Instructional Plan

Representational/Picture Drawing Level

Name of Math Skill/Concept: Rounding to the nearest ten and/or hundred by drawing pictures that represent concrete materials.

Prerequisite Skills Needed:
- "counting on" and "counting back"
- counting by ones; "skip counting" by tens
- rounding to the nearest ten and/or hundred using concrete objects, including discrete counting objects (rounding to nearest ten) and base-ten materials (rounding to nearest hundred).

Learning Objectives:

1.) Round to the nearest ten by drawing pictures that represent concrete materials.

2.) Round to the nearest ten/hundred by drawing pictures that represent base-ten materials.

3.) Round to the nearest ten/hundred by drawing pictures using a number line.

Important Ideas for Implementing This Teaching Plan:

1.) Only teach students to round to the nearest ten and/or hundred *after* students have demonstrated mastery of performing these skills using concrete objects (See the Concrete Level Instructional Plan).

2.) Teach rounding to the nearest ten or hundred at the drawing level without a number line before you teach rounding numbers using concrete materials and a number line (See sections C-E of Concrete Level Instructional Plan). Students with learning difficulties often are moved too quickly into abstract level instruction before they have a solid understanding at a concrete or drawing level. A rapid progression to the abstract level makes it very difficult for these students to master the skill because they do not have the "concrete" and "representational" foundation to make the "abstract" meaningful.

Instructional Phase 1: Initial Acquisition of Skill/Concept – Teacher Directed Instruction

Teach Skill/Concept within Authentic Context

Description:
- "Links" are made to the concrete experiences and the contexts used at the concrete level (See Build Meaningful Student Connections).
- A rationale for learning to round by drawing is provided: making decisions about buying items that come in groups of ten without having the items themselves to manipulate (See Build Meaningful Student Connections).

- Initial instruction for drawing is imbedded within the context of buying hamburgers for a cookout (See Explicit Teacher Modeling, "Round to the nearest ten by drawing pictures that represent base-ten materials."

Build Meaningful Student Connections

*The following description is an example of how you might implement this instructional strategy for rounding to the nearest ten by drawing pictures (without number line). A similar process can be used for the other learning objectives in this plan.

Purpose: to assist students to build meaningful connections between what they know about rounding to the nearest ten and/or hundred using concrete materials to rounding by drawing pictures that represent concrete materials.

Learning Objective 1: Round to the nearest ten/hundred by drawing pictures that represent concrete materials.

Materials:
Teacher –
- a set of concrete objects (counting objects or base-ten materials) to review rounding to the nearest ten.
- visually display the learning objective, "round to the nearest ten by drawing pictures."

Description:

1.) **L** ink to students' prior knowledge of rounding to the nearest ten or hundred using concrete materials.
   For Example:
   We've learned how to round to the nearest ten/hundred using books, counters, and base-ten materials. (Quickly demonstrate this process while prompting students to "help" you as you demonstrate. *You might also consider inviting a student to demonstrate.

2.) **I** dentify the skill students will learn: "Round to the nearest ten/hundred by drawing pictures."
   For Example:
   Today, we're going to learn how to round to the nearest ten/hundred by drawing pictures instead of using concrete materials. (Display the written objective.) What are we going to learn today? (Point to the written statement and elicit the response, "round to the nearest ten/hundred by drawing pictures.")   That's correct. We're going to learn how to round to the nearest ten/hundred by drawing pictures. (Point to the written objective as you say this.)

3.) **P** rovide rationale/meaning for rounding to the nearest ten/hundred by drawing pictures.
   For Example:

There will be times when you will need to round to the nearest ten/hundred when you don't have actual objects to use. For example, you may need to buy something like hamburgers for a party which come in packs of ten. You will need to know how many packs of ten hamburgers to buy so that you have enough hamburgers for everyone but not too many that you waste them. You also will not want to spend more money than you need to since buying too many packs of hamburgers will cost more than buying the right number of packs. Since you have to decide how many packs to buy before you actually have them, you'll need to round to the nearest ten without using the actual hamburgers. We'll use this example to learn how to round to the nearest ten by drawing pictures.

Provide Explicit Teacher Modeling

Purpose: to provide students a clear teacher of rounding to the nearest "ten" or "hundred" by drawing pictures that represent concrete materials.

Learning Objective 1: Round to the nearest ten by drawing pictures that represent concrete materials.

Materials:

Teacher –

- A platform for displaying discrete counting objects and drawings that all students can see.
- base-ten materials (ten sticks and one cubes).
- Markers/chalk for writing and drawing.
- Language cards that read either "round to nearest ten" or "round to nearest hundred."

Description:

A. Break down the skill of rounding to the nearest ten by drawing pictures that represent concrete materials.

1.) Identify and read the number to be rounded.
2.)   Draw a two-digit number - e.g. "23" –two long vertical lines ("tall skinny lines") are drawn for "twenty," and three horizontal lines (short "fat" or "side-by-side" lines) are drawn for "three ones."
3.) Identify the place value to be rounded to (e.g. "nearest ten").
4.) Review what "rounding" means.
5.) Identify and draw representations for the "lower" and "higher" tens.
6.) Compare drawings of "lower" and "higher" tens by *counting on* to "higher" ten by ones and *counting back* to lower ten by ones.
7.) Decide which ten the given number should be rounded to.

B. Explicitly Describe and Model how to round to the nearest ten by drawing pictures that represent concrete materials.

1.) Explicitly Describe and Model the skill within a meaningful context. As you model the skill, imbed your instruction within a context such as: You and your students need to decide how many packs of ten hamburgers you need to buy for a cookout. You need a total of 24 hamburgers. You can buy single hamburger patties, but buying more than five singles is more expensive than buying a pack of ten. How many packs of ten should be bought?

