Just In Time Quick Check

Standard of Learning (SOL) 4.3b

Strand: Number and Number Sense

Standard of Learning (SOL) 4.3b

The student will round decimals to the nearest whole number.

Grade Level Skills:

- Round decimals expressed through thousandths to the nearest whole number.

Just in Time Quick Check

Just in Time Quick Check Teacher Notes

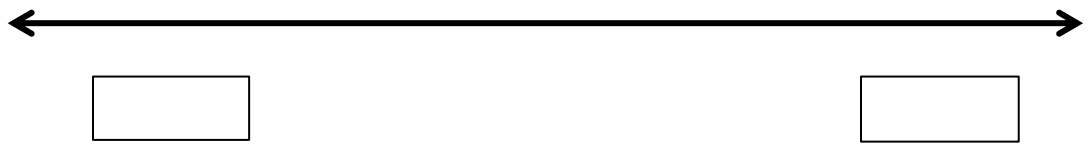
Supporting Resources:

- VDOE Mathematics Instructional Plans (MIPS)
  - 4.3b - Rounding Decimals (Word) / PDF Version
- VDOE Algebra Readiness Remediation Plans
  - Rounding with Number Lines (Word) / PDF
- VDOE Word Wall Cards: Grade 4 (Word) | (PDF)
  - Decimal Place Value Position
  - Round
- Desmos Activity
  - Get Close To Me – Rounding [clothesline]

Supporting and Prerequisite SOL: 4.1c, 4.3a, 3.1b, 2.1d

SOL 4.3b - Just in Time Quick Check

1. Round 28.453 to the nearest whole number. Use the number line to explain your thinking.



2. Write a number that rounds to 5. Explain your thinking.

3. A student says 98.99 will round to 100 when rounded to the nearest whole number. Is this student correct? Explain your thinking.

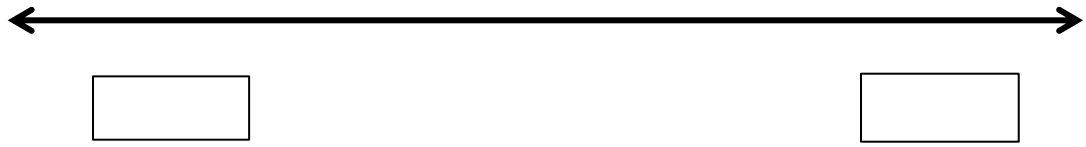
4. Select all numbers that would round to 142 when rounded to the nearest whole number.

142.8	14.193	142.162
141.732	141.64	142.921

SOL 4.3b - Just in Time Quick Check Teacher Notes

Common Errors/Misconceptions and their Possible Indications

1. Round 28.453 to the nearest whole number. Use the number line to explain your thinking.



Some students may struggle to determine between which two whole numbers the decimal number will occur. A common error is when students think procedurally about rounding "down" rather than thinking about the number in terms of its relationship to the whole numbers that are closest to it. For this problem, students thinking procedurally may say that rounding "down" is 27 and rounding "up" is 29 rather than realizing that 28.453 comes between 28 and 29.

Another common error related to procedural thinking is some students will start at the smallest place value and round each spot along the way rather than thinking about the number in its entirety and determining the whole number that it is closest to. In this situation, a student may look at the 3 in the thousandths place and round the number to 28.45, then round 28.45 to 28.5, and finally round 28.5 to 29.

Using the number line to determine the whole numbers that the decimal falls between may help students build a conceptual understanding of rounding. After determining the boundary numbers (whole numbers), students may benefit from determining the midpoint between those whole numbers. In this problem, the midpoint is 28.5. Since 28.453 is slightly smaller than 28.5, students can "see" that it is closer to 28.

Students would benefit from additional experiences in placing numbers on a number line, and determining the boundary points and the midpoint. As students work on rounding these numbers, the discussion may focus on how to determine boundary numbers, how to determine midpoints, and then correctly placing numbers on the number line to find which whole number it is closest to. Sample numbers should include numbers that include tens and hundreds to provide practice beyond single digit whole numbers.

2. Create a decimal number to the hundredths place that rounds to 5. Explain your thinking.

Some students may struggle with creating a number, and thinking about the range of numbers that would round to the created number. Students may benefit from using a place value chart to assist them in creating a number. Then use a number line to encourage students to think about the largest and smallest numbers that could round to that number. For example, a student may place 4.68 on a number line and determine that it comes between 4 and 5, but is closer to 5. As students discuss the number line, ask them how they know the number is closer to 5.

Ask students to name other numbers between 4 and 5 that round to 5. Ask students to determine the point on the number line where numbers begin rounding to 5.

3. A student says 98.99 will round to 100 when rounded to the nearest whole number. Is this student correct? Explain your thinking.

   Some students have the misconception that rounding to the nearest whole is rounding to the largest place value rather than rounding to the "ones" place. In this problem, that would mean rounding to the nearest ten rather than rounding to the nearest whole.

   These students may benefit from modeling numbers using 10 x 10 grids to emphasize the concept of a whole and build the understanding of a "whole" number. After students build understanding of the whole, it may be helpful to use a place value chart to highlight the digit that is in the "ones" place (the first place as you transition from decimal numbers to whole numbers).

   After students build a conceptual understanding of a whole, they can move to placing numbers on a number line, determining which "wholes" the number comes between, and then finally determining which whole the number is closest to.

4. Select all numbers that would round to 142 when rounded to the nearest whole number.

142.8	14.193	142.162
141.732	141.64	142.921

   A common error for some students is to be distracted by digits that do not affect how a number is rounded. For example, in the number 142.162, some students will focus on the 6 in the hundredths place, not realizing that the number only has 1 thousandth so it will be closer to 142. Another common error is to focus on the digits and not notice that the decimal point is in the wrong place for the specific problem (ex: choosing 14.193 because the digits would round to 14.2). Additionally, some students may struggle with starting from the rounded number and thinking about numbers that may round to that number.

   Teachers may wish to provide opportunities for students to practice starting with a whole number and determining numbers that would round to the given whole number. Students may wish to place these whole numbers on a number line as they work to determine numbers that round to the whole.