

Student Worksheet for Ep. 14: Guesstimation

Overview: When it's too hard to count 'em up and too much time to calculate exactly, it's time to guesstimate your answer. I use this technique all the time to ballpark my answer so I know immediately if I've made a mistake.



What to Learn: This lesson is useful when you don't need an exact answer, or if the numbers are way too long to remember. It's really pretty simple to do: you round up or down, and the closer to the ones digit you can handle, the more exact your answer will be.

For example: $84,236 + 76,908$ becomes $84,000 + 77,000 = 161,000$. But if you take it one digit further, then a more exact answer is $84,200 + 76,900 = 161,100$. (The exact answer is 161,142.) By rounding to the nearest hundred, the answer will be off by less than 100. You can do this with addition and subtraction.

For multiplication, you'll get more exact answers if you round in opposite directions by the same amount for numbers that are about the same magnitude. For example, for 78×46 becomes $80 \times 44 = 3,520$. ($78 \times 46 = 3,588$.) The 78 rounds up by 2 to get 80, and the 46 rounds down by 2 to get 44. It's an easier task to multiply 80×44 than 78×46 , isn't it? Absolutely, since it reduces to $8 \times 44 \times 10$.

How much do you leave for a 15% tip on a bill that is \$35.69? Use guesstimations to figure it out easily! First, determine how much 10% of the bill is, which is \$3.57. You can round that to \$3.50 to make it easier. Now half \$3.50 to get \$1.75. Now add up the two numbers to get \$5.25. That's the tip! (15% of \$35.69 = \$5.36).

Exercises: Write down your answers, and then check yourself with a calculator.

Guesstimate the answer to the hundredths place, then tenths place (you should get two different answers):

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|------------------|-------------------|
| 1. $759 + 981 =$ | 6. $209 - 197 =$ |
| 2. $201 + 399 =$ | 7. $892 - 318 =$ |
| 3. $526 + 974 =$ | 8. $642 - 137 =$ |
| 4. $191 + 899 =$ | 9. $854 - 297 =$ |
| 5. $311 + 871 =$ | 10. $769 - 642 =$ |

Guesstimate your answer by rounding in opposite directions:

- $76 \times 21 =$
- $46 \times 98 =$
- $52 \times 28 =$
- $43 \times 94 =$
- $17 \times 64 =$

How much is a 15% tip?

- \$78.54
- \$86.21
- \$19.12
- \$7.36
- 40.23