2.) Follow the same process that is described for rounding to the nearest hundred (Learning Objective 2) in the Representational Level Instructional Plan. The primary difference is that you will model counting on and counting back *by ones* to the nearest ten by drawing horizontal lines to represent one cubes rather than drawing long vertical lines and counting *by tens*.

4.)   An alternative to this approach would be to replicate the concrete process described in the Concrete Instructional Plan where discrete objects are lined in a row and discrete objects are used to count on and count back to the nearest ten. To draw this process, tallies, dots, circles, or squares can be drawn in a line or row to represent the two-digit number. Then you can count on and count back *by ones* by drawing tallies, dots, circles, or squares. The groups of drawings that represent the "counted on" set and the "counted back" set can be circled in order to compare them to determine the closest ten. This process is appropriate if your students are not ready to use base-ten materials or if you are only teaching rounding to tens using values that are represented by two-digit numbers.

Learning Objective 2: Round to the nearest hundred by drawing pictures that represent base-ten materials.

Materials:
Teacher –
- A platform for displaying base-ten materials and drawings that all students can see.
- Base-ten materials (hundred flats, ten sticks, one cubes).
- Markers/chalk for writing and drawing.
- Language card that reads "round to nearest hundred."

Description:
A. Break down the skill of rounding to the nearest hundred by drawing pictures that represent base-ten materials.
   1) Read the number given.
   2) Draw the number (e.g. "123" – a square is drawn for "one-hundred," two vertical lines are drawn for "two tens," and one horizontal line is drawn for "three ones.").
   3) Identify the place value to be rounded to.

4) Review what "rounding" means.

5) Identify and draw representations for the "lower" and "higher" tens or hundreds.

6) Compare drawings of "lower" and "higher" tens or hundreds by *counting on* to "higher" ten or hundred and *counting back* to lower ten or hundred.

7) Decide which ten or hundred number should be rounded to.

B. Explicitly describe and model how to round to the nearest hundred by drawing pictures that represent base-ten materials.

   1.) Read the number given and represent it with base-ten materials.

- think aloud
- cue digit and concrete materials with finger
- use "place value" language

<u>For Example:</u>

Here is a number. I need to read it first. (Read the number – "two hundred thirty-two.") I know how to represent this number using base-ten materials. How could I represent this number using hundred flats, ten sticks, and one cubes? (Elicit the appropriate response.) Great. I can represent this number with base-ten materials with two hundred flats (lay down two hundred flats side by side), three ten sticks (lay down three ten sticks), and two one cubes (lay down two one cubes). I have "two hundred" (Point to and count aloud the two hundred flats, "one hundred, two hundred."), three tens, or "thirty" (Point to and count aloud the three tens sticks, "ten, twenty, thirty."), and two ones, or "two" (Point to and count aloud the two one cubes, "one, two."). Have I represented "two-hundred thirty-two accurately? (Elicit the response, "yes.") Yes, I have "two hundred" "thirty" "two" (Point to each set of manipulatives as you say what they represent.)
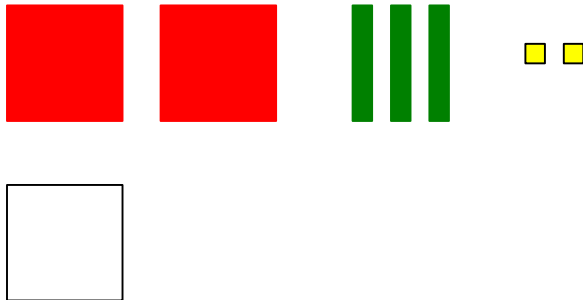
<div align="center">

232

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2.) Draw the number.
- draw hundreds place using squares
- point to each digit and corresponding concrete materials as you draw
- draw directly beneath concrete materials
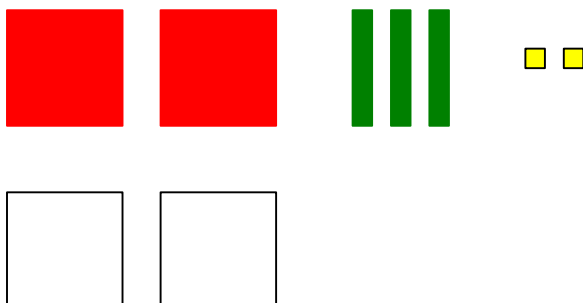- think aloud
- prompt student thinking

Because we don't always have concrete materials, I want to show you how you can draw pictures to represent numbers like this one. I can draw simple pictures for each of the concrete materials I have here that represent "two-hundred thirty-two." I'll start with the hundreds place (Point to "2" in the number "232.") I have two hundred flats that represent "two hundred." I can draw a square to represent a hundred flat. (Draw one square directly below the first hundred flat.)

232

This square represents this hundred flat (Point to the drawing of the square and then point to the first hundred flat.) I can draw the second hundred flat the same way. (Repeat the same process you use for drawing the first hundred flat.) I now have draw two hundred flats. What number does these two drawings represent? (Elicit the response, "two hundred.") That's right, these two squares that I have drawn mean "two hundred." Each square represents one hundred flat and two hundred flats equal "two hundred."
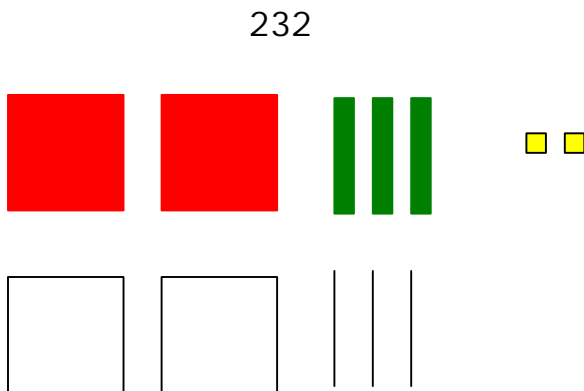
232

- draw the tens place using vertical lines
- point to each digit and corresponding concrete materials as you draw
- draw directly beneath concrete materials
- think aloud
- prompt student thinking

For Example:

Now I'll draw the tens place. (Point to the "3" in "232.") I have represented "thirty" with three ten sticks (Point to the three ten sticks.) Each of my ten sticks represents "ten." There are three tens, or "thirty." (Point to each ten stick and count aloud, "ten, twenty, thirty.") I can draw "thirty" by drawing one long vertical line (tall "skinny" lines) for each "ten." I'll do that now. (Draw one long vertical line beneath each ten stick.)

