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Pre-Algebra Notes

Rounding and Estimating Decimals Date:

Each digit in a decimal has place value chart like the one write decimals.

hundreds	tens	ones	•	tenths	hundredths	thousandths	ten thousandths
		0	•	4	2	6	

both a place and a value. A below can help you read and

Express the following decimals using words.

1. 0.426 – four hundred and twenty six thousandths	2. 0.53 – <u>fifty three hundredths</u>
3. 0.8 –	4. 0.231 –
5. 1.5	6. 2.24 –
Write each as a decimal.	
7. three and two tenths –	8. fourty-five hundredths –
9. five and fourty-one hundredths –	10. three hundred one thousandths –

Rounding Decimals

To round off decimals:

- A. Find the place value you want (the "rounding digit") and look at the digit just to the right of it.
- B. If that digit is less than 5, do not change the rounding digit but drop all digits to the right of it.
- C. If that digit is greater than or equal to five, add one to the rounding digit and drop all digits to the right of it.
- 11. Round 4.321 to the nearest tenth 4.3
- 13. Round 0.621 to the nearest tenth -
- 12. Round 5.623 to the nearest one $-\underline{6}$
- 14. Round 5.286 to the nearest hundredth -

Round each number to the underlined place

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15. 38.<u>4</u>1 - _____

16. <u>0</u>.7772 - _____ 17. 0.5<u>8</u>9 - ____

Estimating Sums and Differences

There are three different methods we can use estimate the answer to addition and subtraction problems.

- 1. Rounding to Estimate
- 2. Using Front End Estimates to Estimate
- 3. Using Clustering to Estimate

1. Rounding to Estimate

To use rounding to estimate a sum or difference, we round each number to the same place value then add or subtract our rounded numbers. Since we are estimating, there is not always one correct answer to these problems. It always depends on what place value you decide to round to.

Example: $10.8 + 9.3 \approx 11 + 9 \approx 20$ (The symbol \approx is read "is approximately equal to")

18. 355.302 + 204.889 19. 653.56 + 148.23 20. 14.865 - 10.2

2. Using Front-End Estimates to Estimate

To use front-end estimation, we add the front-end digits (the first digits in the numbers) first, then we round the remaining digits. Then we add the two sums together to estimate the answer.

Examples:

	5.43 + 2.68 + 1.89	2.56 + 3.71 + 1.19		
+	$5.31 \rightarrow .3$ $2.68 \rightarrow .7$ $1.89 \rightarrow +.9$ 8 + 1.9 = 9.9			
+	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$			

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3. Using Clustering to Estimate

We can use Clustering to estimate the sum of several numbers when all numbers all close to the same value.

Examples:

 $15.24 + 14.22 + 15.89 + 14.90 \leftarrow$ Notice that all of these numbers are close to 15 - they "cluster" around 15. So, to estimate the sum of these numbers we could simply add 15 + 15 + 15 + 15 or take $15 \cdot 4 = 60$

 $4.5 + 5.23 + 5.6 + 4.8 \approx 5 + 5 + 5 + 5$ or $5 \cdot 4 = 20$

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