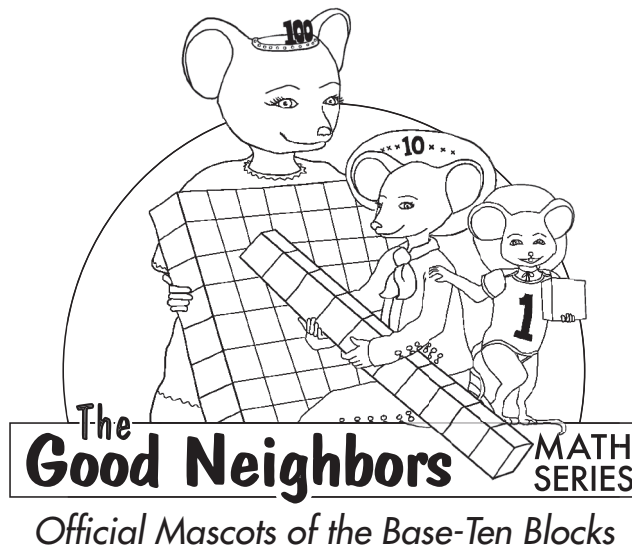


# *The Good Neighbors Math Series*

## Upper Elementary

### Blackline Masters



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East Aurora, NY

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## ***The Good Neighbors Math Series***

### **Place-Value Mnemonic Phrase/Picture Strategy Introduction**

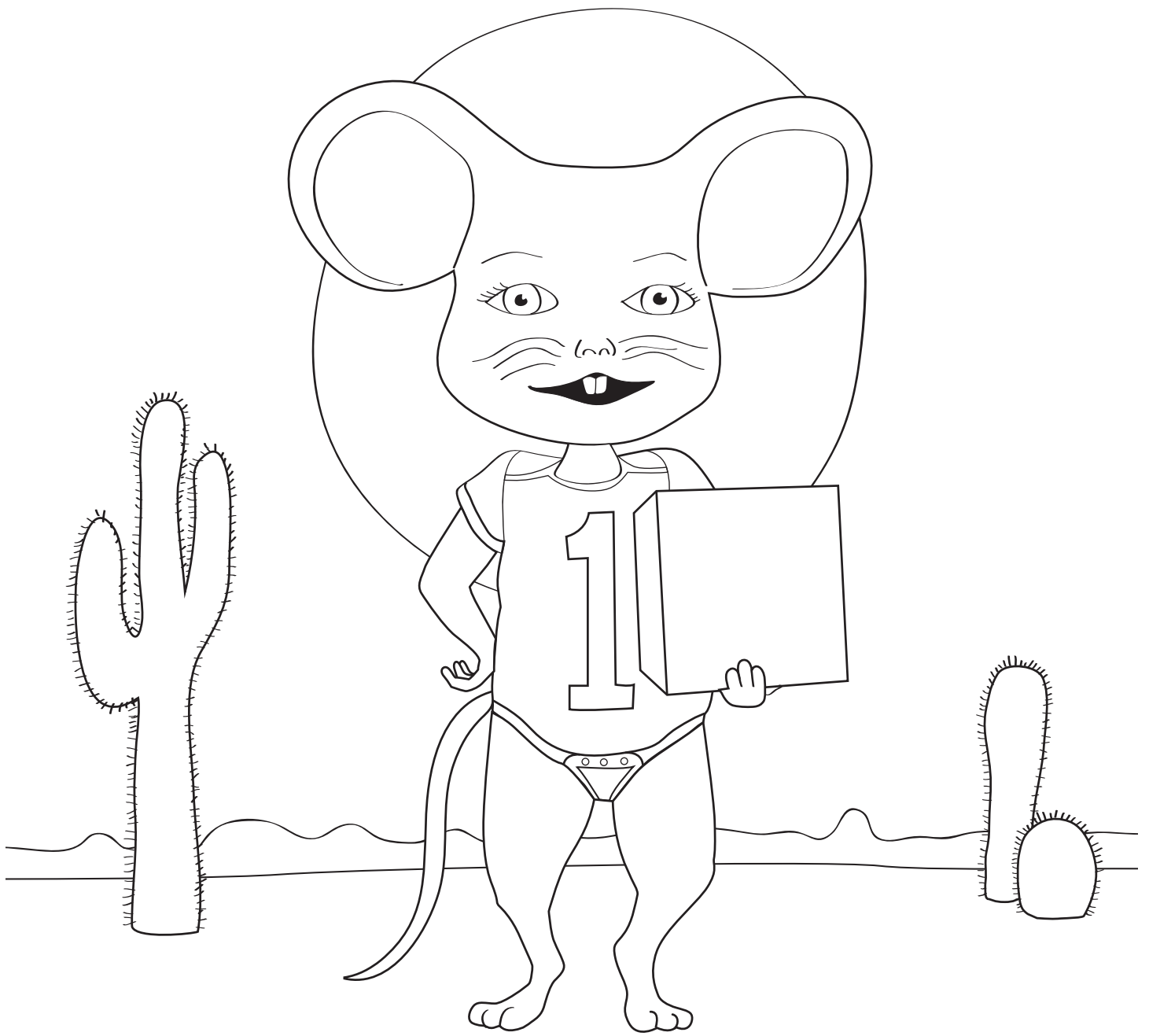
Mnemonics are a useful educational strategy to assist student in acquiring, storing and retrieving both declarative and procedural knowledge. Pairing a mnemonic phrase with a visual representation increases the power of the mnemonic.

*The Good Neighbor Math Series* Mnemonic Picture Strategies assist students in:

- identifying the whole number periods to millions and trillions
- identifying the decimal place values to thousandths

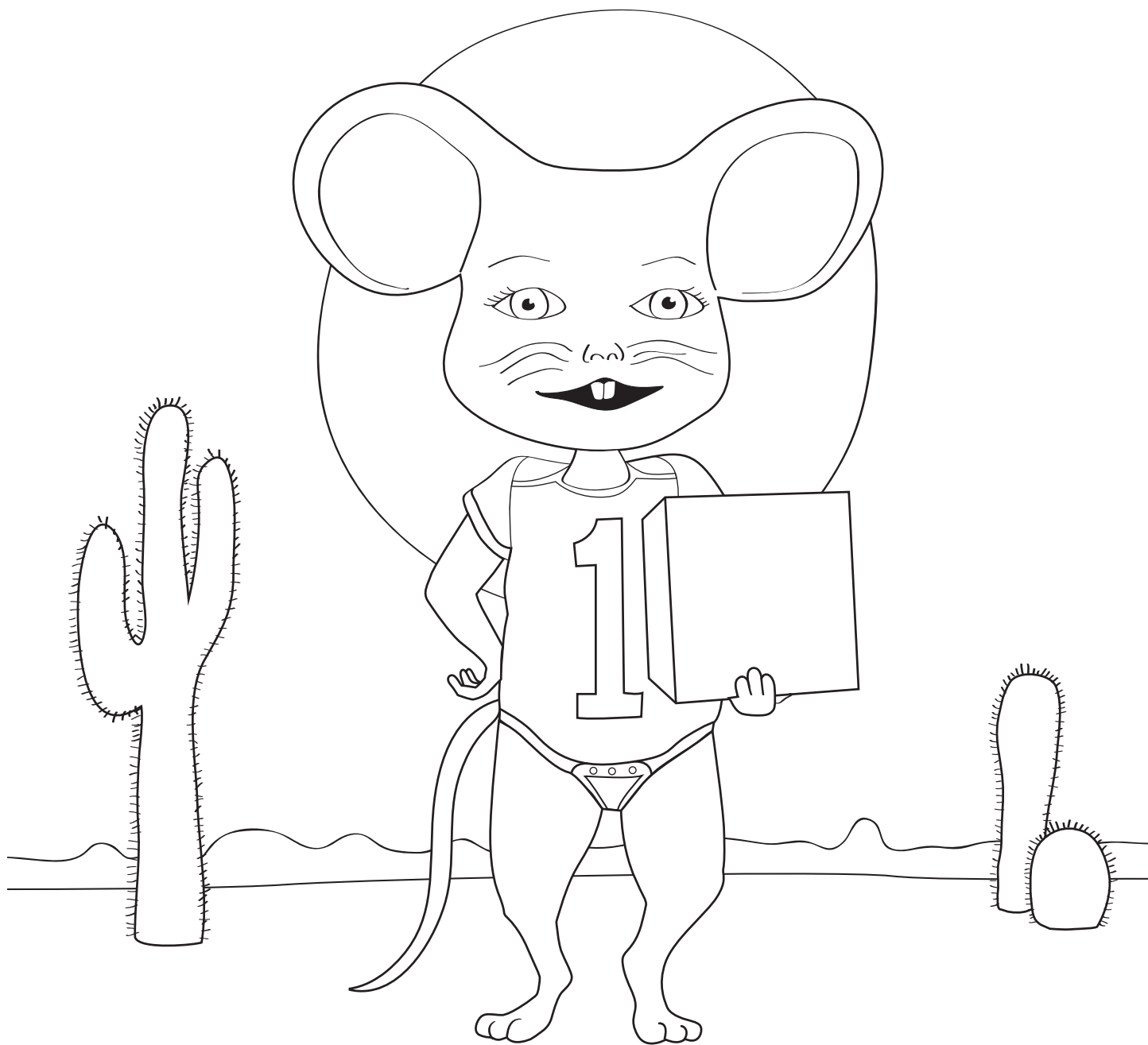
#### **How to Use the Place-Value Mnemonic Phrase/Picture Strategy**