232

How many tens have I drawn? (Elicit the response, "three.") Yes. And how much are three "tens?" (Elicit the response, "thirty.") Yes, the three tens I have drawn equal thirty. Each vertical line (tall "skinny" line) represents "ten," and my three vertical lines (tall "skinny" lines) equal "thirty."

- draw the ones place using horizontal lines
- point to each digit and corresponding concrete materials as you draw
- draw directly beneath concrete materials
- think aloud
- prompt student thinking

For Example:

Now I'll draw the ones place. (Point to the "2" in "232.") I have represented "two" with two one cubes (Point to the two one cubes.) Each cube represents "one." There are two ones, or "two." (Point to each one cube and count aloud, "one, two.") I can draw "two" by drawing one short horizontal line (short lines

that go "side-to-side") for each "one." I'll do that now. (Draw two short horizontal lines beneath each other and beneath the two one cubes.)

232
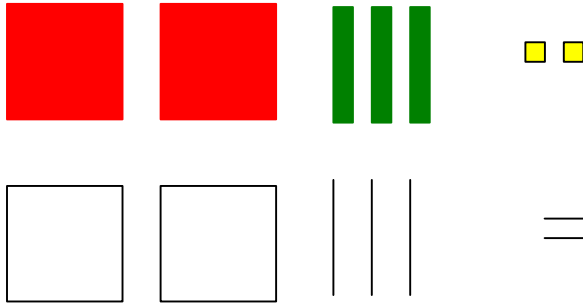
How many ones have I drawn? (Elicit the response, "two.") Yes. And how much are two "ones?" (Elicit the response, "two.") Yes, the two ones I have drawn equal "two." Each horizontal (short side to side) line represents "one" and I have drawn two horizontal (short "side to side") lines." Now that I have represented my hundred flats, ten sticks, and one cubes with drawings do I still need to use the concrete materials? (Elicit the response, "no.") Why" (Elicit the response, "because the drawings mean the same thing.") Yes, my drawings represent the same value that my concrete materials do, so I don't need the concrete materials. (Remove the base-ten materials.)

3) Hold up the "rounding" card that identifies the place value you will round to (e.g. "nearest ten" or "nearest hundred").
   - point to word
   - say what rounding to
   - students repeat

For Example:

Now that I have drawn my number, its time to round it to the nearest ten or nearest hundred. I have some cards here. Each card says what place value I need to round my number to. Let's see what the first card says. (Display the card that says "nearest hundred.") What place value do we need to round two-hundred thirty –two to? (Elicit the response, "to the nearest hundred.") Yes, the card reads "nearest hundred." (point to the words as you read the card.)

4.) Review what "rounding" means.
   - prompt student thinking

I have to round to the nearest hundred. What does "rounding" mean? (Elicit the response, to find the number it is closer to.) Yes. When we "round" numbers, we find which place value, in this case "hundred," our number is to.

5.) Draw representations for the "lesser" and "greater" hundreds place.

- prompt student thinking
- relate to concrete experiences
- write lesser and greater hundreds below current drawing
- drawings made below lesser and greater hundred.

For Example:

We've already rounded with concrete materials. How did we use concrete materials to round? (Elicit the response, "represent the lower and higher numbers for "hundreds" with concrete materials and then compare them.") Yes, we represented the lower and higher number for hundreds and then compared our concrete materials to see which "hundred" our given number was closest to. We can do the same thing by drawing. The only difference is that I will use drawings instead of concrete objects. We already know how to represent "hundreds" by drawing squares. We know that we can represents "tens" with long vertical lines (tall skinny lines). We also know we can draw "ones" by drawing short horizontal lines ("short side to side lines").

To round "two-hundred thirty-two" to the nearest "hundred" I first need to determine how many hundreds are in my number. How many hundreds are in the number "two-hundred thirty-two?" (Point to the "2" in "232" and the drawings that represent "two-hundred" and elicit the response, "two hundreds.") Yes, there are two hundreds in "two-hundred thirty-two." (Cue students by pointing to the hundred flats and drawings as needed.) I know that two-hundred thirty-two is *greater than* two-hundred but *less than* three hundred, so I either round "two-hundred thirty-two" to two-hundred or to three-hundred. (*If the concepts of "greater than" and "less than" are difficult concepts for your students, you also can use a number line to show that "232" comes after "200" and before "300." This may be a useful cue to use in addition to using the concepts of "greater than" and "less than.") I'll write the number "two-hundred" to the side of and below my drawings for "two-hundred thirty-two." I'll write "three-hundred" to the other side of and below my drawings for "two-hundred thirty-two." (Write "200" and "300" to the sides of and below your drawings.)

