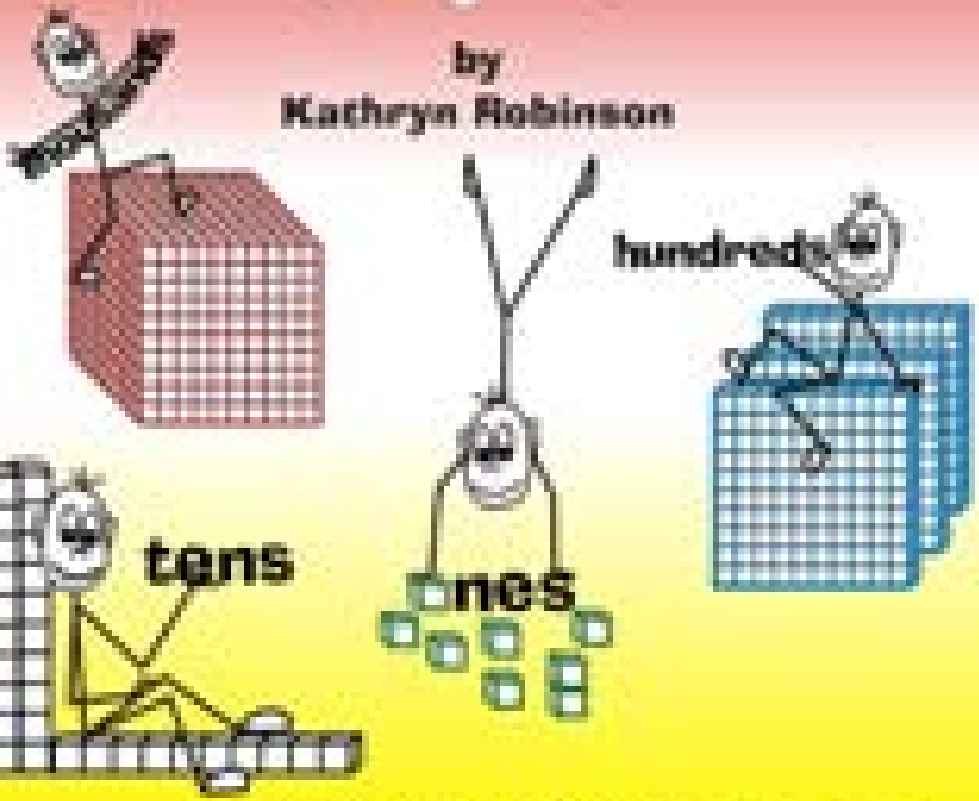
Just Hands-On
Place Value

by
Kathryn Robinson



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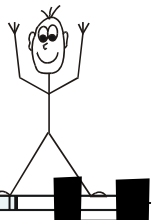
Hands-On Math Activities



Just Hands-On™ Place Value

(Grades 1 – 2)

Kathryn Robinson

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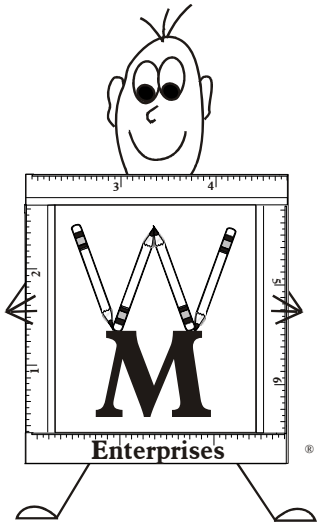
About the Author

- **Kathryn Robinson** has taught elementary level school children for the last 20+ years in widely diverse cultural and challenging international settings in the United States, Germany, Pakistan, and Bangladesh. Due to the paucity of Math and Language Arts materials in Bangladesh, Kathy wrote ***Just Turn and Share Math Centers*** and day-by-day writing lessons for use in her international classroom. Settling in the Florida Suncoast area in 1994, Kathy uses these centers and writing lessons as an adjunct activity for day-to-day classroom, textbook-based lessons. ***Just Turn and Share Math Centers Series,*** and ***Just Write: Writing Series*** lessons continue to challenge, invigorate, and motivate her students in the classroom.

