

To earn full credit for this worksheet, you must follow the MTH 60 Documentation guidelines and do your work in pencil. No late work accepted.

Keep in mind that your homework is part of your "grade application," just as a cover letter and resume are part of a job application. Impressions count. Neatness and completeness make a lasting impression on the instructor (so does turning your homework in on time).

1. Including 8.2% sales tax, a bed-and-breakfast inn charges \$162.30 per night. Find the inn's nightly cost before the sales tax. Remember to define your variable, use algebra to solve, show all of your work, and write your answer in a complete sentence.

Let N represent the inn's nightly cost (in dollars) before the sales tax

Total cost = nightly cost + sales tax amount

$$162.30 = N + 0.082N$$

$$162.30 = 1.082N$$

$$\frac{162.30}{1.082} = \frac{1.082N}{1.082}$$

$$150 = N$$

The inn's nightly cost before the sales tax is \$150.

2. Solve the proportion $\frac{ax-b}{b} = \frac{c-d}{d}$ for x .

$$\begin{aligned}\frac{ax-b}{b} &= \frac{c-d}{d} \\ bd \cdot \frac{ax-b}{b} &= bd \cdot \frac{c-d}{d} \\ d(ax-b) &= b(c-d) \\ adx - bd &= bc - bd \\ adx - bd + bd &= bc - bd + bd \\ adx &= bc \\ \frac{adx}{ad} &= \frac{bc}{ad} \\ x &= \frac{bc}{ad}\end{aligned}$$

3. A rectangular swimming pool has a width of 32 feet and an area of 1536 square feet. What is the pool's length? Remember to define your variable, use algebra to solve, show all of your work, and write your answer in a complete sentence.

Let L represent the length of the pool (in feet).

$$\begin{aligned}A &= LW \\ 1536 &= L(32) \\ 1536 &= 32L \\ \frac{1536}{32} &= \frac{32L}{32} \\ 48 &= L\end{aligned}$$

The length of the swimming pool is 48 feet.