Rounding Whole Numbers

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Lecture Notes

Rounding

How to Round

Step 1: **Underline** digit at the place value you are asked to round.

Step 2: Look at the digit to the **immediate right** of underlined digit.

- If digit to the right is **4 or less (0-4), keep** underlined digit the same.
- If digit to the right is **5 or more (5-9), add 1** to **underlined** digit.

Step 3: All digits to the **left** of underlined digit remain the **same.**

- Exception occurs when underlined digit is 9. In this case, if digit to the right is 5 or more (5-9), we round up and have 9 + 1 = 10, which means a +1 carry will be involved. Thus, one (or more) digits to the left of underlined digit **will** change.

Step 4: All digits to the **right** of underlined digit convert to **zero.**

Round to the nearest ten.

146

- Notice here that we **"rounded up,"** because the 14̲6 became 150, a bigger number.
- We *added* 1 to the underlined digit.

Round to the nearest hundred.

5767

Round 49,837 to the nearest hundred.

Round to the nearest hundred.

9833

- Notice here that we **"rounded down,"** because the 98̲33 became 9800, a smaller number.
- However, we **did not subtract 1** from the underlined digit.
  - The underlined digit stayed the same.
  - We never subtract from the underlined digit.
  - We either add 1 to the underlined digit or it stays the same.
  - It is a common mistake to *subtract* 1 from the underlined digit.

Round 49,849 to the nearest hundred.

Round to the nearest thousand.

27,096

Round 526,653 to the nearest ten thousand.

Round to the nearest thousand.

9730

Round the following number to the nearest thousand.

249,510

Estimate by Rounding

Notes

- If you have not yet mastered rounding, estimating by rounding will be extremely difficult, if not impossible, for you to complete.
- **First round** to the place value indicated.
- **Second calculate** the answer (add, subtract, multiply, divide).
- **Front end rounding** means to round to the left-most digit, whichever place value it occupies.

Estimate the answer by rounding each number to the nearest ten.

$33 + 59 + 66 + 41$

Write the rounded numbers and the estimated answer.

$33 \rightarrow \square$

$59 \rightarrow \square$

$66 \rightarrow \square$

$41 \rightarrow + \square$

$\square$

Estimate the answer by rounding each number to the nearest hundred.

$647 + 761$

Write the rounded numbers and the estimated answer.

$647 \rightarrow \square$

$761 \rightarrow + \square$

$\square$

Estimate the answer by rounding each number to the nearest ten.

$59 - 32$

The estimated answer is $\square$.

Estimate the product by first rounding the given numbers to the nearest ten.

69×83

Estimate the answer by rounding each number to the nearest hundred.

$$\begin{array}{r} 859 \\ -\ 177 \\ \hline \end{array}$$

The estimated answer is ☐.

Estimate the answer by using front end rounding. Then fin

$$\begin{array}{r} 691 \\ -\ 385 \\ \hline \end{array}$$

The estimation you get by using front end rounding is ☐.

- Use *front end rounding*.
- Both top and bottom numbers must be rounded to the nearest hundreds place.

Estimate the answer by using front end rounding. Then fir

$$\begin{array}{r} 427 \\ \times\ 46 \\ \hline \end{array}$$

The estimation you get by using front end rounding is ☐.

- Use *front end rounding*.
- The top number must be rounded to the nearest hundreds place.
- The bottom number must be rounded to the nearest tens place.
- In either case, the rounding occurred at the left-most digit place.

First, use front end rounding to estimate the answer.

$2141 + 6449$

Estimate the answer.

☐

Estimate the difference by first rounding the given numbers to the nearest thousand.

$$\begin{array}{r} 78{,}486 \\ -\ 21{,}730 \\ \hline \end{array}$$

An estimate for the difference is ☐.