Highlights of Kathy's career

- College of St Elizabeth – BA (Elementary Education & French)
- Cameron University – MA (Special Education)
- Elementary Teacher – Germany, Oklahoma, Pakistan, Bangladesh, Florida
- P.E.P. Writes co-author
- PTA President, American International School
- UCF Project Central Participant
- ESOL Instructor – Hillsborough County
- FIN Multiple Intelligences Workshop Presenter
- Writing Workshop Presenter
- Just Turn & Share Math Centers Series author
- Just Write: K-5 Writing Books
- Just Write: Grammar Series
- Just Hands-On Math Activity Series



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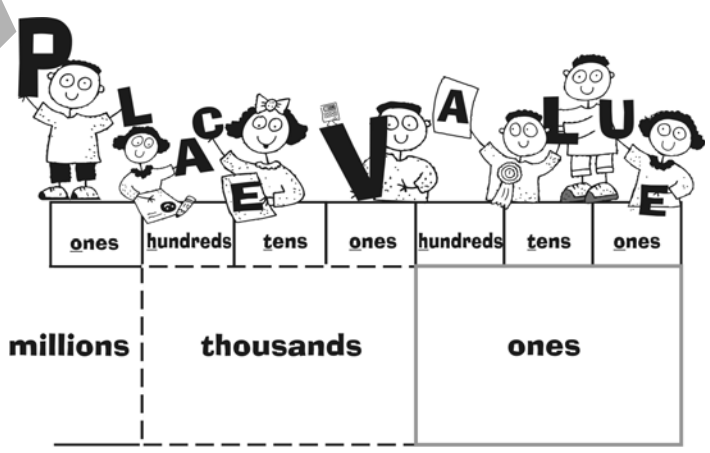


Introduction

Place Value seems like such an easy concept, right? Students in Elementary and Middle School simply need to learn the numbers of Ones, Tens, and Hundreds. Once they have this information under their belts, they will be lucky enough to move on from these places of value to learning the periods. The periods are the Ones Period, the Thousands Period, the Millions Period, the Billions Period, and on and on to infinity and beyond. Confused yet? Well, it is just beginning…

In each period there are Ones, Tens, and Hundreds positions. These positions contain digits, numbers, and values. As no youngster envisions, touches, or sees quantities containing 3,000 to 999,999,999 items why are we adults surprised that they have difficulty comprehending the concept of place value? We are sure the concept is thoroughly covered in the 10 pages of practice most math series allocate to the concept. Aren't we?

I designed this activity book to provide hands-on practice with place value lessons. These brain-based activities have been arranged in increasing difficulty so that no more than one bit of information is new in each activity. Many practice pages contain too many new tidbits of information for the developing mind to grasp in one lesson. These activities have the concept broken down step-by-step to lead to true understanding of place value. I recommend 'playing' one of these activities each day before the students work in their mathematics series with print-based place value practice. I hope that your students will enjoy these activities as much as I have had designing and implementing them with students of all abilities. So have fun while you and your students decide to work with…

Just Hands-On Place Value!!!

Search for Digits

Objective: To learn the mathematical term 'digit'
To understand that there are only 10 digits *(e.g.: 0, 1, 2, 3, 4, 5, 6, 7, 8, & 9)*

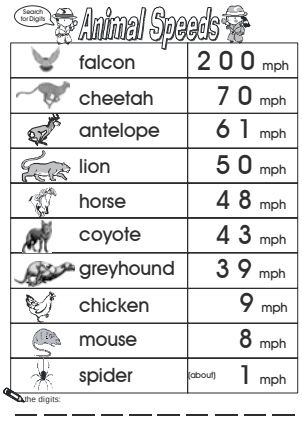
Supplies:

- Teams of two students each
- Crayons/color pencils
- Copy of '*Search for Digits*' page with *Animal Speeds (*or use an advertisement from a newspaper or any page with a variety of numbers *(See page 3)*

Directions:

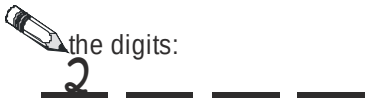
1. Teacher defines the mathematical term 'digit'.
   a. A **numbe**r is an idea in your head that answers the question, "How many…?" (e.g. A fireman might ask you, "How many windows are in your bedroom?" You might then picture the number of windows in your head.)
   b. A **numeral** is the symbol that represents that 'number' in your head. (e.g. The numeral for the number of windows in your bedroom might be '2'.) The numeral can be written on paper to tell the fireman how many windows are in your room.
   c. A numeral can be any sequence of **digits**. (e.g. There might me 25 windows in your whole house. The digits in this numeral/number are '2' and '5.'
2. After eliciting a few examples of digits, the teacher writes some digits on the board. (e.g. 2, 3, 4, 5, 8)

3. Working with a partner, students then circle all of the digits that they can locate on the '*Search for Digits'* page about *Animal Speeds*.



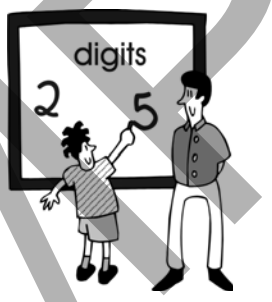
4. One partner circles a digit used in an animal's speed.

