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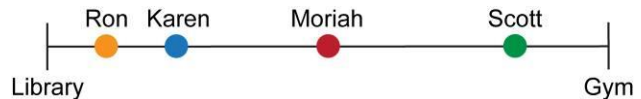
Date: _____

Student Exploration: Rounding Whole Numbers

Vocabulary: midpoint, multiple, round, whole number

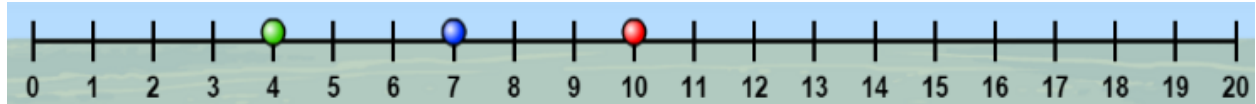
Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

The diagram to the right shows four students who are on their way from the library to the gym when a sudden storm hits. The students need to run to the nearest building.




1. Who would run to the library? _____
2. Who would run to the gym? _____
3. Who is equally close to both? _____


Gizmo Warm-up



The *Rounding Whole Numbers* Gizmo lets you investigate what it means to **round** numbers to the nearest ten and the nearest hundred.


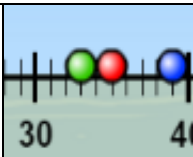
Begin by exploring the number line in the Gizmo.

1. The number line shows the numbers 0 to 10. How many numbers is this? _____
(Hint: It's not 10! Count them.)
2. Click the  button once. Now what numbers are shown? _____ to _____
3. Click **Zoom out** once. What happened to the number line? _____

4. Click **Zoom out** again, and then click the  button once so that the number line goes from 100 to 200. Click and drag the red dot until it is exactly halfway between 100 and 200.

Where is the red dot located? _____



Activity A: Nearest ten	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Select Round to nearest Ten in the top left menu. • Click Zoom in and then click the  button so that the number line shows 10 to 20. 	
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To round a number to the nearest 10, find the closest **multiple** of 10. Some numbers will “round up” to a higher multiple of 10, while others will “round down” to a lower multiple of 10.

1. Be sure the number line shows the numbers 10 to 20.

A. What are the two multiples of 10 you see on the number line? _____ and _____


B. Click **Hill**. Drag the red dot to 13 and let go. What happens? _____

You just rounded 13 down to the nearest multiple of ten, which is 10. The number 13 rounds to 10 because 13 is closer to 10 than it is to 20.

C. Of the numbers 10 to 20, which are closer to 10? _____

D. Of the numbers 10 to 20, which are closer to 20? _____

E. What number is exactly halfway between 10 and 20? _____

2. Click **Flat**. Click the  button twice so that the number line shows the numbers 30 to 40.

A. What are the two multiples of 10 you see on the number line? _____ and _____

B. Predict which numbers will round to 30: _____

C. Predict which numbers will round to 40: _____

D. Click **Hill**. Use the Gizmo to check your answers to B and C.

E. A number that is exactly halfway between two others is the **midpoint** of those numbers. What number is the midpoint between 30 and 40? _____

F. Drag a dot to 35. Click **Nudge midpoints**. What does 35 round to? _____

By common rule numbers at the midpoint are rounded up.

3. Use the Gizmo to round the numbers below to the nearest ten.

41 _____

46 _____

45 _____

83 _____


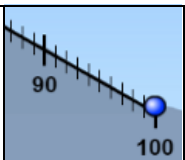
88 _____

99 _____

105 _____

117 _____



Activity B: Nearest hundred	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Select Round to nearest Hundred. • Click Zoom out and then click the  button so that the number line shows 100 to 200. 	
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To round a number to the nearest hundred, find the closest multiple of 100.

1. Click **Flat**. Be sure the number line shows the numbers 100 to 200.

A. What are the two multiples of 100 you see on the number line? _____ and _____


B. Drag dots to 129, 141, and 163. Predict what these numbers will round to.

129 _____ 141 _____ 163 _____

Click **Hill** to check your answers to B.

C. Find the largest number that rounds to 100. _____

D. Find the smallest number that rounds to 200. _____ (Don't forget the midpoint rule.)

2. Click **Flat**. Click the  button once so that the number line shows the numbers 200 to 300.

A. What is the midpoint between 200 and 300? _____

B. Compare each of the numbers below to the midpoint between 200 and 300. Based on that, predict how they will round to the nearest hundred.

219 _____ 253 _____ 275 _____ 206 _____

Use the Gizmo to check your answers to B. Correct your answers if necessary.

3. In this question you will round 435 to the nearest hundred without using the Gizmo.

A. The number 435 is between what two multiples of 100? _____ and _____

B. What is the midpoint between those two multiples of 100? _____

C. Is 435 less than or greater than that midpoint? _____

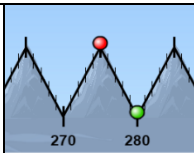
D. What is 435 rounded to the nearest hundred? _____

Use the Gizmo to check your answers to A through D. Correct them if necessary.

4. Round the numbers below to the nearest hundred. Check your answers with the Gizmo.

481 _____ 350 _____ 1070 _____ 32 _____



Activity C: Nearest ten and hundred	<u>Get the Gizmo ready:</u> <ul style="list-style-type: none"> • Select Round to nearest Ten. • Set the number line to show 0 to 100. 	
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Any number can be rounded to the nearest ten or the nearest hundred.

1. Click **Flat**. Drag dots to 25, 50, and 63.

A. Predict how those three numbers will round to the nearest ten.

25 _____ 50 _____ 63 _____

B. Click **Hill** to check your answers to A. Use **Nudge midpoints** if necessary.

C. Click **Flat**. Select **Round to nearest Hundred**. Drag dots to 25, 50, and 63 again. Predict how those numbers will round to the nearest hundred.

25 _____ 50 _____ 63 _____

D. Click **Hill** to check your answers to C. Use **Nudge midpoints** if necessary.

2. Round 239 to the nearest ten: _____ Round 239 to the nearest hundred: _____

3. Eric says that 348 rounded to the nearest hundred is 400 because “348 rounded to the nearest ten is 350, and 350 rounded to the nearest hundred is 400.” Explain why Eric is wrong. Draw a number line as part of your explanation if you like.

4. Use the Gizmo to complete the number scavenger hunt below.

A. Find all the numbers that become 140 when rounded to the nearest ten.

B. Find all the numbers that become 150 when rounded to the nearest ten.

C. Find all the numbers that become 150 when rounded to the nearest ten and become 200 when rounded to the nearest hundred.

