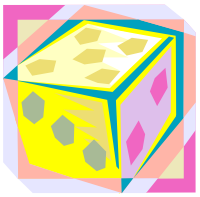


PRACTICE TASK: Ten is the Winner

Adapted from *Investigations in Number, Data, and Space: How Many Tens? How Many Ones? Addition, Subtraction, and the Number System.*

STANDARDS FOR MATHEMATICAL CONTENT

MCC5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (NOTE: Addition and subtraction are taught in this unit, but the standard is continued in Unit 3: Multiplication and Division with Decimals.)

STANDARDS FOR MATHEMATICAL PRACTICE

1. **Make sense of problems and persevere in solving them.**
2. **Reason abstractly and quantitatively.**
3. **Construct viable arguments and critique the reasoning of others.**
4. **Model with mathematics.**
5. **Use appropriate tools strategically.**
6. **Attend to precision.**
7. **Look for and make use of structure.**
8. **Look for and express regularity in repeated reasoning.**

BACKGROUND KNOWLEDGE

Before students play this game, they should have developed an understanding of how decimal numbers can be represented. Using base ten blocks, decimal numbers can be represented by using the "flat" to represent one whole. One tenth of the whole is the "long." Finally, the "small square" (or "small cube" depending on the materials being used) can be used to represent a hundredth because there are one hundred of them in the "flat." The blocks below represent 2.47 or two and forty-seven hundredths

ESSENTIAL QUESTIONS

- Why is place value important when adding whole numbers and decimal numbers?
- How do we add decimal numbers?
- How does the placement of a digit affect the value of a decimal number?

MATERIALS

- "Ten is the Winner, Directions" student sheet (one per group)
- "Ten is the Winner, Recording Sheet" student recording sheet (one per pair)
- Dice (one die per group)

GROUPING

Partner/Small Group Task

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Students learn a game that allows them to practice adding and comparing decimal numbers. The focus of this game is on adding decimal numbers to the hundredths place.

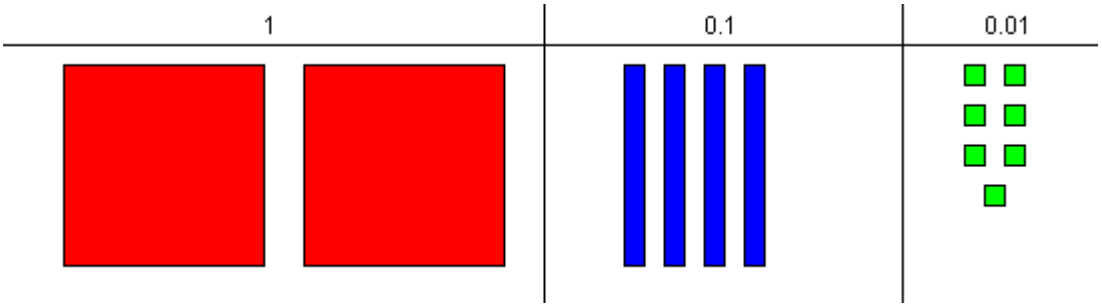
Comments

To introduce and teach this game, display the game recording sheet. Play the game with the class against the teacher or one side of the room against the other. You can play an abbreviated game if students quickly understand what to do.

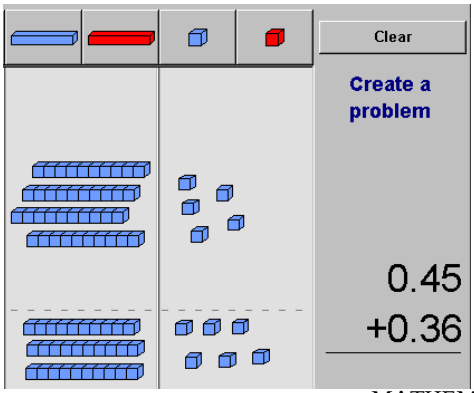
While students are playing the game, be sure decimal materials (base ten blocks, money, etc.) are available to students who wish to use them.