5. The other partner writes the digit at the bottom of the chart.



6. Teams continue searching through the numbers for new digits that have not previously been chosen until every digit possible has been written at the bottom of the page. *(Note: Only possibilities are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9)*

7. Teacher/individual students transcribe the digits that they have discovered on the board.



8. On the back of their page or on a dry erase board, each team lines up the digits from least to greatest.

POINTS OF CLASS DISCUSSION:

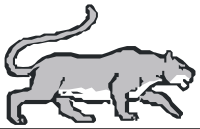
- Discuss that these are the **ONLY** digits in our mathematical system. (0-9)
- When these digits are arranged in different patterns, they represent different numbers and quantities.
- Digits can be arranged in millions of different sequences.
- Each digit or position in the sequence has a place value.
- A digit's value differs depending on its position in a particular sequence. (e.g. The digit '2' in 250 is worth '200' whereas in the sequence '7429,' the digit '2' is worth '20.')

Name: _____

Directions:

- Circle the digits in each number.
- List all the digits that you discover on the lines by the  at the bottom of the page.

Animal Speeds

	falcon	2 0 0 mph
	cheetah	7 0 mph
	antelope	6 1 mph
	lion	5 0 mph
	horse	4 8 mph
	coyote	4 3 mph
	greyhound	3 9 mph
	chicken	9 mph
	mouse	8 mph
	spider	(about) 1 mph

 the digits:

_ _ _ _ _ _ _ _ _ _

There are Only Ten!

Objective: To experience different values for each of the ten digits:
(e.g: 0, 1, 2, 3, 4, 5, 6, 7, 8, & 9)

Supplies:

- Organize teams of two students each
- Each team needs: 2 sets of *Moveable* numbers (0-9). *(Inexpensive magnetic plastic numbers are the easiest for students to manipulate.)*
- Large soft dice or a set of cards with digits 0-9 on them *(If two dice are used for numbers between seven and nine, cover the four, five, and six dot sides on the second die so that two digit numbers cannot be rolled.)*
- Two-Digit *Place Value* Chart per team *(See page 6)*
  To make this activity work with the Two-Digit Place Value Chart do not use a number that requires a '1' in the tens position. After the activity, discuss the names of the number for 10, 11, 12, 13, 14, 15, 16, 17, 18, & 19. These numbers have a digit in the tens position that do not end with '*-ty*'.

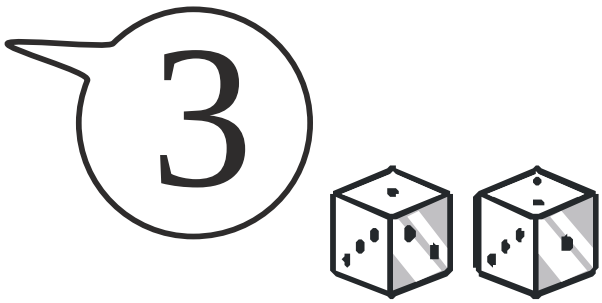
Directions:

1. Teacher reviews the mathematical term 'digit'.

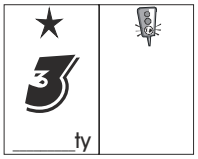
2. Distribute one *Let's Play with Numbers* activity chart and two sets of manipulative digits 0-9 to each team.

3. Discuss the different digits that the teams have on their desks. (e.g: 0, 1, 2, 3, 4, 5, *6, 7, 8, & 9)*
   a. Ask students to point to their favorite number.
   b. Call on teams to hold up their favorite digit and share the information.
   c. Ask students to hold up the number that represents their age.
   d. Students should hold up the number of their grade-level. etc…

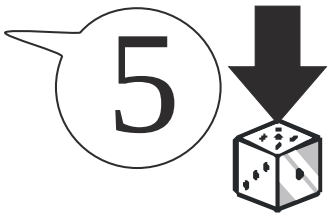
4. Teacher rolls the dice *(or draws a number from 2-9 out of the numbered deck)* and calls out the number rolled or drawn. *(Using two dice prevents a zero or a one from occurring in the tens column.)*



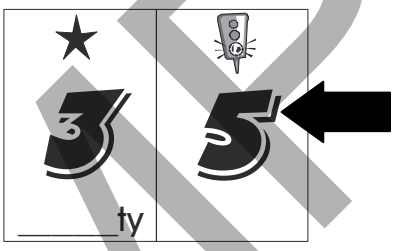
5. Ask teams to place the *rolled digit* in the box with the star. (The *star* is in the box farthest to the left because they will ***star***t to read the number from this box.)



