Word Problems – Translating and Solving

Objectives:

…to write equations and/or inequalities that match given situations
...to solve word problems using two step equations

Assessment Anchor:

8.D.2.2 – Create and/or interpret expressions, equations or inequalities that model problem situations.

EXAMPLES

Problem #1:
Jim has 14 CDs, which is 5 more than 3 times as many CDs as Anna has. Use “x” to represent how many CDs Anna has. Write an equation and then solve it to find out how many CDs Anna has.

WORD MODEL: Jim exact = Jim’s description

TRANSLATE: 14 = 5 + 3x

SOLVE: 14 = 5 + 3x

\[
\begin{align*}
-5 & \quad -5 \\
9 & = 3x \\
3 & \\
\end{align*}
\]

ANSWER: Anna has 3 CDs. 3 = x

Problem #2:
Alex worked on his math homework for 25 minutes, which was 5 minutes less than twice as long as Becky worked on hers. Use “h” to represent how many minutes Becky worked on homework. Write an equation and then solve it to find out how many minutes Becky worked on homework.

WORD MODEL:

TRANSLATE: 14 = 5 + 3x

SOLVE: 14 = 5 + 3x

\[
\begin{align*}
-5 & \quad -5 \\
9 & = 3x \\
3 & \\
\end{align*}
\]

ANSWER: ____________________________ 3 = x
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Problem #3:
Ben has $400. He gets paid $15 to mow a lawn. He would like to get a new TV that costs $1250. Use "m" to represent how many lawns Ben mows. Write an inequality and solve it to find out how many lawns Ben must mow to have enough money.

WORD MODEL: $ already + $ earned “is at least” $ for TV

TRANSLATE: 400 + 15m ≥ 1250

SOLVE: 400 + 15m ≥ 1250
       – 400       – 400
     15m ≥ 850
       15       15

ANSWER: Ben must mow at least 57 lawns. m ≥ 56.6

Problem #4:
Gwen has $50 to spend at the video store. She can rent a game system for $15, and video games for $4 each. Use “v” to represent the number of video games. Write an inequality and solve it to find out how many video games she can buy.

WORD MODEL: $ for single item + $ for other items “is no more than” $ she has

TRANSLATE: 

SOLVE:

ANSWER: 

Problem #5:
Tom’s son is 34 inches tall. To ride on the go-karts he must be taller than the line posted on the sign (the line is at 4 feet). If Tom’s son grows 3 inches each year, and we use “y” to represent the number of years, write and solve an inequality to find out how long until he can ride the go-karts.

WORD MODEL: 

TRANSLATE: 

SOLVE:

ANSWER: 

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Problem #6: Jessica ate 24 cookies as her afternoon snack, which is 2 more than twice as many cookies as Dana ate. Use “c” to represent how many cookies Dana ate. Write and solve an equation to find out how many cookies Dana ate.

WORD MODEL:

TRANSLATE: SOLVE:

ANSWER: ____________________________

Problem #7: Jim earns $9 an hour cleaning houses. He wants to save $900 for a new stereo system. So far, he has saved $490. Use “h” to represent the number of hours he must work. Write and solve an inequality to find out how many hours he must work to have enough money.

WORD MODEL:

TRANSLATE: SOLVE:

ANSWER: ____________________________

Problem #8: Susan makes $30,000 a year, which is $5,000 less than half of what Mary makes a year. Use “k” to represent how much Mary makes a year. Write and solve an equation to find out how much money Mary makes each year.

WORD MODEL:

TRANSLATE: SOLVE:

ANSWER: ____________________________