Value System

## A Teaching and Learning Bulletin Board

553076



### MATH

#### Place Value

Cut out the strips in the display pack and place them in a line, with all whole numbers to the left of the decimal point and decimal numbers to the right. Use the display to teach students about place value. Show them that as you move one place to the left on the display, the value of the digit gets ten times greater. As you move one place to the right, it gets ten times smaller. Reinforce the concept by talking to students about very large and very small numbers as shown on the display. Students like to hear about such large and small quantities in the world around them (e.g., *There are around 7 billion people in the world; There are roughly 300 billion stars in the Milky Way; It takes one hundredth of a second for a bolt of lightning to strike*).

#### Decimals Have a Point!

Photocopy and cut out the numbers and decimal points on page 4. Distribute several numbers and a decimal point to each student, ensuring that all students have the same numbers. Students must now construct a number using a decimal point that meets your specific criteria (e.g., *Construct the smallest number you can; Construct a number between 80 and 90; Construct a number that is closest to 52*).

#### The Bigger the Better

Have students draw six squares in a line. Instruct them to place a decimal point between the third and fourth squares. Call out a number between 1 and 9. Students can choose any of the squares to write the number in. Continue to call out numbers and have students write the numbers in squares until all of the squares have been filled. Now in pairs or small groups, have students compare the numbers they have written. The student who has written the number with the highest value is the winner. Students can refer to the display to check which of their numbers has the greatest value. The game can be adapted by changing the number of squares and the position of the decimal point.

#### Connections to the Common Core State Standards

The activities in this teaching guide align with the following Common Core State Standards for Mathematics. For more information, visit [www.corestandards.org](http://www.corestandards.org).

#### Number and Operations in Base 10

- 2.NBT.1
- 3.NBT.1
- 4.NBT.1
- 5.NBT.1, 5.NBT.2, 5.NBT.3, 5.NBT.4

#### Number and Operations—Fractions

- 3.NF.1, 3.NF.2
- 4.NF.1, 4.NF.5, 4.NF.6, 4.NF.7

#### Expressions and Equations

- 8.EE.3

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## **When in Rome . . .**

Show students some examples of Roman numerals in everyday use (clocks, copyright dates, contents pages in books, etc.). Invite students to code and decode their ages, dates of birth, and other common numbers using the Roman numerals display. Have groups of students lie on the floor to form various Roman numerals with their bodies. Finally, ask students to look at any Roman numeral letters in their name (I, V, X, L, C, D, M). Who can make the biggest number using just these letters?

## **Hip to Be Square**

Model a perfect square for the class on the board—for example, four squares across and four squares down creating a total of 16 squares. Sixteen is a perfect square because  $4 \times 4 = 16$ . Explain that the length and width of the square are the same. Have students draw other perfect squares completing all the rows across and down. Students may refer to the display if needed. Explain that the length of the side of each perfect square is called the square root. Allow students time to study the Common Squares/Square Root table on the display to see if they can discover any patterns. Do they notice anything about the relationship between odd and even numbers, the unit digits, or the difference between consecutive squares? You can create a simple game for reinforcing squares/square roots by writing random numbers (make sure to include lots of square numbers) on the reproducible squares on page 3, cutting them out, and placing them facedown in a pile. Then have students take turns drawing a number and identifying whether it is a perfect square or not (again they can refer to the display if they are unsure). If the number drawn is a perfect square the player keeps it. If not, he or she places the number in a discard pile. The winner is the person who has collected the most perfect squares when all the numbers are drawn.