232

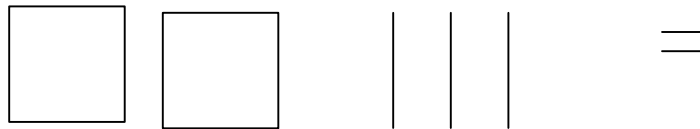
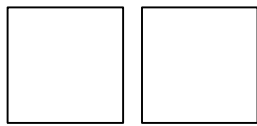200   300

When we rounded using only base ten materials, we represented our hundreds with hundred flats. How many hundred flats equal "two-hundred?" (Elicit the response, "two.") And how can we draw two "hundreds?" (Elicit the response, "draw two squares.") Yes, I can represent "two-hundred" by drawing two squares because my squares represent hundred flats. I'll draw two "hundreds" now. (Draw two squares under "200.")
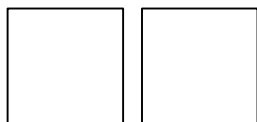
232

200   300

How can I draw "three-hundred?" (Point to "300" and elicit the response, "draw three squares.") Yes, I can represent "three-hundred" by drawing three squares. Each square represents a hundred. (Draw three squares beneath "300.")

232

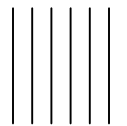200   300

6.) Compare each hundreds place "to be rounded to" to the given number.

- count on to the higher hundred place.
- relate to concrete experiences
- count on from "230"
- draw vertical lines as you count on
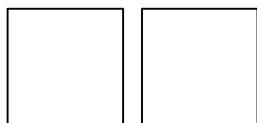- say total "prompt student thinking"

<u>For Example:</u>

Since we know we need to round to the nearest hundred, we can compare our drawings to see whether "two-hundred thirty-two" is closer to "two-hundred" or "three-hundred." Our drawings can help us do that. We learned that when we compared concrete materials to round to the nearest hundred, it was helpful to count on by tens starting with the tens place of our number. For "two-hundred thirty-two," we would start with "thirty" (Point to the "3" in "232.") and count on by ten using ten sticks. We can do the same thing with drawings by drawing a long vertical line (tall skinny line) as we count on by tens. Let's do that now. (Count on from thirty while drawing long vertical lines below the drawings for "232.") How many tens are we from "three-hundred?" (Elicit the response, "seven tens.") Good, and what is another way to say "seven tens?") (Elicit the response, "seventy.") Yes, "three hundred" is about seventy greater than "two-hundred thirty-two." Is "three-hundred" exactly seventy away from "two-hundred thirty-two? (Elicit the response, "no.") Why? (Elicit the response, "because of the two ones in two-hundred thirty-two.") Great thinking guys! Because our number is "two-hundred thirty-**two**" and not "two-hundred thirty," our number is not exactly seventy from "three-hundred."
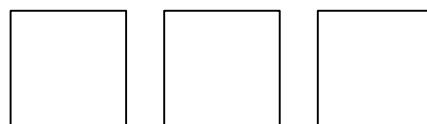
232

200

300

- count back to "lower hundred."
- relate to concrete experiences
- count back from "230"
- draw vertical lines as count back
- say total
- prompt student thinking

For Example:

Now we need to count-back to "two-hundred" to see how far away two-hundred thirty-two" is from "two-hundred." (*Follow the same procedure for counting back as you did for counting on, drawing long vertical lines as you count back by tens.)
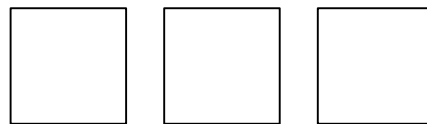
232
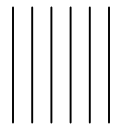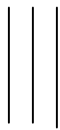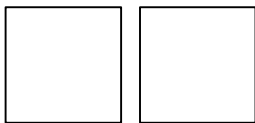
200   300

- compare the drawings that represent "counting on" and "counting back."
- prompt student thinking
- point to each group of drawings

Now that we have counted on to three-hundred and counted back to two-hundred, what do we know? (Elicit the response, "two-hundred thirty-two is closer to two-hundred than it is to three-hundred.") Yes. How do you know that? (Elicit the response, "because two-hundred thirty-two is about three tens/thirty away from two-hundred and it is about seven tens/seventy away from three-hundred.") Excellent thinking guys! By drawing pictures, we know that "two-hundred thirty-two" (Point to "232.") is about three tens or "thirty" away from "two-hundred" (Point to the group of two vertical lines and then point to "200."). We know "two-hundred thirty-two" (Point to "232.") is about seven tens or "seventy" away from "three-hundred (Point to the group of seven vertical lines and then point to "300.")

7.) Decide which hundred the number should be rounded to.
- prompt student thinking – "why?"

For Example:

So, which "hundred" should "two-hundred thirty-two" be rounded? (Elicit the response, "two-hundred.") Yes, "two hundred thirty-two" should be rounded to "two-hundred." Why? (Elicit the response, "because it is closer to two-hundred than it is to three-hundred.") That's right. By drawing pictures, we know that "two-hundred thirty-two is closer to "two-hundred" than "three-hundred," therefore we should round "two-hundred thirty-two" to two-hundred. (Circle "200.")

8.) Repeat steps 1-6 with at least three more examples for both rounding to "tens" and rounding to "hundreds."

Learning Objective 3: Round to the nearest ten and hundred by drawing pictures using a number line.

Materials:

Teacher –

- number lines representing hundreds (e.g. "100" to "200;" "400" to "500;" "800 to "900"). Number lines should represent ten multiples. Color-coding the "tens" digit in the ten multiples to the color of the ten sticks can be a helpful cue for students with visual processing problems or attention difficulties. *The number lines should be measured so they are the same length as ten "ten sticks laid side-to-side. Each ten multiple should be written so that it occurs at the beginning/end of the ten sticks.

For Example:

Number line: 100 110 120 130 140 150 160 170 180 190 200

- base-ten materials (ten sticks and one cubes).
- a visual platform from which to display concrete objects and draw so all students can clearly see them (*there should be enough room to line concrete objects side-by-side in the form of a line in multiples of ten.).
- a language card with the word "rounding" written.

A. Break down the skill of rounding to the nearest ten and hundred by drawing pictures using a number line.

1.) Review the number line.

2.) Write number to be rounded above number line in the position the number would occur on number line.

