



## Problem of the Week

### Problem B and Solution

### Otters in a Happy Space

#### Problem

Happy Space toy store bought 50 plush toy otters for \$8.00 each for resale. They also paid a \$30 shipping fee.

They priced the toy otters at \$10.00 each throughout December, after which they sold the remainder at a reduced sale price.

- If they sold 30 toy otters in December for \$10.00 each, what must the reduced sale price per otter be in order that they break even on this item (that is, they have no net profit nor loss)?
- For each otter, what percentage of the \$10.00 price is the savings from the reduced price?



#### Solution

- To break even, Happy Space must recover their total cost for the otters, which is  $(\$8.00 \times 50) + \$30.00 = \$430.00$ .

The income from the sale of 30 otters at \$10 each is  $30 \times \$10.00 = \$300$ .

Thus, they need to recover  $\$430 - \$300 = \$130$  from the sale of the remaining 20 otters at a reduced price in order to break even.

This requires that the otters be priced at  $\$130 \div 20 = \$6.50$ . So the appropriate reduced sale price is \$6.50 to break even.

- The reduced sale price of \$6.50 is  $\$10.00 - \$6.50 = \$3.50$  less than the original price. Thus, as a percentage, this savings is

$$\frac{\$3.50}{\$10.00} \times 100\% = 0.35 \times 100\% = 35\%$$