Working with Fractions, Decimals, and Percents

Worked Examples
You earn $29,450 per year, and you just got a 20% raise! How much is your new income?
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First, let’s estimate. Your original salary is about $30,000. 20% is 1/5, so your raise is about 1/5 of $30,000, or $6,000. Your new salary should be about $36,000.
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Now let’s compute exactly.

Your raise is \((.20)(\$29,450) = \$5,890\).

So your new salary is \($29,450 + \$5,890 = \$35,340\).

(Yes, I used my calculator for this part.)
A sweater is on sale for 27% off. The original price was $79.99. What is the sale price?

First, let’s estimate. The sweater was originally about $80, and the discount is about 25%, or 1/4 of that. It’s easy for me to figure in my head that 1/4 of 80 is 20, so I know the discount is about $20. So the sweater should cost about $60.
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Now let’s compute the exact answer:

The discount is (.27)($79.99) = $13.4982 (yes, I used my calculator).

Since we don’t use fraction of pennies, the discount will actually be $13.50.

So the sweater will actually cost $74.99 – $13.50 = $61.49.
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Now let’s compute the exact answer:

The discount is \(0.27 \times 79.99\) = $13.4982 (yes, I used my calculator).

Since we don’t use fraction of pennies, the discount will actually be $13.50.

So the sweater will actually cost $74.99 – $13.50 = $61.49.

We slightly underestimated the price, because we slightly overestimated the discount when we said that 18% was about 20%. But our estimate is pretty close.
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Note that \(1/5 = 20\%\) is one of the common fractions, so we could have written the percent as soon as we recognized it.