

# ANSWERS

Sharon needs to move tomorrow for her new job. She rents a U-Haul truck to move her belongings. It costs \$30 to rent the truck she needs, plus \$0.50 per mile to rent the truck she needs. Let  $P(m)$  be the price of renting the truck and driving it for  $m$  miles.

The Price for any given # of miles Equation

1. Write the symbolic form for  $P(m)$ .

$$P(m) = 0.50m + 30$$

To find the price (P), we need to multiply the # of miles (m) with \$0.50 and then add the \$30 rental fee

2. Sharon has budgeted \$200 for the truck rental. How many miles can she drive on her budget? To find the answer, solve for  $m$  such that  $P(m) \leq 200$ . Represent your answer in Set Notation.

$$\begin{array}{r} 0.50m + 30 \leq 200 \\ -30 \quad -30 \\ \hline 0.50m \leq 170 \\ \frac{0.50}{0.50} \quad \frac{0.50}{0.50} \\ \hline m \leq 340 \end{array}$$

solve just like equations

Price must be equal or less than 200 so Sharon does not go over budget

$$\{m: m \leq 340\}$$

She can drive less than or equal to 340 miles on a \$200 budget

3. Sharon wanted to save money, so she went online to find alternate truck rental companies. She found that Freddy's garage can rent her a truck for a flat rate of \$100. So, she wants to compare under what conditions it will be cheaper for her to rent from U-Haul versus Freddy's garage. Solve for  $m$  such that  $P(m) < 100$  to find the answer. Represent your answer in set notation.

$$\begin{array}{r} 0.50m + 30 < 100 \\ -30 \quad -30 \\ \hline 0.50m < 70 \\ \frac{0.50}{0.50} \quad \frac{0.50}{0.50} \\ \hline m < 140 \end{array}$$

$$\{m: m < 140\}$$

it would be cheaper to rent from U-Haul if she drives less than 140 miles

To find out when it would be cheaper to rent from U-Haul, we need to set the Price (P(m)) less than the \$100 it costs at Freddy's

4. Sharon computes the distance she will need to drive during the move. She determines that she will drive 120 miles. Should she rent from U-Haul or from Freddy's garage? Explain your answer.

She should rent from U-Haul since we found out in Question 3 that it's cheaper to rent from U-Haul if she drives less than 140 miles ;  $120 < 140$