- Give each student, student pair, or small group of students the desired mnemonic word cards from the *Upper Elementary Card Deck* in random order (Onesie the Mouse; Onesie the Mouse builds triangles; Tenor has three) and the desired mnemonic picture with the mnemonic blanks.
- Allow the students time to arrange the cards to formulate the mnemonic phrase. If the students are having difficulty formulating the mnemonic phrase assist them by giving them some clue(s), but allow the students to formulate the mnemonic phrase themselves as much as possible.
- Have students spend a few minutes coloring the picture. Students rarely have an opportunity to color, and the more the students connect with the picture the greater chance they will remember the mnemonic phrase.
- Give the students the mnemonic picture with the mnemonic phrase at the top and the number on the bottom. Show them the direction the mnemonic words must go to coincide with the number words (whole number mnemonics - right to left; decimal mnemonic - left to right). Show the students how the first letter(s) match with the number words.
- Have the students write the mnemonic phrase on the sheet. Have student color the sheet and place the sheet in a folder/notebook to use as a reference.
- Write a number on the board. Have students write the mnemonic phrase under the number, then the number words under the mnemonic phrase. Have students read the number, and or identify specific place-values within the number.
- Write a number on the board and model writing the first letter or letters of the mnemonic phrase under the number. Show students that the letters can stand for both the mnemonic phrase and the number words. Have students read the number, and or identify specific place-values within the number.
- Write a number on the board and have students write the first letter or letters of the mnemonic phrase under the number. Have students read the number, and/or identify specific place-values within the number.



