Lesson 10
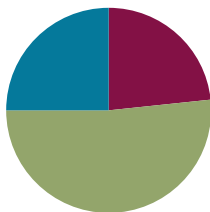
Objective: Explore $1,000. How many $10 bills can we change for a thousand dollar bill?

Suggested Lesson Structure

■ Fluency Practice	(14 minutes)	
■ Application Problem	(31 minutes)	
■ Student Debrief	(15 minutes)	
Total Time	**(60 minutes)**	

Fluency Practice (14 minutes)

- Count and Change Coins from 85 to 132 Cents **2.NBT.8**   (3 minutes)
- Sprint: More Expanded Form **2.NBT.3**   (8 minutes)
- Skip-Count by Tens: Up and Down Between 0 and 1,000 **2.NBT.2**   (3 minutes)

Count and Change Coins from 85 to 132 Cents (3 minutes)

Materials: (T) 16 pennies and 13 dimes

> T: (Display and label a penny and a dime.) At the signal say the answer. A penny is like 1 one, 1 ten, or 1 hundred?
>
> S: 1 one!
>
> T: A dime is like 1 one, 1 ten, or 1 hundred?
>
> S: 1 ten!
>
> T: Let's count. (Quickly lay out 85 cents using 8 dimes and 5 pennies.)
>
> S: 10, 20, 30, 40, 50, 60, 70, 80, 81, 82, 83, 84, 85.
>
> T: (Lay out another dime.) Whisper the new value of our money to your partner. (Take note of students who have difficulty with this.)
>
> S: 95 cents.
>
> T: Let's count on. (Lay out pennies as students count to 105.)
>
> S: 96, 97, 98, 99, 100, 101, 102, 103, 104, 105.
>
> T: The new value of our money is…

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Coin names are important and take time for English language learners to learn. It is wise to have a classroom economy (search online under *classroom economies for children*) using coins so that they are used again and again. Repetition is crucial for language acquisition. There are many suggestions online that meet the needs of diverse classroom cultures.

S: 105 cents!

T: Whisper to your partner how we can reduce the number of coins but keep the value the same.

S: Change 10 pennies for a dime. (Take note of students who are uncertain, possibly because 105 is not a multiple of 10.)

T: (Continue, mixing counting by ones and tens to 125. Vary your practice in response to where you noticed students having difficulty in the first counts. Remember to count from 125 to 132 using pennies.)

Sprint: More Expanded Form (8 minutes)

Materials: (S) More Expanded Form Sprint

Skip-Count by Tens: Up and Down Between 0 and 1,000 (3 minutes)

T: Let's play Happy Counting skip-counting by tens!

T: Watch my fingers to know whether to count up or down. A closed hand means stop. (Show signals as you explain.)

T: Let's count up by tens, starting at 560. Ready? (Rhythmically point up until a change is desired. Show a closed hand then point down. Continue, mixing it up.)

S: 560, 570, 580, 590, 600, 610, 620 (stop). 610, 600 (stop). 610, 620, 630, 640, 650, 660, 670, 680, 690 (stop). 680, 670, 660 (stop). 670, 680, 690, 700, 710, 720, 730 (stop). 720, 710, 700.

Application Problem (31 minutes)

Materials: (S) Problem Set (if unable to project during the Debrief, perhaps have the students do their work on posters rather than 8 ½" x 11" paper)

T: Read the following story:

Jerry is a second grader. He was playing in the attic and found an old, dusty trunk. When he opened it, he found things that belonged to his grandfather. There was a cool collection of old coins and bills in an album. One bill was worth $1,000. Wow! Jerry lay down and started daydreaming. He thought about how good it would feel to give as many people as he could a ten dollar bill. He thought about how he had felt on his birthday last year when he got a card from his uncle with a ten dollar bill inside.

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> To support understanding, the story can be acted out or illustrated. Never underestimate the increased comprehension offered by the simplest of illustrations. A hand-drawn thousand dollar bill would be a useful prop for acting out the story. Also, ask students questions such as, "What would you do if you found $1,000? Tell your partner."

But even more, he thought about how lucky he felt one snowy, cold day walking to school when he found a ten dollar bill in the snow. Maybe he could quietly hide the ten dollar bills so that lots of people could feel as lucky as he did on that cold day! He thought to himself, "I wonder how many ten dollar bills are equal to a thousand dollar bill? I wonder how many people I could bring a lucky day to?"

T: Summarize the story to your partner from the beginning to the end the best you can.