6. After checking students' charts, one student in the class rolls one or two dice.



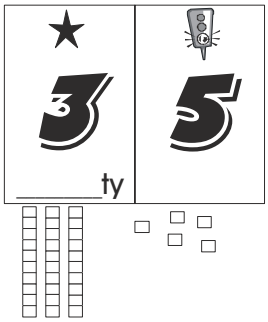
7. Ask teams to place the *rolled digit* in the box with the 'Go!' light. (Eventually, the "Go!" Traffic Light will signal that students beginning adding and subtracting from the right-hand column/*"Go!" column*.)



8. Discuss how to read this number.
    a. Point out the ____*ty* at the bottom of the box with the *star*.
    b. Explain that except for the '1' digit, all tens column words end with the letters: '-ty'.
    c. For example: twen**ty**-five; thir**ty**-five; for**ty**-five, fif**ty**-five, six**ty**-five, seven**ty**-five, eigh**ty**-five, and nine**ty**-five.
    d. Read this two-digit number with the students: "thir**ty**-five"

9. Students clear the numbers from the chart and repeat steps #4 – 8 by rolling the dice and placing digits in the boxes.

SUGGESTION: During the next practice sessions, students should use Unifix® cubes to demonstrate the meaning of the digits.



The Candy Maker of Place de Value

Objective: To help students remember the names of the place value columns.
To recognize the number of single units in each column on a place value chart. (e.g. tens and ones)

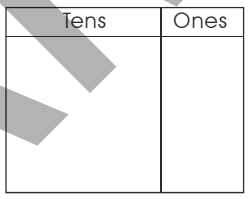
Supplies:

- Teams of two students each
- The Candy Maker of Place de Value story *(See pages 10-23)*
- The Candy Maker of Place de Value story picture cards *(See pages 27-35)*
- Two sets of flip chart numbers 0-9 per team *(See Preparation below) (See page 25)*
- One *Place Value* chart per team *(See page 24)*
- 10-20 *Ones* squares *(See page 26)* or 10 small round candy *(like M & M®'s)* to use as *Ones* treats per team
- 2-3 *strips of ten squares (or Ten Trays)* per team (*Do not laminate for this activity since the students will be coloring on the squares.) (See page 26)*
- Brown crayon/marker per team

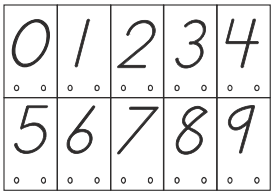
Preparation:

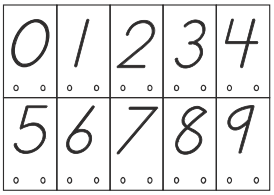
- Cut apart the story picture cards to display to students. *(See pages 27-35)*

- Reproduce on card stock, laminate, and cut out one *place value* chart *(See page 24)* per team

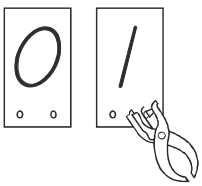


- Teacher/students create flip charts:
  - ❖ Copy and cut out 2 sets of 0-9 for each team *(See page 25)*

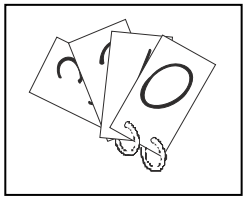




  - ❖ Punch two holes in the bottom of each number card



❖ Create a flip chart by looping two rings or paper clips through the holes in the cards consecutively so that zero is at the top and nine is at the bottom.



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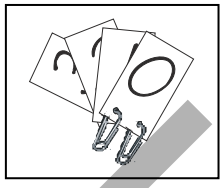
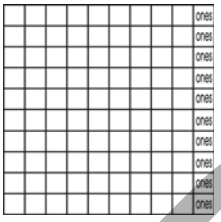
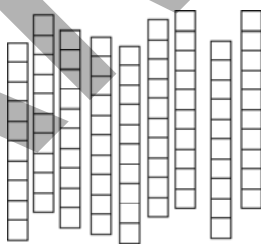


- Reproduce on brown and /or white paper.



- Cut apart at least 10 individual squares marked 'Ones' to use for single chocolate "Ones". *(M& M's® can be used in place of the individual square "Ones.")*

- Cut the remaining squares into strips with ten squares in each strip for "Tens" (tins) strips. For this story, each team will only need 2-3 strips of ten squares.



Activity Directions:

1. Distribute place value chart, M & M's®/*Ones* squares, strips of tens (tins) per team of two students.