\_\_\_\_\_

# Onesie the Mouse



**123,456,789**

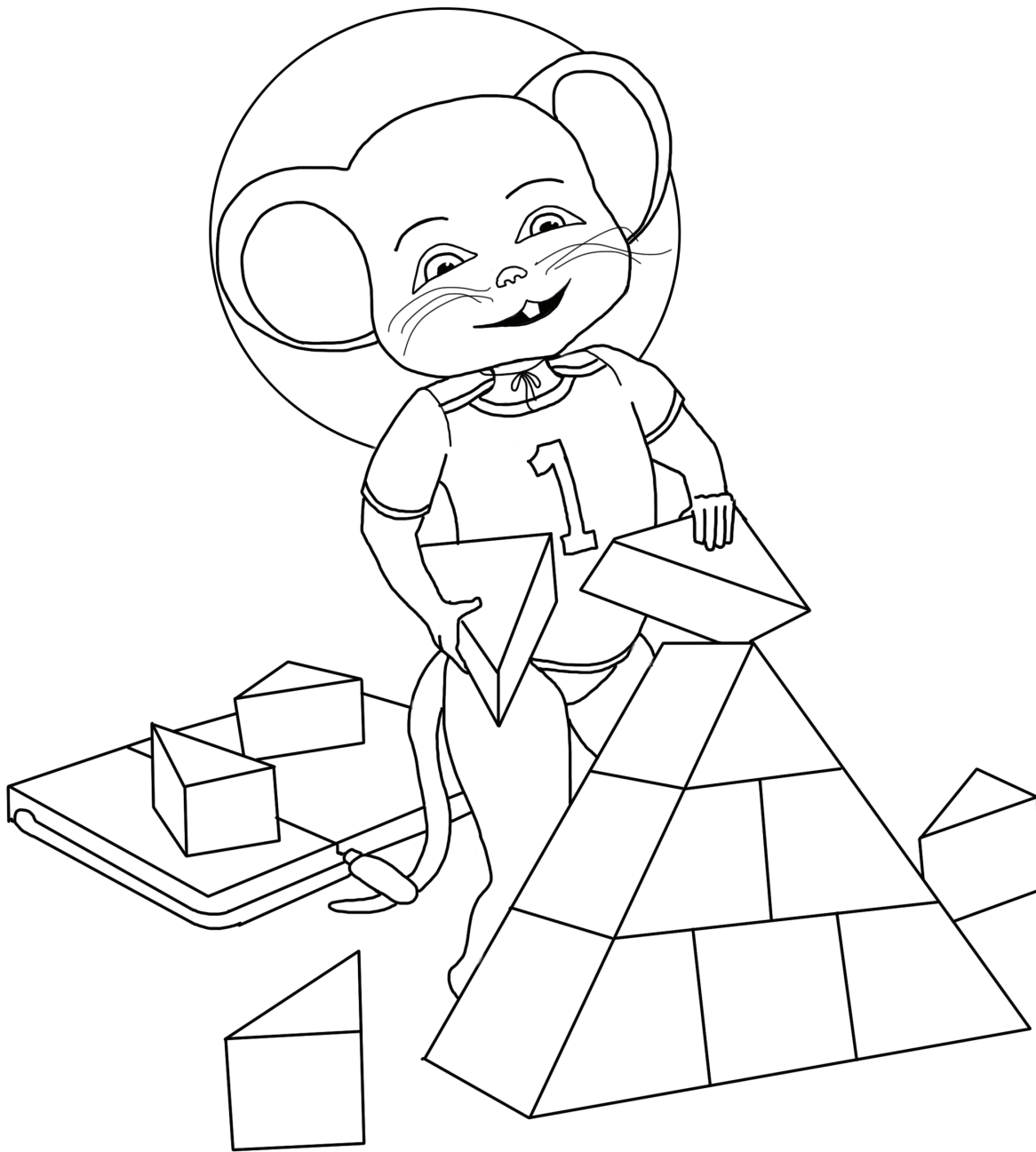
**millions      thousands      ones**





\_\_\_\_\_

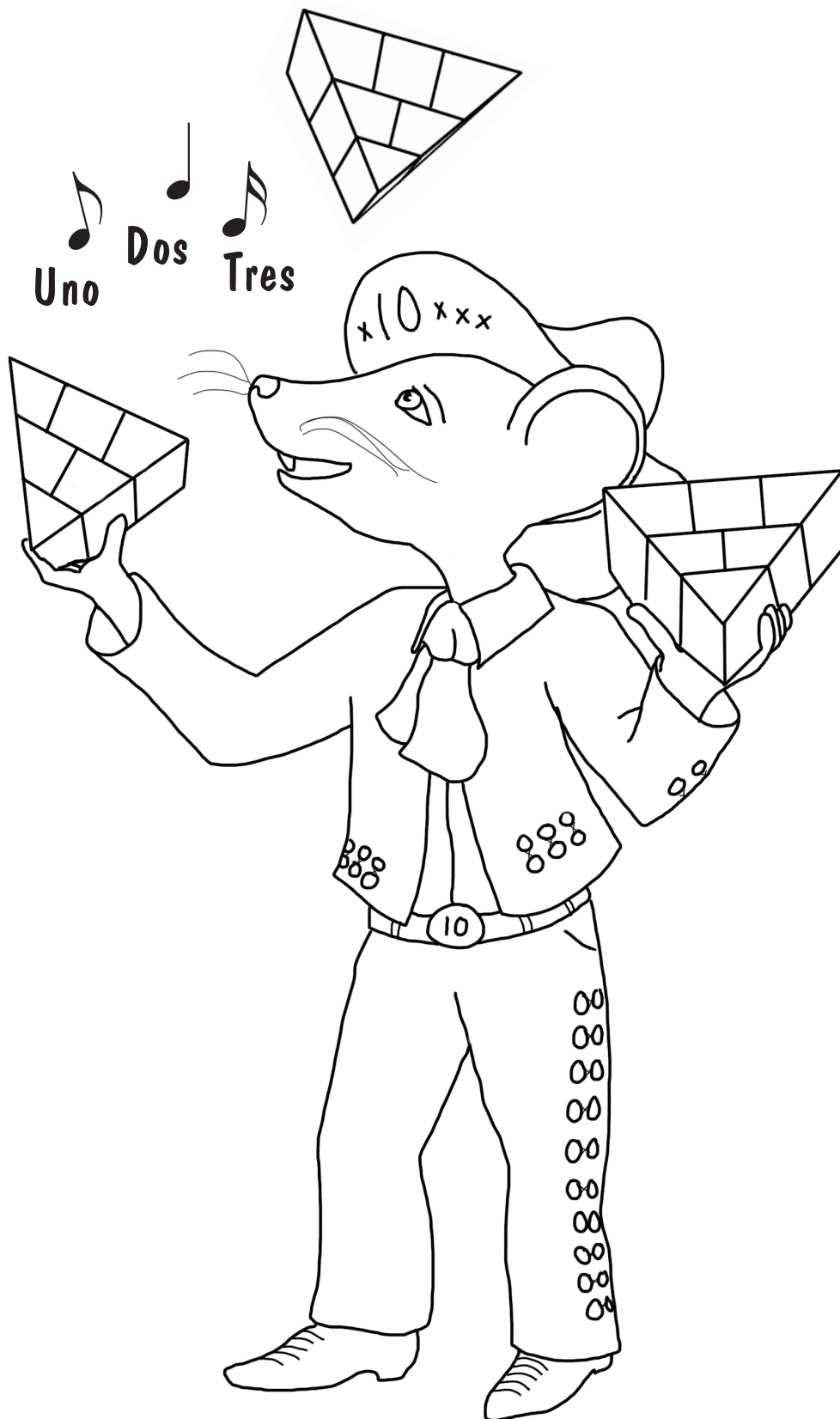
# Onesie the Mouse Builds Triangles



**432,109,876,543,210**

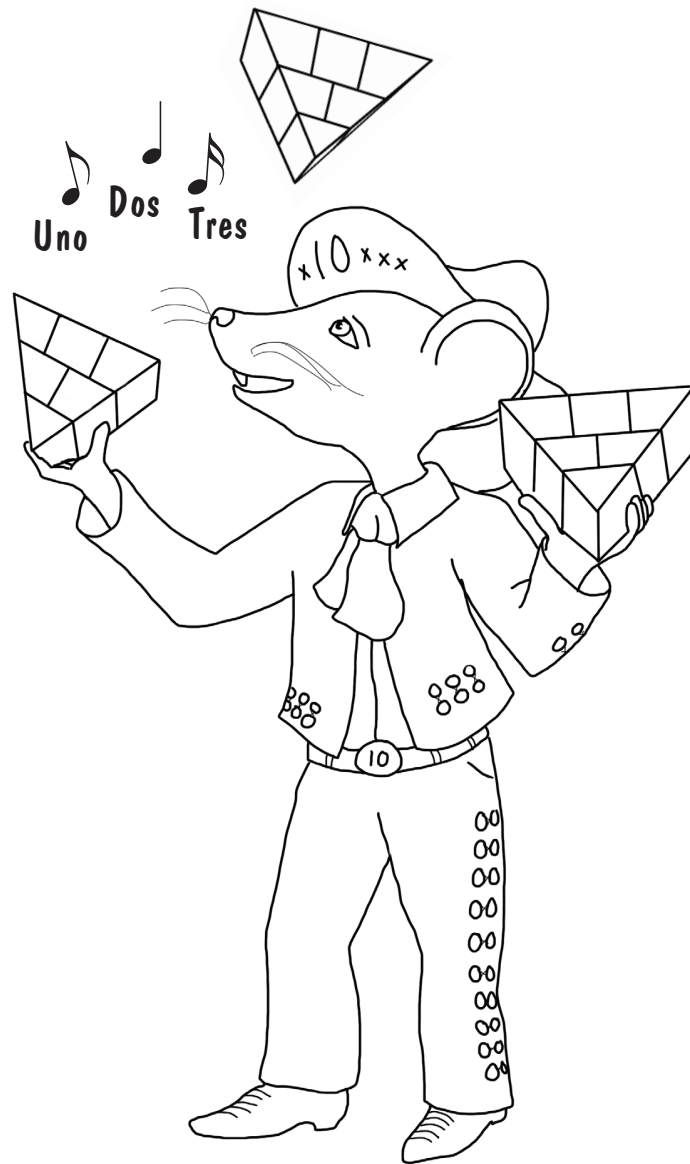
**trillions    billions    millions    thousands    ones**







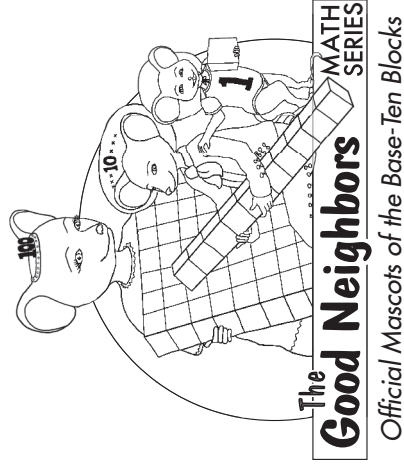
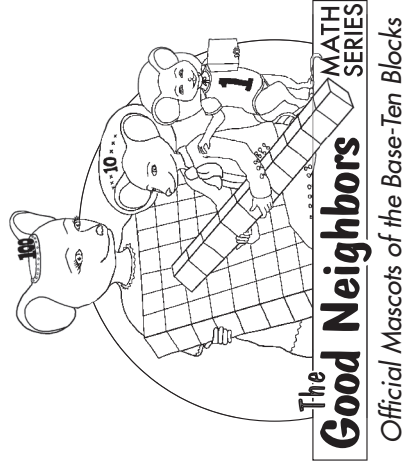
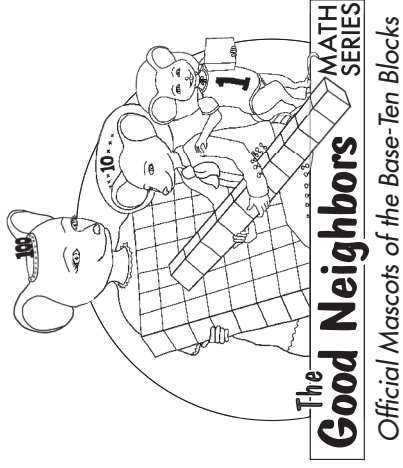
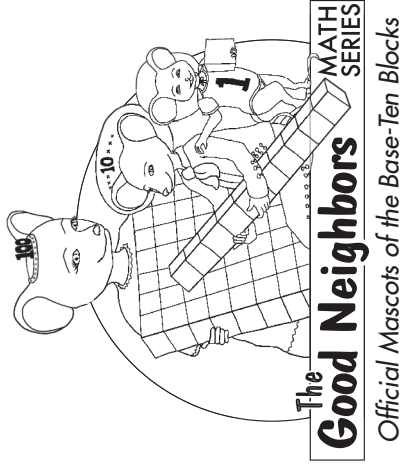
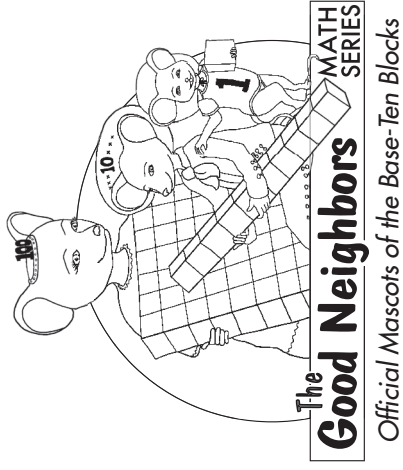
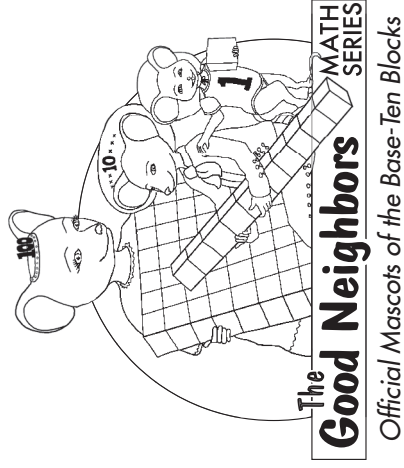
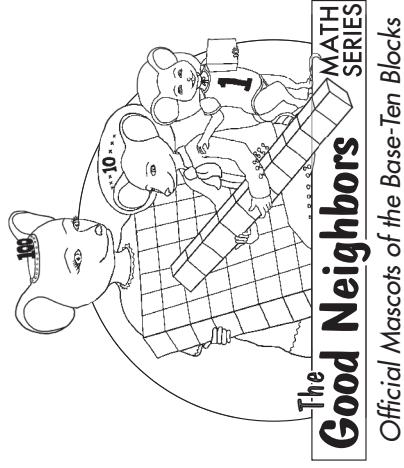
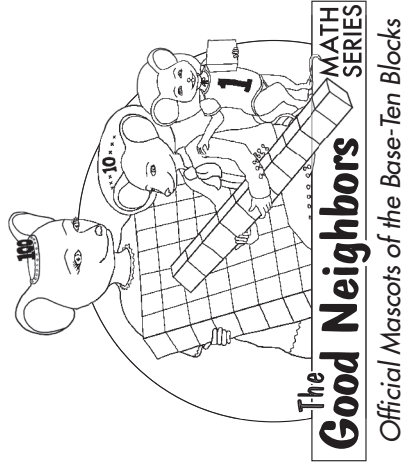
# Tenor has three