T: (After students talk for about a minute, you will know whether they can reconstruct the story. Invite them to listen once again to fill in missing details if necessary.)

T: You will work in pairs to answer Jerry's question. What is his question?

S: To know how many people he can give a ten dollar bill to. → To find out how many ten dollar bills are the same as a thousand dollar bill.

T: At the end of 20 minutes, you will put your work on your table and we will do a gallery walk so that you will have a chance to see everyone's work.

T: (Pass out Problem Set.) Let's go over the directions.

T: Answer Jerry's question: "I wonder how many ten dollar bills are equal to a thousand dollar bill?" Use the RDW strategy and explain your solution using words, pictures, or numbers.

T: Work with your partner to solve the problem. Use a full sheet of paper. Remember to write your answer in a statement.

Note: As the students work, ask them to think about the tools and strategies they have learned and used thus far in the year. Much of MP1's "Make sense of problems and persevere in solving them" and MP5's "Use appropriate tools strategically" involves encouraging students to move through indecision and not knowing to making choices independently. Encourage them to try what comes. "Go for it." "See if it works." Often, students start to strategize when they realize a choice is ineffective. This is a day to let that happen. Make an effort to sit back and watch your class objectively. Make notes on who is struggling. Notice what their partner does in response. Notice how they re-engage. If a student loses focus, consider some simple focus questions such as, "What is the problem asking you?" Or, "Is your pencil sharp enough?" Redirection can be quick and subtle but effective.

Do give students time signals. "You have 10 minutes" "You have 5 minutes." For students who succeed quickly, post a challenge problem, such as Jerry's grandfather took the thousand dollar bill to the bank and changed it for some ten dollar and hundred dollar bills. If he gave Jerry and his sister each one hundred dollars, how much money will he have left?

Student Debrief (15 minutes)

Lesson Objective: Explore $1,000. How many $10 bills can we change for a thousand dollar bill?

Materials: (S) Completed Problem Set

T: Let's set up our gallery in order to allow everyone to see each other's work. Pair 1, place your work here. Pair 2, place your work here. (Arrange the work in a circular configuration.)

T: When I give the signal, advance to the next table to your right. Make note of the different strategies your friends have used to solve Jerry's problem.

Keep this process moving. It will take about 5–7 minutes for 10 pairs to move through the "gallery."

T: Bring your work to the carpet for our Debrief.

T: Do we all agree how many ten dollar bills Jerry will be able to share? Tell me at the signal.

S: 100 ten dollar bills!

T: Most groups were able to come up with that answer, but did everyone's work look the same?

S: No!

T: You used different strategies. Let's look more closely at some different ways of solving the problem.

Analysis of One Piece of Student Work

T: I would like to start out looking at Brandon, Pedro, and Wanda's work. (Post the student work.)

T: When you look at their work, talk to your partner about what you see (circulate and listen).

S: I see number bonds. → I see that a number bond has hundreds sticking out. → I see the other number bond is different. It has 10 tens instead of hundreds.

T: Does anyone have a quick compliment for this team's math?

S: I would like to compliment that you made it easy for us to see the number of tens.

S: I like that you showed how you counted up the total number of tens. That was easy to understand.

T: Good compliments. Does anyone have a suggestion or a question?

S: A question I have is why did you draw two number bonds?

S: Well, we didn't know the answer, but we knew that we could skip-count by hundreds up to one thousand. So we just started drawing and counting. Then Wanda said that we could make another one and that we could write the tens instead.

T: So, they got going and got another idea. Excellent. Let's remember that! Don't get too stuck. Try something. Suggestions? Questions?

S: I think if the two bonds were the same size it would be even easier to see that 100 is 10 tens.

S: I have an idea. Maybe when you are counting up the tens, you could write 10 tens, 20 tens, 30 tens right inside the parts.

Comparison of Two Pieces of Student Work

T: Let's look at the work of Sammy, Olga, and Marisela. Talk to your team again, what do you see?

S: They made a number line. → I see they counted up to 1,000 by skip counting by 1 hundred. → I see that each hop has 10 tens written inside it. → There are 10 hops in all. → They have counted by ten under the number line right here. Maybe that's where they were figuring out how many tens in all.

T: Let's compare the number bond team and the number line team's solutions. Talk to your partner, what is different about the way they represented the problem and what is the same?

S: Both of them got the right answer. → I like the number line better. → She didn't say to talk about what we liked, just what was the same and different. → They both count by tens and 10 tens. → And they both skip-counted by hundreds.

MP.2

T: So, two different tools, a number bond and a number line. Now look at Freddy, Vincent, and Eva's work. What tool did they use?