### **CLASSROOM MANAGEMENT**

## **Keeping Track**

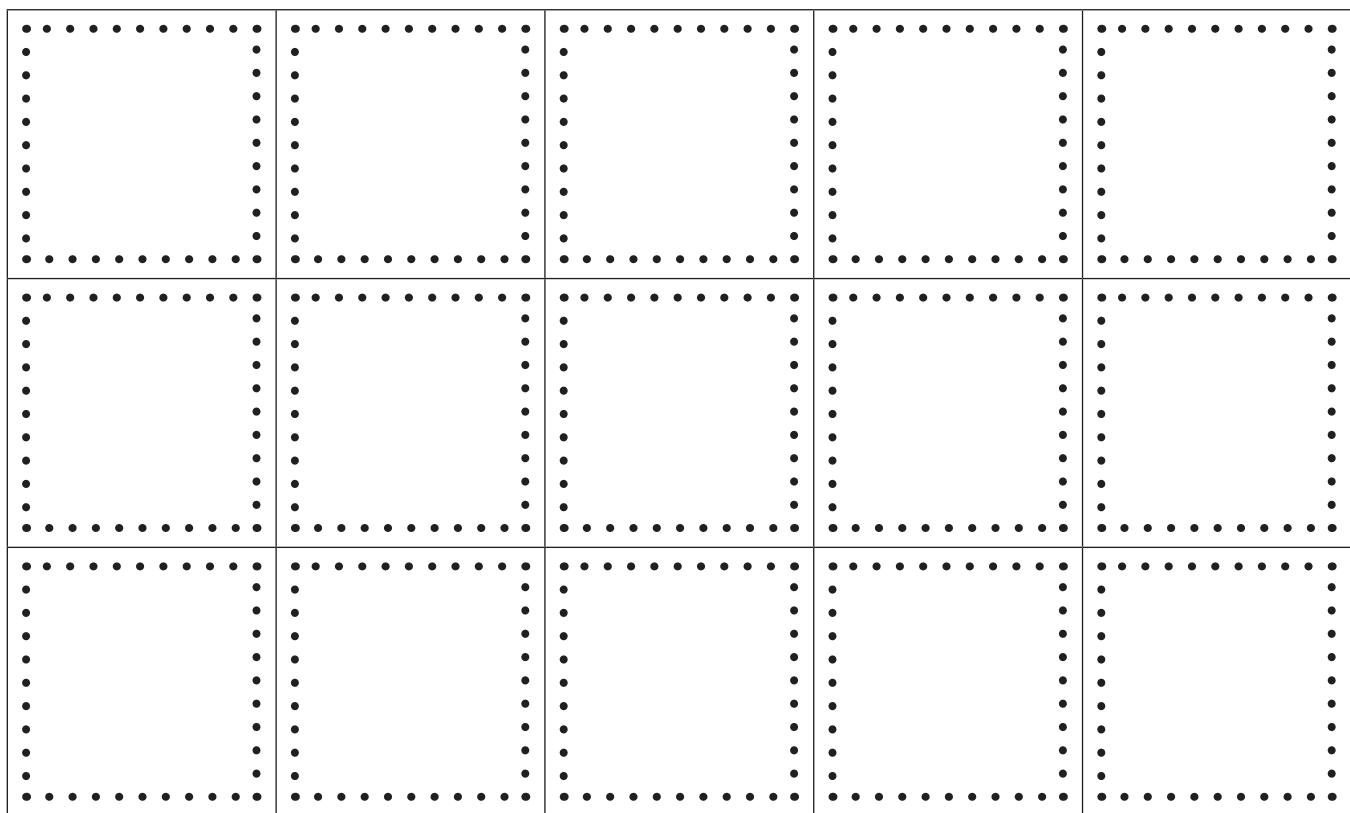
Your Place Value chart can be used to keep track of goals for the class—for instance, targets for attendance, class projects completed, or following classroom rules. You could, for example, decide to award a treat to the class when they have completed a certain number of days of perfect attendance. The class starts with one point so a marker is placed in the ones section of the place value chart. Every time the class achieves full attendance their score gets ten times bigger, so the marker moves one place to the left. When the class reaches, for instance, one billion, they receive the treat. In this way, students have a visual representation of how close they are getting to their goal, and at the same time the concept of place value is being reinforced.

## **Using the Reproducibles**

Extend learning by copying the reproducibles on pages 3 and 4 and using them with the following activities.

- ◆ **Bingo:** Invite students to look at the Fraction and Decimal Equivalent displays. Explain that they will now play Bingo with the help of the display. Using the reproducible on page 3, have students fill in the nine squares with any fractions that are shown on the display (there are 18 in all). The students must now cross out their fractions one by one, as you call out their equivalent decimals from the display. The first student to cross out all their numbers must shout "Bingo!" and is the winner. Alternatively you could ask students to fill in nine decimals from the display as you call out their equivalent fractions.
- ◆ **Decimal Dash:** Give each student a decimal point and several sets of the numbers on page 4. Then you call out a number with a decimal, for example, "six hundred seventy two and thirteen hundredths." Students race to arrange their numbers and decimal point on their desk to match that number. The first student to do so raises a hand or shouts "Decimal Dash." Check the student's number. If correct, he or she wins that round. Play as many rounds as you like. The numbers you call out will be determined by your students' abilities.

## Fractions/Decimals Bingo



•	•	•	•	•	•	•	•	•
9	9	9	9	9	9	9	9	9
8	8	8	8	8	8	8	8	8
7	7	7	7	7	7	7	7	7
6	6	6	6	6	6	6	6	6
5	5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4	4
3	3	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2	2
1	1	1	1	1	1	1	1	1
0	0	0	0	0	0	0	0	0