0.123

tenths   hundredths   thousandths





**ones**

**thousands**

**millions**

**billions**

**trillions**

**222,222,222**

**222,222,222**

**222,222,222**

**222,222,222,222,222**

***222,222,222,222,222***

***Onesie***

***the***

***Mouse***

***builds***

***triangles***

***tenths***

***hundredths***

***thousandths***

**Tenor**

**0.222**

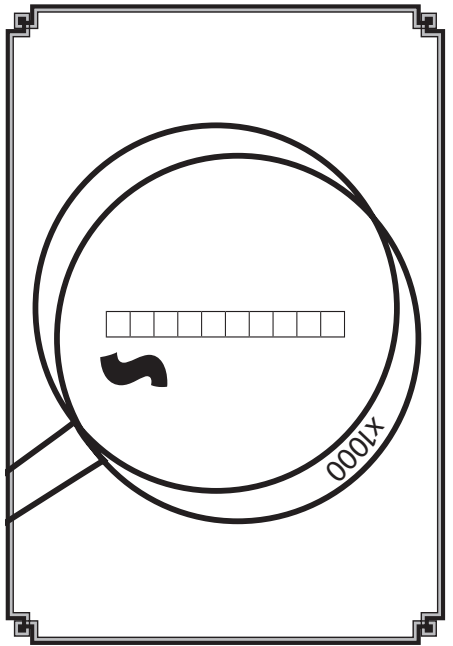
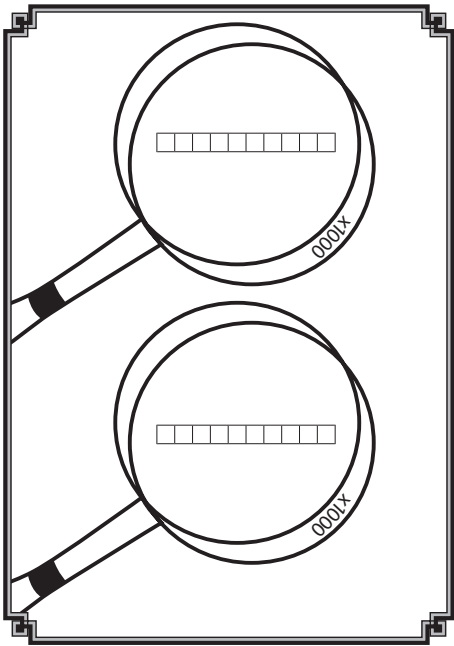
**has**

**0.222**

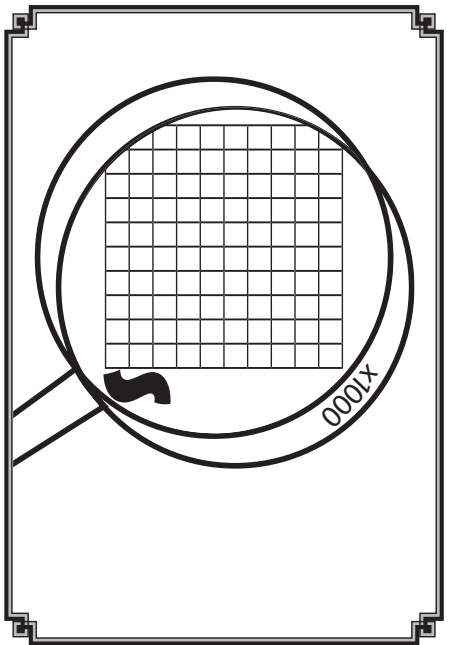
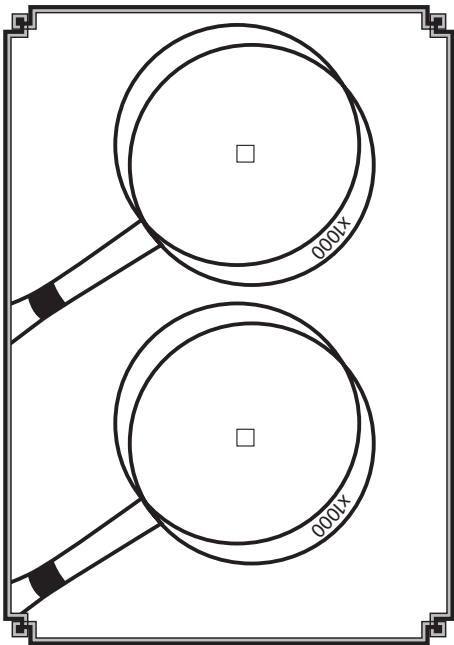
**three**

**0.222**

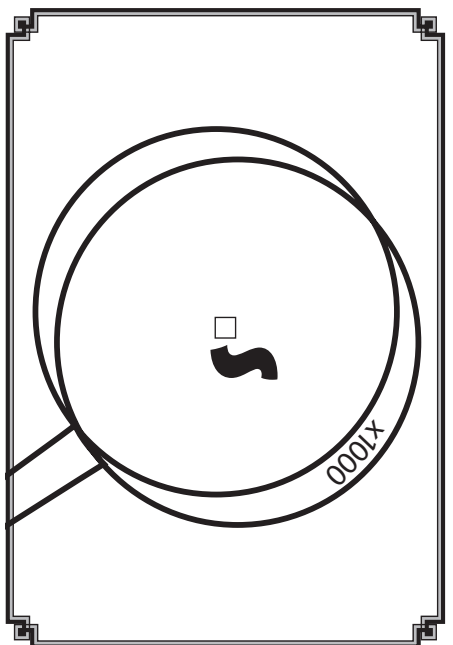
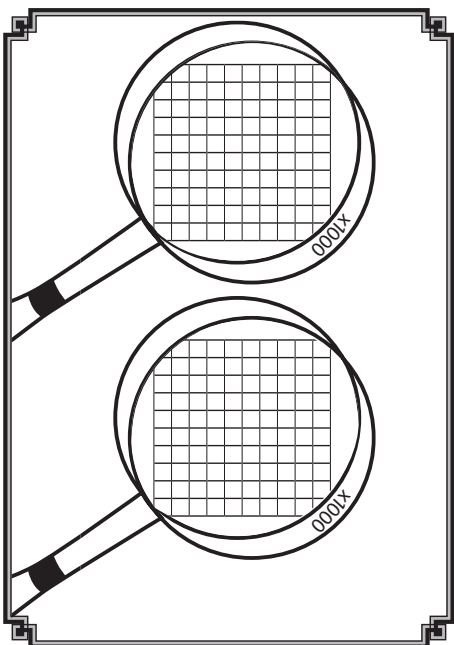
**0.2**



**0.02**



**0.002**



# ***Good Neighbors Math Series***

## ***Upper Elementary Card Deck Activities***

### **Whole Number Activities**

#### **Activity 1**

##### ***Top It***

**Materials**      *Upper Elem. Whole Number Card Deck* (choose cards for appropriate level and targeted skills – ex. whole number to millions; whole numbers to trillions)

**Target skills**    Compare the value of whole number periods; identify the whole number periods in a number; identify the mnemonic word associated with each whole number period

**Objective:**      To collect the most cards.

**Players**          2

**Directions:**

1. Shuffle the deck and place it face down on the table.
2. Each player takes a card.
3. Each player determines what whole number period his or her card represents. (Teacher may want to have a large number written on a piece of paper and have students point to period that his/her card represents)
4. The player with the largest value gets to keep both cards.
5. If the value is the same, each player picks another card and compares the value. The player who has the card of greater value gets all the cards in that round.
6. The player with the most cards wins.

## Activity 2

### *Memory*

Materials     *Upper Elem. Whole Number Card Deck* (choose sets of cards appropriate to level/targeted skill – whole numbers to millions; whole numbers to trillions)

Players       2 to 4

#### Variations

- Play with 4 sets of cards, so students need 4 cards to represent the same place-value to win a round (twelve total cards dealt)
- Play a *Spoon Scramble* version of the game. Place spoons in the center of the playing area (one less spoon than the number of players). When a player has all cards that represent the same place-value, he/she places the cards face-up on the playing area and grabs a spoon. The other players then try to grab the remaining spoons. The player without a spoon is assigned a letter from the word SPOONS, starting with the first letter. If a player incorrectly claims to have all the cards that represent the same place-value, that player receives a letter instead of the player without the spoon. Play continues until all but one player gets all the letters in SPOONS. The player who does not have all the letters is the winner.



## Whole Number and Decimal Activities

### Activity 1

#### *Top It*

- Play *Top It* as described above, but use the *Upper Elem. Whole Number and Decimal Decks*.

### Activity 2

#### *Three of a Kind*

- Play *Three of a Kind* as described above, but use the *Upper Elem. Whole Number and Decimal Decks* (period/place-value words, mnemonic words, underlined period/place-value cards). Can play with up to 8 players if all whole number and decimal sets are used.

### Activity 3

#### *Complete the Number*

- Play *Complete the Number* as described above, but use the *Upper Elem. Whole Number and Decimal Deck cards* appropriate for the whole number and decimal versions of *Complete the Number* games described above. Make whole number place-value digit lines and decimal place-value digit lines appropriate for level/target skills. If a player picks a whole number card he or she must roll the dice. If a player picks a decimal card, he or she does not have to roll the dice.

Target skills Identify the whole number periods in a number; identify the mnemonic word associated with each whole number period

Object To pick three cards that represent the same whole number period and get the most three card sets.

Directions:

1. Prior to playing the game, put all the cards face-up and have the students identify the three card sets that represent each whole number period.
2. Put the cards facedown in three columns of same type cards (ex. first column – period word cards, second column – mnemonic word cards, third column – number cards).
3. Players take turns. The first player turns over one card in the first column and then turns over a card in the second column. If the cards represent the same period the player turns over a card in the third column. If all three cards represent the same period the player takes the cards and the next player takes a turn. Anytime the player chooses cards that do not represent the same period, the player turns the cards facedown in their original location and the next player takes a turn.
4. When all sets have been made the game is over. The player with the most sets of matches wins the game.