3.) Count out set of ten sticks and one cubes representing number and then draw pictures to replace the concrete objects.

For Example:

"162"

Number line: 100 110 120 130 140 150 160 170 180 190 200
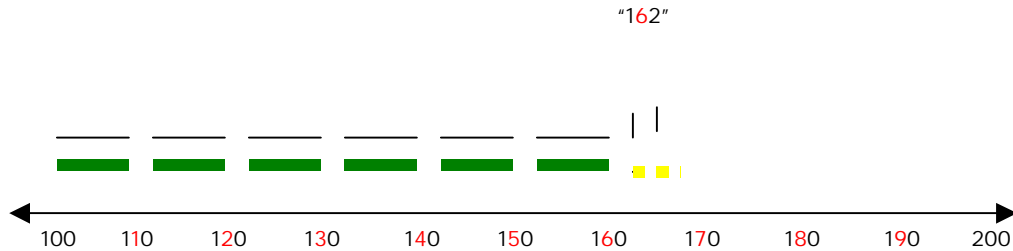
4.) Remove concrete materials.

5.) Identify whether you are rounding to the nearest ten or to the nearest hundred.

6.) "Count on" to the greater "ten" or "hundred" by drawing.

Example for rounding to "tens:"

"162"

Number line: 140 150 160 170 180

For Example for rounding to "hundreds:"

"162"

_____ _____ _____ _____

_____ _____ _____ _____ _____ _____ | |
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100   110   120   130   140   150   160   170   180   190   200
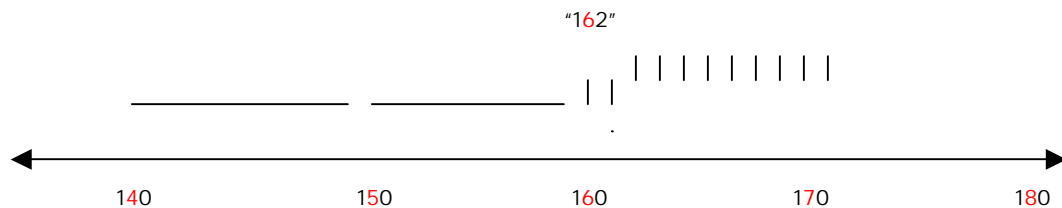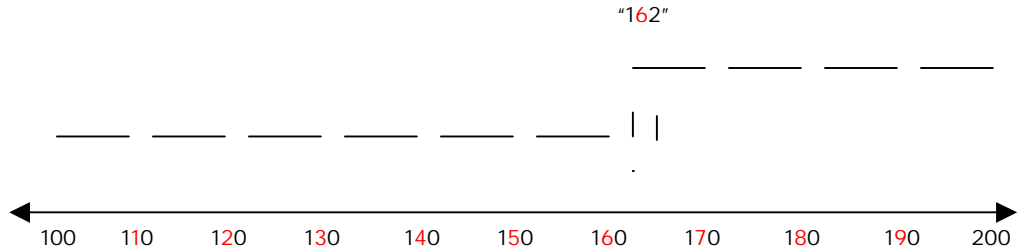

7.) Say how many ones or tens were "counted on;" write number above the set of counted on drawings.

8.) "Count back to the lesser "ten" or "hundred" by drawing.

Example for rounding to "tens:"

"162"

| | | | | | | | | | |

_____ _____ |
.

<--->
    140   150   160   170   180
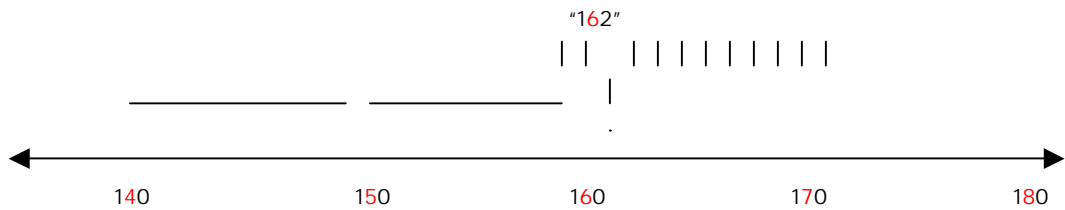
For Example for rounding to "hundreds:"

*Count back using "tens" already drawn or by drawing "tens" above existing drawings.

"162"

_____ _____ _____ _____

_____ _____ _____ _____ _____ _____ | |
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100   110   120   130   140   150   160   170   180   190   200
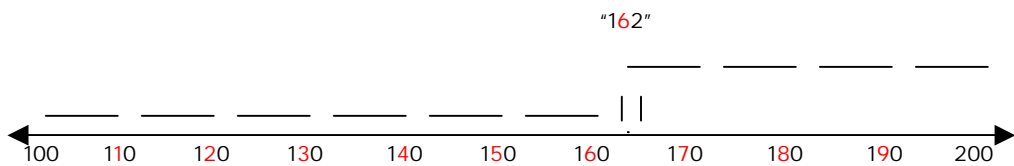
9.) Say how many ones or tens were "counted back;" write number above the set of "counted back" drawings.

10.) Compare the values of the "count on" and "count back" groups of drawings.

11.) Determine which group of drawings represents less.

12.) Say and then circle which ten or hundred the original group of objects is closer to and why.

13.) Review the term "rounding."

B. Explicitly Describe and Model how to round to the nearest ten and hundred by drawing pictures using a number line.

*Follow the same process described for rounding to the nearest ten and hundred using base-ten materials and a number line (Learning Objectives 3, 4, & 5 of Concrete Level Instructional Plan) following the teaching steps outlined for this objective.. Emphasize to students that the drawing process for rounding to tens and hundreds using a number line is the similar to when they used concrete materials except that they can use drawings to represent the concrete materials they used before.