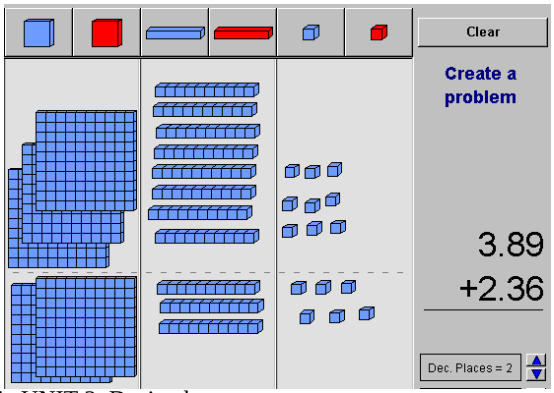
One way student understanding can be quickly assessed is by asking students to write a few sentences to explain why place value is important in this game and/or the strategies they used while playing the game. Student recording sheets can also be used to assess student understanding of addition with decimal numbers.

One variation for this game is to have students use estimation for the running total, rounding off to the nearest 1 and then adding to find the running total. .



Also, students should have an understanding of how to represent addition with decimal numbers. Below are some sample addition problems from the National Library of Virtual Manipulatives at the following web address.
http://nlvm.usu.edu/en/nav/frames_asid_264_g_2_t_1.html?from=category_g_2_t_1.html

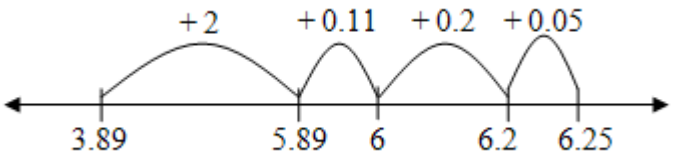




Students should be able to represent addition of decimal numbers, including regrouping. The problems above would require regrouping ten hundredths to create one tenth and regrouping ten tenths to create one whole. It is important for students to recognize that they need to line up decimal place values in order to add correctly. If some students recognize that the decimal points are always lined up as well, that is fine, but what is important is that students recognize each place value needs to be lined up.

Another strategy that is often helpful for students to use to find the sum of two numbers is an open number line. The problem 3.89 + 2.36 = can be solved using an open number line as shown below.

Start by placing 3.89 on the number line. Count on 2.36 from 3.89 to determine the sum of the two decimal numbers. The sum is the ending number on the number line, in this case 3.89 + 2.36 = 6.25.



Task Directions

Students will follow the directions below from the "Ten is the Winner, Game Directions" student sheet.

Players: 2-3

Materials:

- One die
- "Ten is the Winner, Directions" student sheet (one per group)
- "Ten is the Winner" student recording sheet (one per player)
- Pencil

Directions:

The object of the game is to be the closest to 10 without going over after fifteen turns. Players will need to keep a running total on their paper as they play the game.

1. Decide which player will go first.
2. Player 1 says "tenths place" or "ones place" and then rolls the die.
3. The number that is rolled is written in the place named before rolling the die. A zero is written in the remaining place.
4. Player 2 says "tenths place" or "ones place" and then rolls the die. Player 2 then records the number rolled in the place called.
5. Players continue to take turns, recording the digits rolled, until both players have taken fifteen turns.
6. Each player adds up their numbers to find their total. The player closest to ten without going over is the winner.

FORMATIVE ASSESSMENT QUESITONS

- How do you decide whether to roll a digit for the hundredths place, tenths place, or the ones place?
- How does a digit in the hundredths place (or tenths place, or ones place) affect the value of the number?
- Why is place value important when adding decimal numbers?
- What strategy (strategies) are you using to win the game? How are your strategies working?
- What strategy (strategies) are you using to add the decimal numbers?

DIFFERENTIATION

Extension

- Change the target number, adding whole number places. Ask students to determine how many rounds should be played.
- Use a deca-die (0-9) instead of regular six-sided die. Have children predict before playing whether or not the change in die or number of places will make their goal easier or more difficult to achieve.