### Activity 3

#### *Three of a Kind*

**Materials**      *Upper Elem. Whole Number Card Deck* (choose cards for appropriate level and targeted skills – ex. whole numbers to millions; whole numbers to trillions; 3 players need 3 sets of cards – 4 players need 4 sets of cards – 5 players need five sets of cards)

**Players**        3 to 5

**Target skills**   Identify the whole number periods in a number; identify the mnemonic word associated with each whole number period

**Object**         To get three cards that represent the same period, and win the most rounds.

#### Directions:

1. Shuffle the deck and deal 3 cards to each player (all cards should be dealt).
2. Players look at their cards. If a player had 3 cards that represent the same period, proceed to Step 4 below. Otherwise, each player chooses a card to discard, placing it facedown in front of him/her. When all players have placed a card facedown, the teacher says, "Pass", and all players pass their card to the player on the left.
3. Each player picks up the new card and repeats Step 2. The passing of the cards should proceed quickly.
4. As soon as a player has 3 cards that represent the same period, the player presents the cards and states the period all 3 cards represent.
5. Reshuffle the deck and play another round.

#### Variations

- Play a *Spoon Scramble* version of the game. Place spoons in the center of the playing area (one less spoon than the number of players). When a player has all cards that represent the same period, he/she places the cards face-up on the playing area and grabs a spoon. The other players then try to grab the remaining spoons. The player without a spoon is assigned a letter from the word SPOONS, starting with the first letter. If a player incorrectly claims to have all the cards that represent the same period, that player receives a letter instead of the player without the spoon. Play continues until all but one player gets all the letters in SPOONS. The player who does not have all the letters is the winner.

## **Activity 4**

### *Complete the Number*

Materials	<i>Upper Elem. Whole Number Card Deck</i> (remove the number cards and use the remaining cards that are appropriate for level/targeted skills), blank sheets of white paper or large classroom whiteboard/small magnets (optional), number cards 0-9, dice with 1s, 10s, 100s (make by putting stickers on a dice; or make key for 1-6 dice)
Players	2-5
Target skills	Identify the whole number periods in a number; identify the mnemonic word associated with each whole number period; identify the 1s, 10s, 100s place-values within a whole number period; read large whole numbers
Object	To complete the number, read the number correctly, and win the most rounds.

Directions:

1. Draw three horizontal lines and commas as needed on blank white sheets of paper/large white board to represent three place-value digits in each whole number period (1s, 10s, and 100s place-values).
2. Shuffle number cards and *Upper Elem. Whole Number Card Deck* and place them facedown in two separate piles.
3. Players take turns. The first player picks the top card from the *Upper Elem. Whole Number Card Deck*, rolls the dice, and picks the top card from the number card deck. The player places the number on the sheet of paper/whiteboard with small magnet above the blank digit line that represents the same place-value as the card chosen and dice rolled. The next player picks the top card from the *Upper Elem. Whole Number Card Deck* and rolls the dice. The player picks a number card **ONLY IF** the place-value of the card chosen and dice rolled is not already occupied by a number card. If the blank is not occupied the player takes the top number card and places his/her card above the blank digit line that represents the same place-value as the card chosen and the dice rolled. If the space is occupied, the player places the *Upper Elem. Whole Number Card Deck* card in the discard pile, and the player's turn is over.
4. The player that competes the last digit in the number on his or her turn must read the number. If the player reads the number correctly he/she is the winner of that round.
5. When all the *Upper Elem. Whole Number Card Deck* cards have been turned over, shuffle the cards, turn them facedown and continue play. If all three place-values in a period have been filled, disregard cards that represent that period (remove cards as chosen and have player pick another card). Play as many rounds as desired.

## Decimal Activities

### Activity 1

#### *Top It*

Materials     *Upper Elem. Decimal Card Deck*

Target skills   Compare the value of the 10ths, 100ths, and 1000ths place-values; identify the 10ths, 100ths, and 1000ths place-values in a number; identify the base-ten block associated with 10ths, 100ths, and 1000ths place-values; identify the mnemonic word associated with the 10ths, 100ths, and 1000ths place-values.

Objective     To collect the most cards.

Players       2

Directions:

1. Shuffle the deck and place it face down on the table.
2. Each player takes a card.
3. Each player determines what place-value his or her card represents (10ths, 100ths or 1000ths). (Teacher may want to have a decimal number written on a piece of paper and have students point to place-value that his/her card represents)
4. The player with the largest value gets to keep both cards.
5. If the value is the same, each player picks another card and compares the value. The player who has the card of greater value gets all the cards in that round.
6. The player with the most cards wins.

## Activity 2

### Memory

**Materials**      *Upper Elem. Decimal Card Deck* (select three types of cards for the game (ex. word cards, mnemonic cards, underlined place-value cards))

**Players**        2 to 4

**Target skills**   Identify the 10ths, 100ths, and 1000ths place-values in a number; identify the base-ten block that represents the 10ths, 100ths, and 1000ths place-values; identify the mnemonic word that represents the 10ths, 100th, and 1000ths place-values.

**Object**         To pick three cards that represent the same place-value and get the most three card sets.

#### Directions:

1. Prior to playing the game, put all the cards face-up and have the students identify the three card sets that represent the 10ths, 100ths, and 1000ths place-values.
2. Put the cards facedown in three columns of same type cards (ex. first column place-value word cards, second column base-ten block cards, third card mnemonic word cards).
5. Players take turns. The first player turns over one card in the first column and then turns over a card in the second column. If the cards represent the same place-value the player turns over a card in the third column. If all three cards represent the same place-value the player takes the cards and the next player takes a turn. Anytime the player chooses cards that do not represent the same place-value, the player turns the cards facedown in their original location and the next player takes a turn.
6. When all three sets have been made the game is over. The player with the most sets of matches wins the game.

#### Variation

- Use 4 to 6 sets of cards (4 to 6 columns)

### Activity 3

#### *Three in a Row*

Materials      *Upper Elem. Decimal Card Deck*, four sticky notes

Players        2-5

Target skills   Identify the 10ths, 100ths, and 1000ths place-values in a number; identify the value of a decimal number, identify the value of a digit within a decimal number, identify the value of a set of base-ten blocks, identify the base-ten block that represents the 10ths, 100ths, and 1000ths place-values; identify the mnemonic word that represents the 10ths, 100th, and 1000ths place-values.

Object         To place cards in three-card sets of 10ths, 100ths , 1000ths cards (three-card sets can be any combination of cards that represent the 10ths, 100ths, 1000ths place-values) and not have unplaced cards when all the cards in the deck have been taken.

Directions:

1. Write "0." on the first sticky note and the digit "2" on the other three sticky notes and place them on a table horizontally to make the number "0.222".
2. Shuffle the cards and place the deck facedown.
3. Players take turns. The first player picks the top card from the deck and places it under the sticky note that represents the same place-value as the card chosen.
4. The second player picks the next top card from the deck and places it under the sticky note that represents the same place-value as the card chosen **ONLY IF** the card represents a place-value different from the first player's card (cards can only be placed if they are part of a 10ths, 100ths, 1000ths card set. A new row of cards can only be started after a complete three-card set has been made). If the card represents the same place-value as the first player's card, the second player cannot play the card and keeps it for a future turn.
5. Play continues with players attempting to place one card per turn in a three-card set. If a player has cards from previous turns he/she attempts to place one of the cards in a three-card set. If the player does not have cards from previous turns, he/she takes a new card from the deck and attempts to place it in a three-card set.
6. Play continues until all the cards from the deck have been taken. The player(s) who have no unplaced cards when all the cards from the deck have been taken win the game.

## Activity 4

### *Complete the Number*

**Materials**      *Upper Elem. Decimal Card Deck* (remove the nine cards that represent "0.222"), three blank sheet of white paper or small white board, number cards 0-9

**Players**        2-5

**Target skills**   Identify the 10ths, 100ths, and 1000ths place-values; identify the base-ten block that represents the 10ths, 100ths, and 1000ths place-values; identify the mnemonic word that represents the 10ths, 100th, and 1000ths place-values, read a decimal number to the 10ths, 100ths, and 1000ths place.

**Object**          To complete the decimal numbers and collect the most cards.

#### Directions:

1. On the first sheets of paper draw "0. \_\_\_\_\_", on the second sheet draw "0. \_\_\_\_\_", and on the third sheet draw "0. \_\_\_\_\_", or use a small white board and change the digit lines as needed.
2. Shuffle number cards and the *Upper Elem. Decimal Card Deck* and place them facedown in two separate piles.
3. Players take turns. The teacher turns over the first *Upper Elem. Decimal Card Deck* card. The card chosen determines which decimal template to use for the round (ex. if the card represents the hundredths place, use the decimal template to hundredths). The first player picks the next card from the *Upper Elem. Decimal Card Deck* and picks the top card from the number deck **ONLY IF** the place-value of the card chosen is a place-value on the template. If the place-value is on the template the player places his/her card above the blank digit line that represents the same place-value as the card chosen. If the place-value is not on the template, the player places the *Upper Elem. Decimal Card Deck* card in the discard pile, and the player's turn is over. The next player picks the top card from the *Upper Elem. Decimal Card Deck* and picks the top card from the number deck **ONLY IF** the place-value of the card chosen is on the template and is not already occupied by a number card. If the place-value is on the template and is not occupied by a number card, the player places his/her card above the blank digit line that represents the same place-value as the card chosen. If the place-value is not on the template or is occupied by a number card, the player places the *Upper Elem. Decimal Card Deck* card in the discard pile, and the player's turn is over.