1.) Review the number line (Prompt students to describe what it represents - e.g. number values, what value it starts with/ends with, does it increase by ones or tens, relevant color-coding. Explicitly point these characteristics out as needed.)

2.) Write the number to be rounded above the number line in the position the number would occur on the number line.

3.) Count out a set of ten sticks and one cubes that represent the number and then model how to draw pictures to replace the concrete objects (e.g. the long vertical lines used to represent tens in Learning Objectives 1 & 2 can be drawn horizontally over the number line to replicate a "ten stick" laying on its side; dots, circles, squares, or tallies can be drawn for one cubes.)

For Example:

"162"

_____ _____ _____ _____ _____ _____ | |
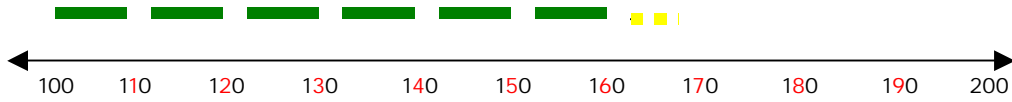
3.) Remove concrete materials.

3.) Identify whether you are rounding to the nearest ten or to the nearest hundred.

4.) "Count on" to the greater "ten" or "hundred" by drawing. Use the same drawings for "ones" and "tens" as you did for step number three. Place the drawings you "count on" slightly above the original row of drawings so they can be differentiated from the original set.

Example for rounding to "tens:"
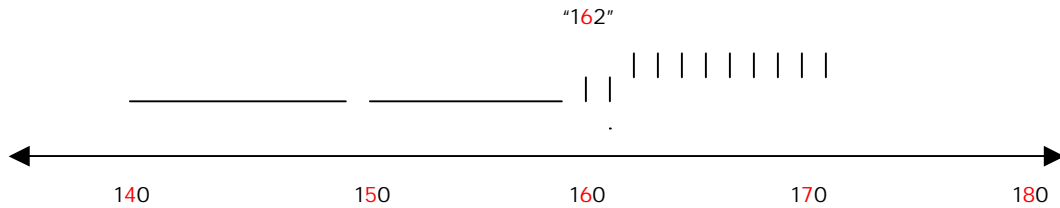
For Example for rounding to "hundreds:"
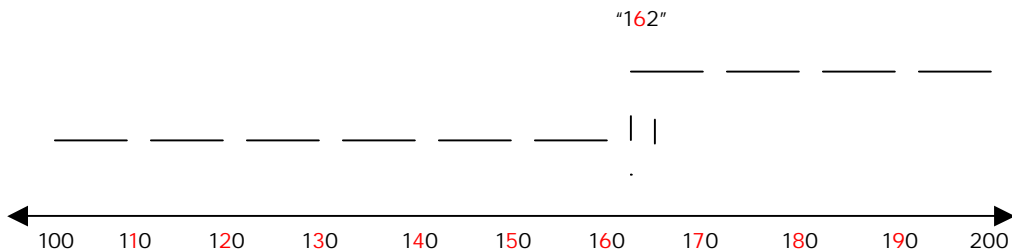
6.) Say how many ones or tens were "counted on" to reach the greater ten or hundred and write the value in number form above the set of "counted on" drawings.

7.) "Count back to the lesser "ten" or "hundred" by drawing (counting back by ones) or counting existing drawings (counting back by tens).

Example for rounding to "tens:"

"162"

| | | | | | | | | | |
                          |

_____ _____

<--->
140   150   160   170   180

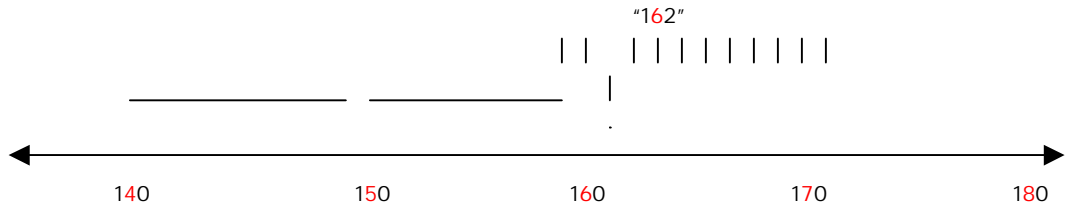For Example for rounding to "hundreds:"

* Count back using "tens" already draw or by drawing "tens" above existing drawings.

"162"

_____ _____ _____ _____

_____ _____ _____ _____ _____ _____ | |

<--->
100   110   120   130   140   150   160   170   180   190   200
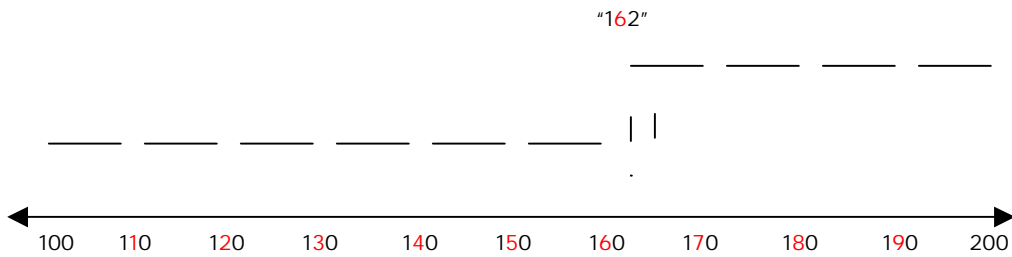
9.) Say how many ones or tens were "counted back" and write the value in number form above the set of "counted back" drawings.

10.) Compare the values of the "count on" group of drawings and the "count back" group of drawings (*Circling the two sets of drawing can be a helpful cue).

11.) Determine which group of drawings represents less.

12.) Say and then circle which ten or hundred the original group of objects is closer to and why.

13.) Review the term "rounding." (Display and point to "rounding" language card.)

