

1. The first new price is determined by $\$100 - .40(\$100) = \$60$.

The final price is determined by $\$60 + .40(\$60) = \$84$.

So the final price was \$84.

2. The flaw in Herbie's plan is that the markdown is not based upon the sale price, but instead is based upon the original price.

Let x represent the original price of the shirt (\$). Then:

$$\begin{aligned}x - .25x &= \$20 \\ .75x &= \$20 \\ \frac{.75x}{.75} &= \frac{\$20}{.75} \\ x &\approx \$26.67\end{aligned}$$

The original price of Herbie's theoretical shirt must have been \$26.67.

3. $\left(\frac{2}{11}\right)(325,000) \approx 59,090.9$

So we can expect about 59,091 votes in the special election.

4. Let x represent the original number of single parents who blocked the Disney Channel. Then:

$$\begin{aligned}x + .40x &= 1106 \\ 1.4x &= 1106 \\ \frac{1.4x}{1.4} &= \frac{1106}{1.4} \\ x &= 790\end{aligned}$$

790 single parents in Clatsop county blocked the Disney Channel before the release of High School Musical 2.

5. $\$79.95 - .25(\$79.95) = \$59.965$

So the sale price of the bling was either \$59.96 or \$59.97.

6. Let x represent the original price of the bling-bling. Then:

$$\begin{aligned}x - .25x &= \$79.95 \\ .75x &= \$79.95 \\ \frac{.75x}{.75} &= \frac{\$79.95}{.75} \\ x &= \$106.60\end{aligned}$$

The non-sale price of the bling-bling was \$106.60.

7. $\left(\frac{7}{10}\right)(34,291,000) = 24,003,700$

There are 24,003,700 running around saying "aboot."

8. Let x represent the typical charge for one of them dye jobs. Then:

$$\begin{aligned}x - .60x &= \$26 \\ .40x &= \$26 \\ \frac{.40x}{.40} &= \frac{\$26}{.40} \\ x &= \$65\end{aligned}$$

A blue-dye job at the salon typically runs \$65.

9. Let x represent the non-sale price of a quart of ice cream. Then:

$$\begin{aligned}x - .30x &= \$1.54 \\ .70x &= \$1.54 \\ \frac{.70x}{.70} &= \frac{\$1.54}{.70} \\ x &= \$2.20\end{aligned}$$

Ice cream typically costs \$2.20 per quart.

10. Let's assume that the original price was \$100. Then after the 60% price increase the cost was \$160. When we decrease this price by \$60 the percent change is given by:

$$\frac{\$60}{\$160} = .375.$$

So the percent decrease that offsets a 60% increase is a mere 37.5% decrease!

11. Let's assume that the original price was \$100. Then after the 25% price increase the cost was \$125. When we increase this price by another 25% the new price is given by:

$$\$125 + .25(\$125) = \$156.25$$

So a 25% increase followed by another 25% increase results in a net increase of 56.25%!

12. Let x represent the original population of Behoovetown. Then:

$$\begin{aligned}x + .20x &= 11,700 \\1.2x &= 11,700 \\\frac{1.2x}{1.2} &= \frac{11,700}{1.2} \\x &= 9,750\end{aligned}$$

The original population of Behoovetown was 9,750.