4. The player that completes the last digit in the number on his or her turn must read the number. Then that player collects all the cards of the number. Continue with a new round (repeat Step 3).
5. When all the *Upper Elem. Decimal Card Deck* cards have been turned over, shuffle the cards, turn them facedown and continue play. When all the number cards have been turned over, the game is over. Each player counts the number of cards he/she has collected during the game. The player with the most cards wins the game.

## Activity 5

### *Three of a Kind*

**Materials**      *Upper Elem. Decimal Card Deck* – select three types of cards for the game (ex. place-value word cards, mnemonic word cards, block cards – total of nine cards)

**Players**        3

**Target skills**   Identify the 10ths, 100ths, and 1000ths place-values in a number; identify the base-ten block that represents the 10ths, 100ths, and 1000ths place-values; identify the mnemonic word that represents the 10ths, 100th, and 1000s place-values.

**Object**         To get three cards that represent the same place-value, and win the most rounds.

**Directions:**

1. Shuffle the *Upper Elem. Decimal Card Deck* and deal 3 cards to each player (all cards should be dealt).
2. Players look at their cards. If a player had 3 cards that represent the same place-value, proceed to Step 4 below. Otherwise, each player chooses a card to discard, placing it facedown in front of him/her. When all players have placed a card facedown, the teacher say, “pass”, and all players pass their card to the player on the left.
3. Each player picks up the new card and repeats Step 2. The passing of the cards should proceed quickly.
4. As soon as a player has 3 cards that represent the same place-value, the player presents the cards and states the place-value all 3 cards represent.
5. Reshuffle the deck and play another round.

## ***The Good Neighbors Math Series***

### **Decimal Base-Ten Blocks and Base-Ten Block Decimal Notation**

*The Good Neighbor Math Series* use of base-ten blocks as decimals and its base-ten block decimal notation is based on the concept of the ones cube being magnified x1000. Therefore:




- thousands cube = one whole
- flats = tenths
- rods = hundredths
- cubes = thousandths

This use of the base-ten blocks as decimals provides consistency, clarity, and convenience. One whole is a cube, which is consistent with the whole number base-ten blocks. The magnification of 1000 makes it clear to students just how small decimals are. In order for students to hold decimal blocks that are to scale with the whole number blocks, they must be magnified 1000 times! Being able to utilize the flats, rods, and cubes, as whole number representations as well as decimal representations is extremely convenient.

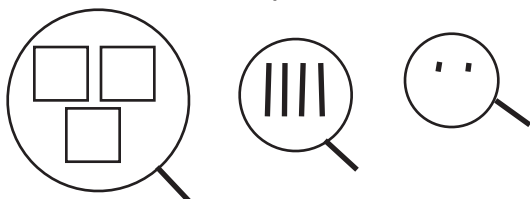
Pages 27-31 allow students to conceptualize and visualize the decimal place-values to scale with the whole number base-ten blocks. Page 27 illustrates the decimal representations described above. Pages 28-31 allow students to see the actual size of the blocks (in Onesie's hand) and the blocks magnified x1000 (the block under the magnifying glass). These illustrations help students understand why it is necessary to magnify decimal base-ten blocks x1000.

Teachers often have primary student represent numbers using base-ten block notation because it is very helpful in conceptualizing the value of numbers. Upper elementary students, when learning about decimals, rarely represent decimal numbers with base-ten block notation. This would be extremely beneficial, but there has not been a clear and consistent decimal notation modeled for teachers.

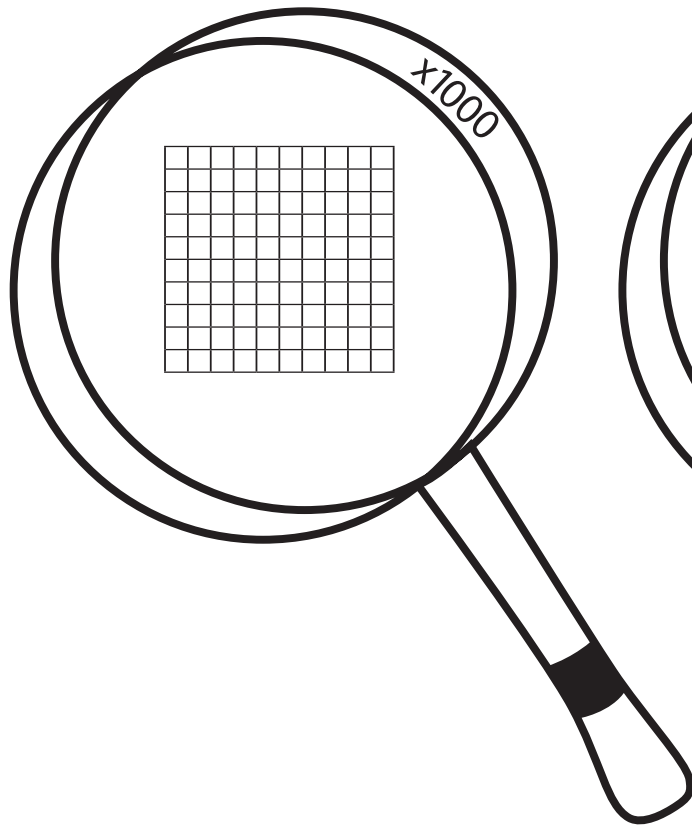
*The Good Neighbors Math Series* base-ten decimal notation uses the same notation as the base-ten whole number notation, but adds a circle around the blocks and a line connected to the circle to represent the x1000 magnifying glass. Therefore base-ten block decimal notation is as follows:

- tenths – 
- hundredths – 
- thousandths – 

The number 0.342 is represented as follows:



