Problem of the Week Archive
Summer Jobs – July 8, 2019

Problems & Solutions
This summer Owen and Jack will both have part time jobs. Owen will be working as a lifeguard and Jack will be working as a server at a local restaurant. Owen plans to work 15 hours each week and will be making $7 per hour. Jack will make an hourly rate of $2.10 plus 18% of his sales in tips. If Jack averages $30 in sales per hour, how many hours will he need to work in order to make the same amount per week as Owen?

\[
\text{Owen will make } 7/\text{hour} \times 15 \text{ hours/week} = 105/\text{week. Jack will make } 2.10/\text{hour} + 0.18 \times 30/\text{hour} = 7.50/\text{hour. In order to make the same amount per week as Owen, Jack will need to work } 105/\text{week} ÷ 7.50/\text{hour} = 14 \text{ hours/week.}
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Owen and Jack will both work 15-hour weeks, but Jack’s paychecks will be reduced by 6% for state income tax. What will be the absolute difference in Owen and Jack’s weekly pay?

\[
\text{Owen will be making } 105 \text{ per week, as calculated in the previous solution. Jack will be making } 7.50/\text{hour} \times 15 \text{ hours} = 112.50 \text{ but will then pay a 6% state income tax. Jack will actually take home } (1 - 0.06) \times 112.50 = 0.94 \times 112.50 = 105.75 \text{ per week. Jack will make } 0.75 \text{ more per week than Owen.}
\]

At the end of the summer, Jack and Owen each will have worked for 12 weeks. They plan to combine their earnings in a joint account to save to buy a used car when they get their licenses. If the account earns 4% interest annually, what is the total amount Jack and Owen will have in their savings account in two years when they get their licenses?

\[
\text{Jack will earn } 105.75 \text{ per week, and Owen will earn } 105 \text{ per week. Collectively, at the end of the summer, they will have earned } 12 \times (105.75 + 105) = 12 \times 210.75 = 2529. \text{ After one year they will have } 1.04 \times 2529 = 2630.16 \text{ in their account. After two years they will have } 1.04 \times 2630.16 = $2735.37.
\]
Problems
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