S: Ten-frames!

T: Compare the way they used the ten-frames with the way the other team used the number bonds.

Continue the math talk, asking students to compare the representations.

For example:

- Freddy, Vincent, and Eva used the ten-frame but only drew 5 of them. How did they get the right answer?
- Where on the number bond and number line work do you see the 5 ten-frames?
- What are the advantages of using the number line?
- What are the advantages of using the number bond?

Be sure to get students to realize that drawing all the bills takes a long time but that the idea of drawing half is wise.

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.

Add.   # Correct ___

A1	100 + 20 + 3 =		23	800 + 77 =	
2	100 + 20 + 4 =		24	300 + 90 + 2 =	
3	100 + 20 + 5 =		25	400 + 80 =	
4	100 + 20 + 8 =		26	600 + 7 =	
5	100 + 30 + 8 =		27	200 + 60 + 4 =	
6	100 + 40 + 8 =		28	100 + 9 =	
7	100 + 70 + 8 =		29	500 + 80 =	
8	500 + 10 + 9 =		30	80 + 500 =	
9	500 + 10 + 8 =		31	2 + 50 + 400 =	
10	500 + 10 + 7 =		32	2 + 400 + 50 =	
11	500 + 10 + 3 =		33	3 + 70 + 800 =	
12	700 + 30 =		34	40 + 9 + 800 =	
13	700 + 3 =		35	700 + 9 + 20 =	
14	30 + 3 =		36	5 + 300 =	
15	700 + 33 =		37	400 + 90 + 10 =	
16	900 + 40 =		38	500 + 80 + 20 =	
17	900 + 4 =		39	900 + 60 + 40 =	
18	40 + 4 =		40	400 + 80 + 2 =	
19	900 + 44 =		41	300 + 60 + 5 =	
20	800 + 70 =		42	200 + 27 + 5 =	
21	800 + 7 =		43	8 + 700 + 59 =	
22	70 + 7 =		44	47 + 500 + 8 =	

Add.   Improvement _____   # Correct ___

B1	100 + 30 + 4 =		23	700 + 66 =	
2	100 + 30 + 5 =		24	200 + 90 + 4 =	
3	100 + 30 + 6 =		25	500 + 70 =	
4	100 + 30 + 9 =		26	800 + 6	
5	100 + 40 + 9 =		27	400 + 70 + 4 =	
6	100 + 50 + 9 =		28	700 + 9 =	
7	100 + 80 + 9 =		29	800 + 50 =	
8	400 + 10 + 8 =		30	50 + 800 =	
9	400 + 10 + 7 =		31	2 + 80 + 400 =	
10	400 + 10 + 6 =		32	2 + 400 + 80 =	
11	400 + 10 + 2 =		33	3 + 70 + 500 =	
12	700 + 80 =		34	60 + 3 + 800 =	
13	700 + 8 =		35	900 + 7 + 20 =	
14	80 + 8 =		36	4 + 300 =	
15	700 + 88 =		37	500 + 90 + 10 =	
16	900 + 20 =		38	600 + 80 + 20 =	
17	900 + 2 =		39	900 + 60 + 40 =	
18	20 + 2 =		40	600 + 8 + 2 =	
19	900 + 22 =		41	800 + 6 + 5 =	
20	700 + 60 =		42	800 + 27 + 5 =	
21	700 + 6 =		43	8 + 100 + 49 =	
22	60 + 6 =		44	37 + 600 + 8 =	

Name _____ Date _____

Jerry wonders, "How many $10 bills are equal to a $1,000 bill?"

Work with your partner to answer Jerry's question. Explain your solution using words, pictures, or numbers. Ask yourselves: Can I draw something? What can I draw? What can I learn from my drawing? Remember to write your answer as a statement.

Name _____   Date _____

Jerry wonders, "How many $10 bills are equal to a $1,000 bill?"

Think about the different strategies your classmates used to answer Jerry's question. Answer the problem again using a strategy you liked that is <u>different</u> from yours. Use words, pictures, or numbers to explain why that strategy also works.

Name _____   Date _____

Jerry wonders, "How many $10 bills are equal to a $1,000 bill?"

Think about the strategies your friends used to answer Jerry's question. Answer the problem again using a different strategy than the one you used with your partner and for the Exit Ticket. Explain your solution using words, pictures, or numbers. Remember to write your answer as a statement.

Lesson 10:	Explore $1,000. How many $10 bills can we change for a thousand dollar bill?
Date:	10/24/14

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