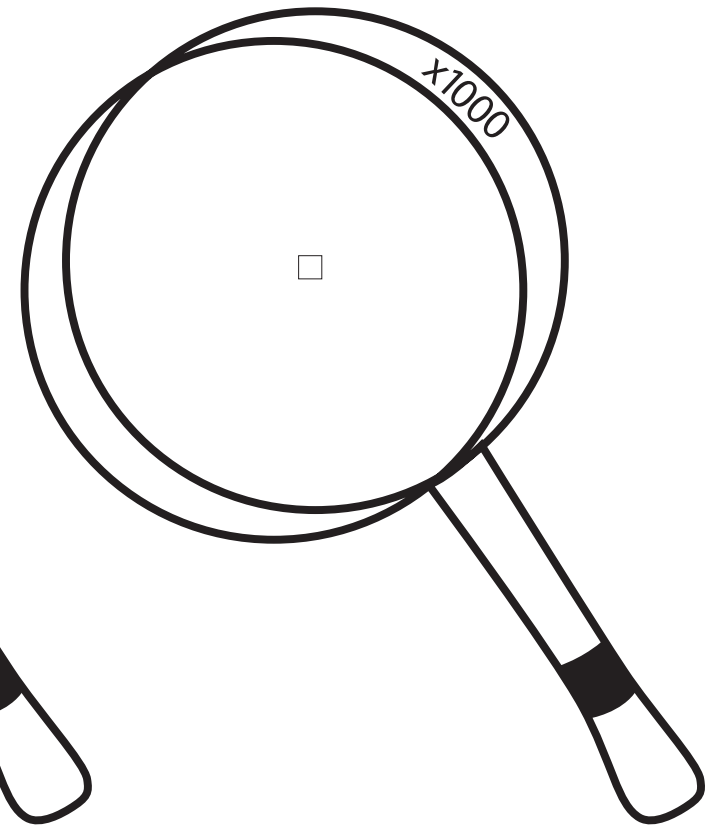
# Decimal Blocks



**tenths**

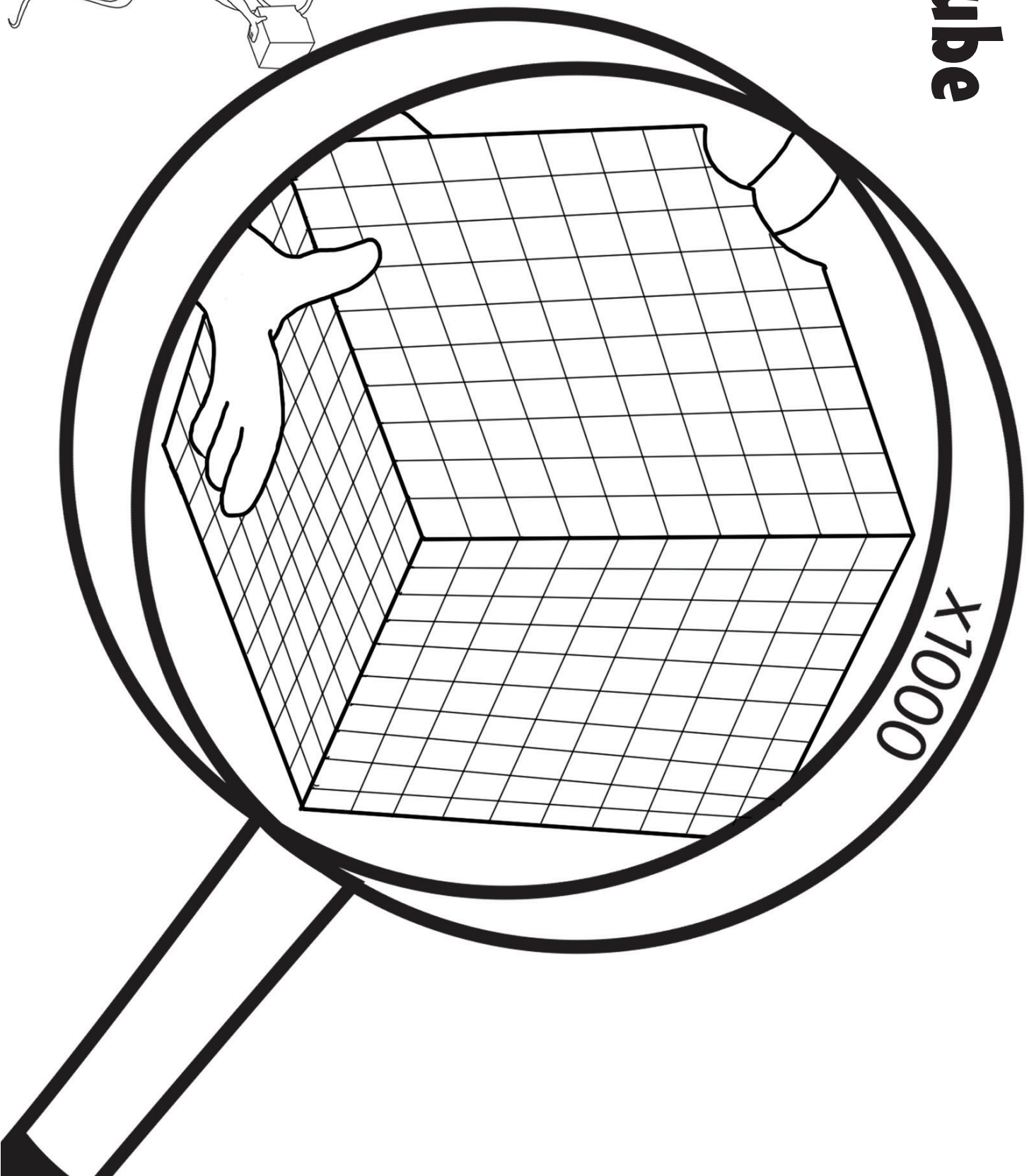
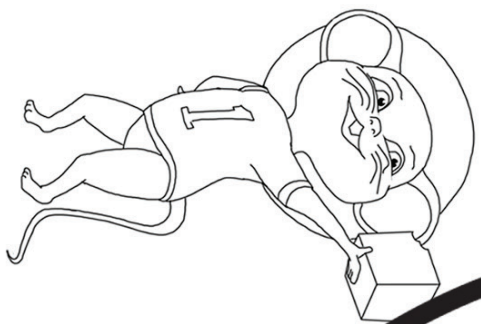


**hundredths**

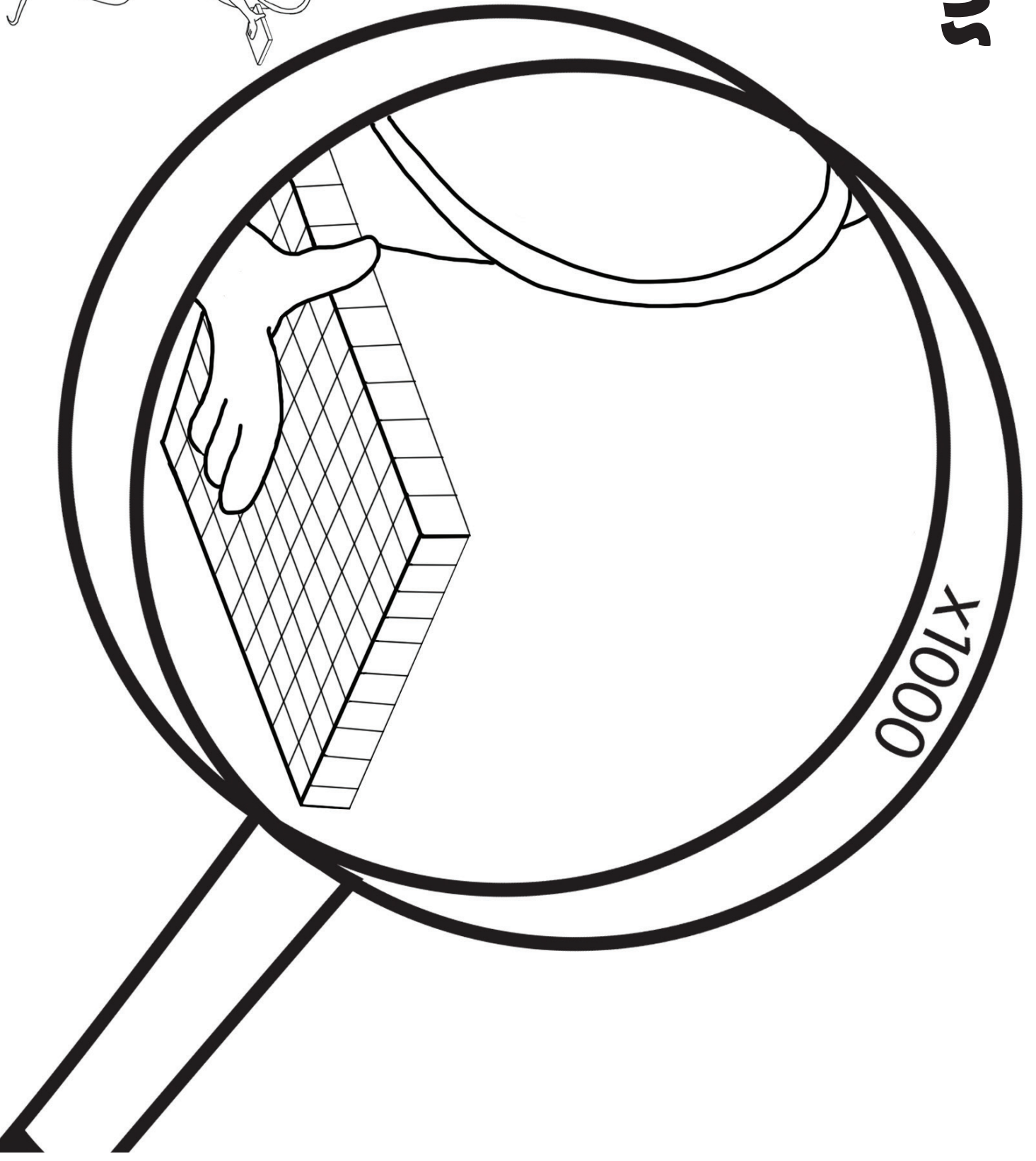
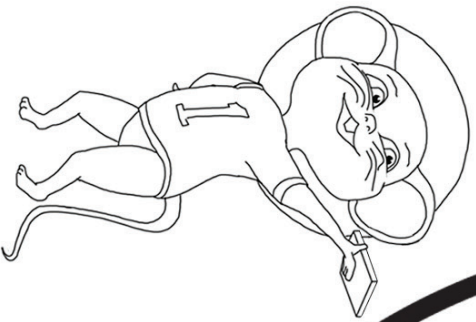


