Task. If my wife makes $\$30,000$ and I make $\$40,000$, what would we each pay for a bill that is \$100 if we paid proportionally based on our salaries?

Solution. Let x be money I should pay for a bill. Then my wife should pay $100 - x$, and these quantities must be proportional to our salaries, that is

$$\frac{x}{100-x} = \frac{40000}{30000}$$

Let us solve this equation:

$$\frac{x}{100-x} = \frac{4}{3} \qquad \Rightarrow \qquad 3x = 4(100-x) \qquad \Rightarrow \qquad 3x = 400 - 4x$$

$$7x = 400 \qquad \Rightarrow \qquad x = \frac{400}{7} = 57\frac{1}{7} \approx \$57.14$$

Thus I should pay

$$\$57.14$$

and my wife

$$\$100 - \$57.14 = \$42.86.$$