Scaffold Instruction

Purpose: : to provide students the opportunity to build their initial understanding of how to round to the nearest ten/hundred by drawing with or without the use of a number line, and to provide you the opportunity to evaluate your students' level of understanding after you have initially modeled this skill.

Materials:
*Dependent on the skill you are Scaffolding Instruction for (See the materials listed for the specific skill you want to scaffold under Explicit Teacher Modeling).

Description:
*Scaffolding at the representational/drawing level of instruction should occur using the same process as scaffolding instruction at the concrete level of instruction (See the description of Scaffolding Instruction for, "rounding to the nearest hundred using base ten materials and a number line," in the Concrete Level Instructional Plan.). The steps used during Explicit Teacher Modeling should be used as structure for scaffolding your instruction.

A.   Scaffold instruction using a high level of teacher direction/support (*Dependent on the needs of your students, you may want to continue to associate concrete materials with drawings at this level as described under Explicit Teacher Modeling.). .). *Move to the next phase of scaffolding only when students demonstrate understanding and ability to respond accurately to your prompts.

B.   Scaffold instruction using a medium level of teacher direction/support (*If you associated concrete materials with drawings while scaffolding using a high level of teacher direction/support, then do not include concrete materials during this phase of scaffolding). *Move to the next phase of scaffolding only when students demonstrate understanding and ability to respond accurately to your prompts.

C.   Scaffold instruction using a low level of teacher direction/support (*Students should actually draw as you prompt during this phase of Scaffolding Instruction.). *Move students to independent practice of the skill only after they demonstrate the ability to perform the skill with limited prompting from you.

Instructional Phase 2: Facilitate Acquisition to Mastery – Student Practice

1. *Receptive/Recognition Level*

Purpose: to provide students multiple opportunities to choose the appropriate "ten" or "hundred" a number should be rounded to given a drawing of the number to be rounded and several choices.

Learning Objective 3: Round to the nearest ten/hundred by drawing using a number line.

Instructional Game

Materials:

Teacher –

- generic game boards (*Game boards can be made by using manila folders or square pieces of tag-board and configuring multiple spaces (i.e. 15-30 spaces will provide multiple practice opportunities) that students can move game pieces on. A rectangle can be drawn on the game-board to represent where the response cards are placed. At the beginning of the year, students can be taught how to make game boards and then these game-boards can be used throughout the year!) Game-boards can be as colorful/creative or as simple in nature as appropriate given your time and your student's ability level.
- dice or spinners
- multiple sets of cards that have: Front - 1.) a number represented on a simple number line with drawings that represent the number and drawings used to "count on" and "count back" to the nearest ten or hundred; 2.) below the number line and drawings, several choices for which "ten" or "hundred" the number should be rounded to are listed; Back – 1.) the correct choice is written. *To facilitate making these cards, you can make one set of twenty using plain paper so that the number lines with drawings and choices are a size that can fit on one side of a 4x5 note-card. Number each example #1 - #20 in the top right corner so that each card has the number appear at the top right corner. Then you can make multiple copies of the one set, cut them out, paste them on note-cards, and laminate the note-cards – Students can assist in pasting the drawings/choices & answers on note-cards!
- a copy of the original set of problems so the teacher can check individual student response sheets.

Students -

- each small group have a game-board, die or spinner, a set of cards.
- a sheet of paper to record which number example they respond to and whether they answered it correctly or not.

Description:

Activity:

Students can practice using a "game board" format where children can play in small groups using generic game boards (see description under "Materials."). Students roll a die or spin a spinner. They pull a card from a stack of cards and make a choice. The card is then turned over to reveal the correct response. Students move the appropriate number of spaces on their game board if their answer is correct. Each card has drawings that represent the rounding process for a variety of numerical values on the front side. Also included on the front side are three to four choices for which "ten" or "hundred" the number should be rounded to. On the back of the card is written the correct response. Students play until someone reaches the "winning" space (the last space on the game board). Students start a new game. Students continue to play until the teacher signals that it is time to end. When the answer is revealed for each response, the student who answered the problem writes the number of the problem (written at top right corner of card) and places a check mark if they got it correct. They write a circle if they did not get it correct.

Instructional Game Steps:

1.) Introduce game.

2.) Distribute materials.

3.) Provide directions for game, what you will do, what students will do, and reinforce any behavioral expectations for the game.

4.) Provide time for students to ask questions.

5.) Model how to respond to the card prompts.

6.) Provide time for students to ask questions about how to respond.

7.) Model how students can keep track of their responses.

8.) Play one practice round so students can apply what you have modeled. Provide specific feedback/answer any additional questions as needed.

9.) Monitor students as they practice by circulating the room, providing ample amounts of positive reinforcement as students play, providing specific corrective feedback/ re-modeling skill as needed.

11.) Play game.

12.) Encourage students to review their individual response sheets, write the total number of "correct" responses under the "C" (Correct) column and do the same for the "H" (Help) column.

13.) Review individual student response sheets to determine level of understanding/proficiency and to determine whether additional modeling from you.

2. **Expressive Level**

Purpose: to provide students multiple opportunities to round to the nearest ten or hundred by drawing pictures on a number line.

Learning Objective 3: Round to the nearest ten/hundred by drawing using a number line.

Self-Correcting Materials

Materials:

Teacher –

- sets of note-cards with appropriate prompts on the front and the answer on the back (e.g. on the front of the card appears the number to be rounded and a prompt to round to the nearest ten or nearest hundred by drawing. On the back is a drawing of the number line, a drawing of the number to be rounded, and drawings that represent the "count on" group of drawings and the "count back" group of drawings. The "ten" or "hundred" the number is rounded to is circled. *As for the cards described under the Receptive/Recognition description, you may want to make a set of drawings (that are the size of a 4 x5 note-card) on several pieces of copy paper and then make multiple copies. These drawings can them be pasted on note-cards and laminated. Advanced students can assist you to make drawings.