**thousandths**

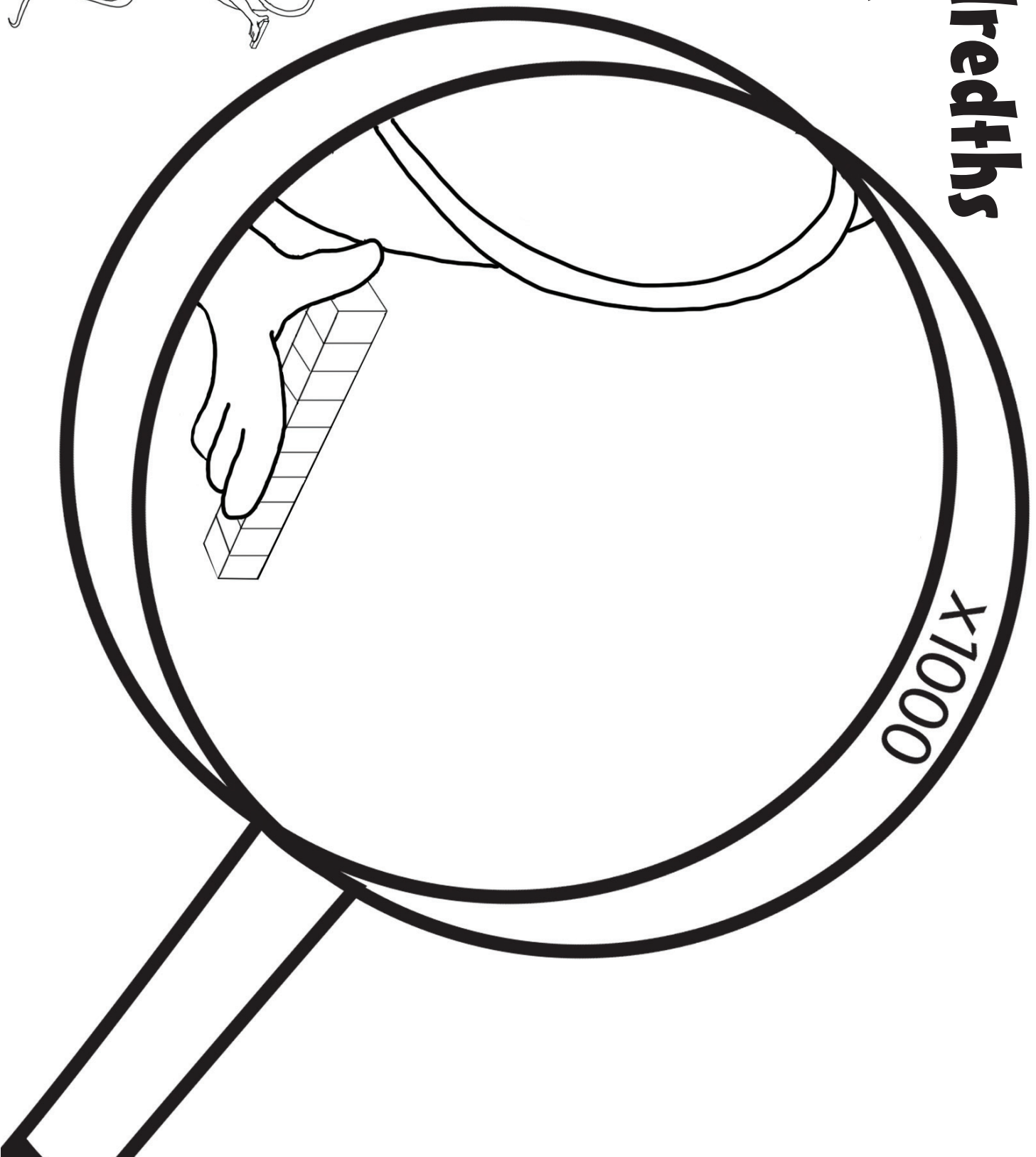
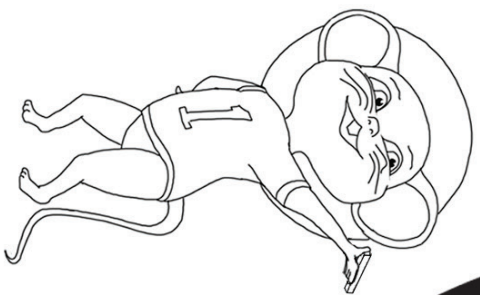
# 1s Cube



# Tenths Slab

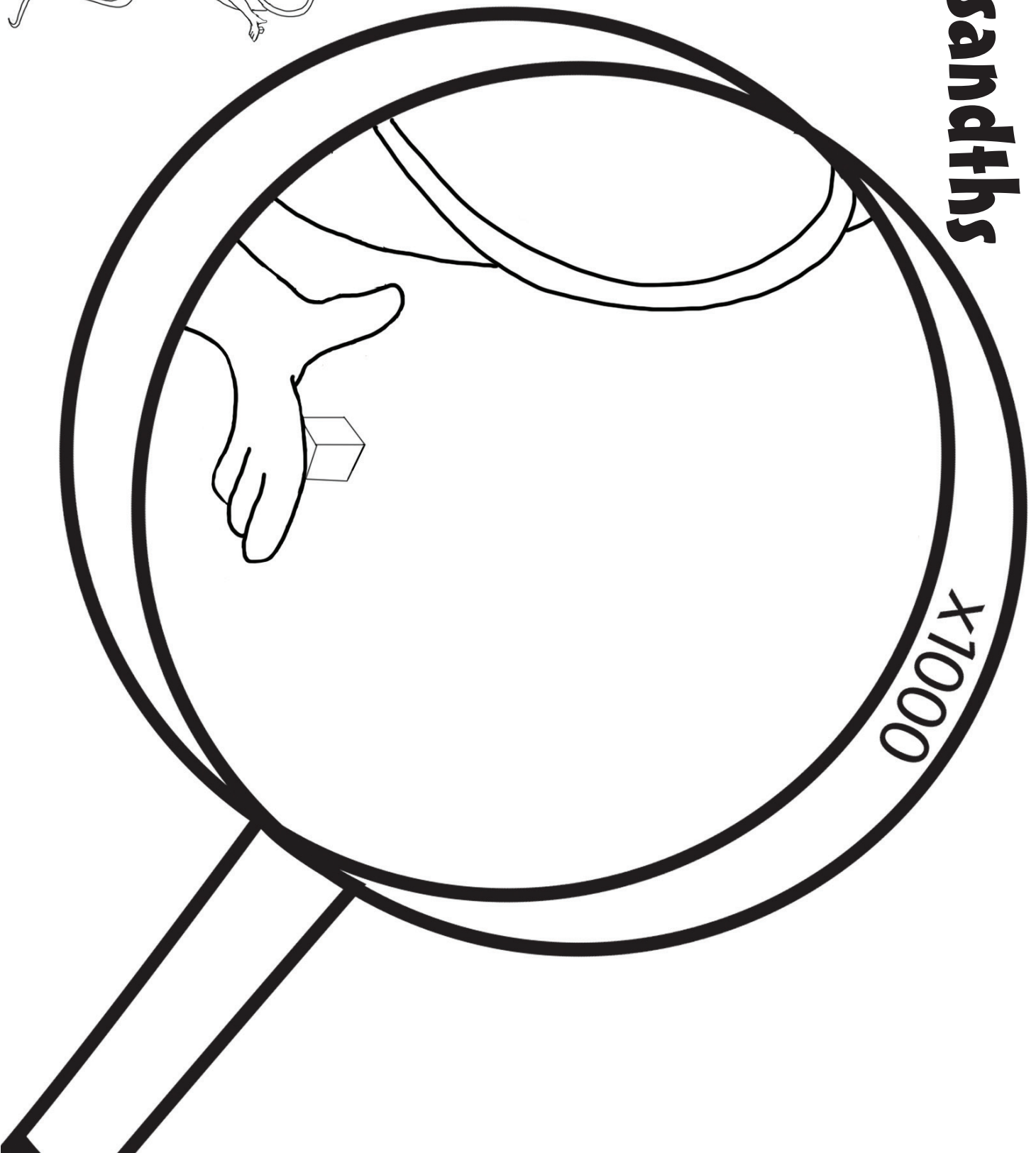
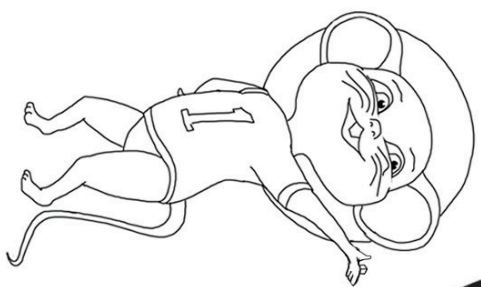


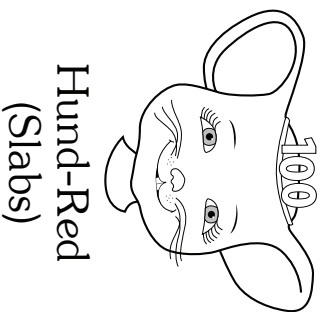
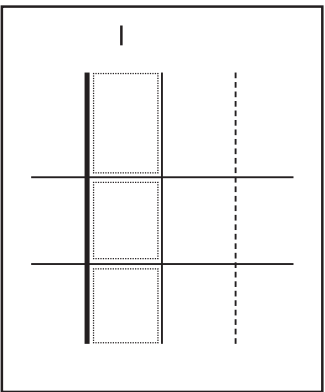
# Hundredths Stick



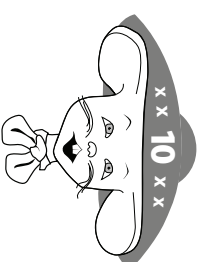


# Thousands Cube

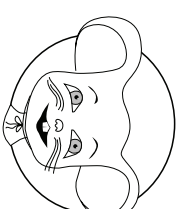




Hund-Red  
(Slabs)



Tenor  
(Sticks)



Onesie  
(Cubes)

Cheese from  
neighbor

plus  
+

(Cross out cheese  
amount from recipe)

Cheese before  
making dish

minus  
-

Recipe/  
Cheese needed  
for dish

equals  
=

Leftover  
cheese

(Cheese not  
crossed out)



Cheesecake



Macaroni & Cheese



Cheese Soup