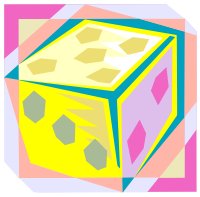
Intervention

- Give students "Ten is the Winner, Game Directions, Version 2" student sheet and "Ten is the Winner, Recording Sheet, Version 2." This version uses decimals to the tenths place. Once students have an understanding of addition to the tenths place, introduce the first version of the game which requires addition to the hundredths place.
- Allow students to play the game with money. Students can represent the value they chose for each roll in money. They can then find their running total by counting the amount of money they have collected.

Name _____ Date _____

Ten is the Winner

Game Directions



Players: 2-3

Materials:

- One die
- "Ten is the Winner, Directions" student sheet (one per group)
- "Ten is the Winner" student recording sheet (one per player)
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Directions:

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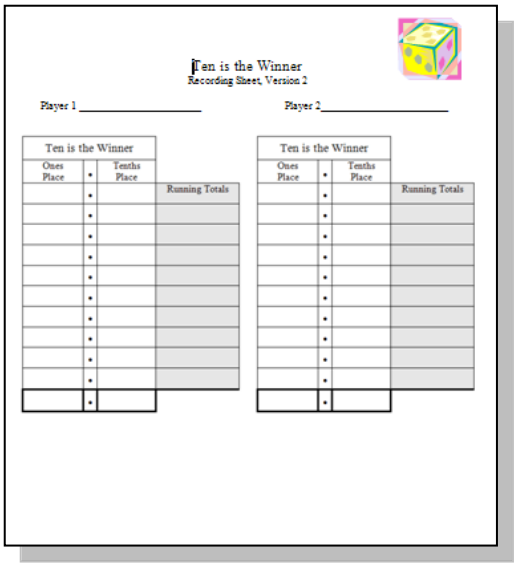

Ten is the Winner
Recording Sheet, Version 2

Player 1 _____ Player 2 _____

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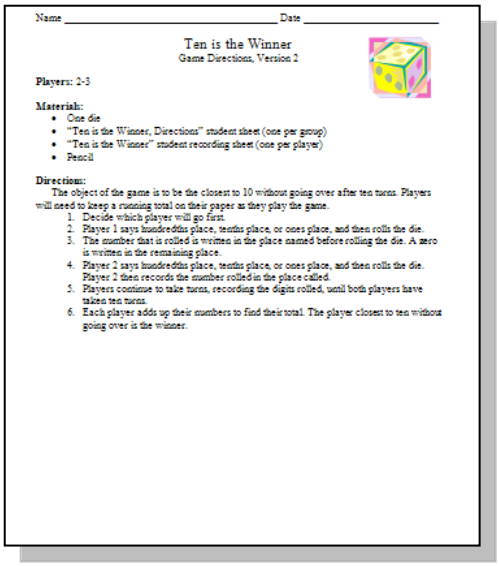

Name _____ Date _____

Ten is the Winner
Game Directions, Version 2

Players: 2-3

Materials:

- One die
- "Ten is the Winner, Directions" student sheet (one per group)
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- Pencil

Directions:

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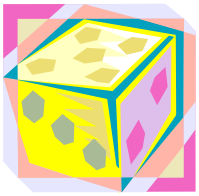

Ten is the Winner

Recording Sheet

Player 1 _____ Player 2_____

Ten is the Winner				
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Ten is the Winner				
Ones Place	.	Tenths Place	Hundredths Place	Running Total
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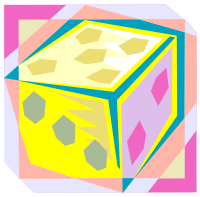
Name _____ Date _____

Ten is the Winner

Game Directions, Version 2



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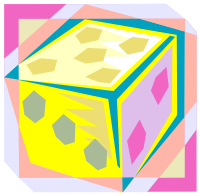

Ten is the Winner

Recording Sheet, Version 2

Player 1 _____ Player 2_____

Ten is the Winner			
Ones Place	•	Tenths Place	
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Ten is the Winner			
Ones Place	•	Tenths Place	
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