- create sets of number lines that represent ten multiples (for rounding to the nearest ten) or hundred multiples (for rounding to the nearest hundred) on plain copy paper. Draw a line slightly above and to the left of each number line to provide a space for the student to write the number they are rounding. These "master copies" can then be copied multiple times to provide learning sheets for students to use. Copies can be placed in folders that are labeled "number lines –tens" and "number lines – hundreds." Students can pull a learning sheet from one or both folders dependent on which skill they are working on.

Students -

- learning sheets that have the appropriate set of number lines on them.
- a set of note-cards (see description above).
- pencil for drawing and writing.

Description:

Activity:

Students respond to prompts written on the front of note-cards. Each prompt shows a number to be rounded and what the number should be rounded to, the "nearest ten" or "nearest hundred." The student uses number lines provided on a learning sheet to draw the number on the number line and then draw the "count on" group and the "count back" group. Before drawing, students write the number they are rounding in the space provided next to each number line. Then, the student circles the ten or hundred the number should be rounded to. The student checks their answer by turning the card over where the correct drawing appears and the nearest ten or hundred is circled. Students mark whether their answer was correct or incorrect.

Self-correcting Materials Steps:

1.) Introduce self-correction material.

2.) Distribute materials.

3.) Provide directions for self-correcting material, what you will do, what students will do, and reinforce any behavioral expectations for the activity.

4.) Provide time for students to ask questions.

5.) Model responding/performing skill within context of the self-correcting material.

6.) Model how students can keep check their responses.

7.) Have students practice one time so they can apply what you have modeled. Provide specific feedback/answer any additional questions as needed.

8.) Monitor students as they work.

9.) Provide ample amounts of positive reinforcement as students play.

10.) Provide specific corrective feedback/ re-model skill as needed.

11.) Encourage students to review their individual learning sheets, write the total number of "correct" responses under the "C" (Correct) column and do the same for the "H" (Help) column.

13.) Review individual student performance record sheets.

Instructional Phase 3: Evaluation of Student Learning/Performance (Initial Acquisition through Mastery/Maintenance)

Continuously Monitor & Chart Student Performance

Purpose: to provide you with continuous data for evaluating student learning and whether your instruction is effective. It also provides students a visual way to "see" their learning.

Materials:

Teacher –

- appropriate prompts if they will be oral prompts
- appropriate visual cues when prompting orally

Student –

- appropriate response sheet/curriculum slice/probe
- graph/chart

Description:

Steps for Conducting Continuous Monitoring and Charting of Student Performance:

1.) Choose whether students should be evaluated at the receptive/recognition level or the expressive level.

2.) Choose an appropriate criteria to indicate mastery.

3.) Provide appropriate number of prompts in an appropriate format (receptive/recognition or expressive) so students can respond.

- Based on the skill, your students' learning characteristics, and your preference, the curriculum slice or probe could be written in nature (e.g. a sheet with appropriate prompts; index cards with appropriate prompts), or oral in nature with visual cues (e.g. teacher shows drawings and choices on overhead and then prompts students to say which ten or hundred the number should be rounded to,) or a combination of written curriculum slices/probes and oral prompts with visual cues (e.g. teacher shows drawings and choices on overhead and then prompts students to write which ten or hundred the number should be rounded to on a sheet of papered numbered 1-8).

4.) Distribute to students the curriculum slice/probe/response sheet/.

5.) Give directions.

6.) Conduct evaluation.

7.) Count corrects and incorrects/mistakes (you and/or students can do this depending on the type of curriculum slice/probe used – see step #3).

8.) You and/or students plot their scores on a suitable graph/chart. A goal line that represents the proficiency (for representational level skills, this should be %100 – 8-10 out of 8-10 corrects) should be visible on each students' graph/chart).

9.) Discuss with children their progress as it relates to the goal line and their previous performance. Prompt them to self-evaluate.

10.) Evaluate whether student(s) is ready to move to the next level of understanding or has mastered the skill at the abstract level using the following guide:

Representational Level: demonstrates %100 accuracy of (given 8-10 response tasks) over two to three consecutive days.

11.) Determine whether you need to alter or modify your instruction based on student performance.

Instructional Phase 4: Maintenance – Periodic Practice to Maintain Student Mastery of Skills

1. Center Time

Purpose: to provide students periodic opportunities to maintain mastery of a skill previously learned and mastered.

Materials:

Teacher – (Same as those listed under both student practice activities in Instructional Phase 3 – Facilitate Acquisition to Mastery – Student Practice)

Students - (Same as those listed under both student practice activities in Instructional Phase 3 – Facilitate Acquisition to Mastery – Student Practice)

Description:

During "Center Time" devote one or more centers to the activities described in Instructional Phase 3 – Facilitate Acquisition to Mastery – Student Practice)

2. Problem of the Day

Purpose: to provide students periodic opportunities to maintain mastery of a skill previously learned and mastered.

Materials:

Teacher –

- visual platform to display drawings depicting rounding a given number to the nearest ten or hundred (e.g. chalkboard/dry-erase board, overhead projector)
- one or more drawings of rounding a number to the nearest ten or hundred

Students -

- pencil and paper for writing.

Description:

Students respond to the "Problem of the Day" when they first arrive or at the beginning of math time.

Display drawings that represent rounding a number to the nearest ten or hundred. A variety of prompts or questions could be written that students respond to:

What ten/hundred should the number be rounded to?
Why?
How many to reach the higher ten/hundred?
How many to reach the lesser ten/hundred?

Students can respond in writing or they can respond orally to the teacher on an individual basis (if writing is a difficult process for them). The teacher can take a minute or two after students have had the opportunity to respond to discuss the "Problem" and elicit student ideas and provide corrective feedback and modeling.