Activity 10 Assessment
Solving Problems Using Equations and Inequalities

Solving Problems Using Equations and Inequalities			
Identifies an equation or inequality that represents a scenario	Solves a given equation or inequality to answer an applied problem	Writes and solves an equation to answer an applied problem	Writes and solves an inequality to answer an applied problem.

Identifies an equation or inequality that represents a scenario

"Raoul can spend up to $40 at the fair. They use $15 for food. Each ride costs $3. Which inequality shows many rides, r, Raoul can go on?

- $15 + 3r \geq 40$
- $40 - 3r \leq 15$
- $3r + 15 \leq 40$

The correct inequality is $3r + 15 \leq 40$.
For the first inequality, Raoul would be spending more than $40; for the second, they would have less than $15 for food."

Solves a given equation or inequality to answer an applied problem

"$3r + 15 \leq 40$
I'll solve the related equation using a flow chart.

$$\boxed{r} \to \boxed{\times 3} \to \boxed{+15} \to \boxed{40}$$

$$\boxed{8.3} \leftarrow \boxed{\div 3} \leftarrow \boxed{-15} \leftarrow \boxed{40}$$

Raoul can't go on part of a ride. I'll round down to 8.
Check: If Raoul goes on 8 rides, they spend
$3(8) + 15 = 24 + 15 = 39$
$39 < \$40$.
If Raoul goes on even 1 more ride, the cost will be greater than 40. So, my answer is correct."

Writes and solves an equation to answer an applied problem

A swim team spends $\frac{1}{2}$ of their savings and $250 they raise in a bake sale to buy team swimsuits for $367.50. What were their savings before this purchase?

"I let s represent their savings.

I know $\frac{s}{2} + 250 = 367.50$

I'll use a flow chart to solve the equation:

$$\boxed{s} \to \boxed{\div 2} \to \boxed{+250} \to \boxed{367.50}$$

$$\boxed{235} \leftarrow \boxed{\times 2} \leftarrow \boxed{-250} \leftarrow \boxed{367.50}$$

The solution to the equation is $s = 235$.
They had $235 in savings.
Check: When $s = 235$,

$$\frac{s}{2} + 250 = \frac{235}{2} + 250$$

$$= 117.50 + 250$$
$$= 367.50."$$

Writes and solves an inequality to answer an applied problem.

Toby has $55 to spend to take friends and one of their parents to a movie. An adult ticket costs $12. A student ticket costs $8. What is the maximum number of friends Toby can invite?

"Let n represent the number of student tickets Toby buys. Toby also buys 1 adult ticket.
$8n + 12 \leq 55$.
I'll use a flow chart to solve the related equation:

$$\boxed{n} \to \boxed{\times 8} \to \boxed{+12} \to \boxed{55}$$

$$\boxed{5.375} \leftarrow \boxed{\div 8} \leftarrow \boxed{-12} \leftarrow \boxed{55}$$

Toby can buy 5 student tickets, so can invite 4 friends.
Check: When $n = 5$,
$12 + 8n = 12 + 8(5)$
$\qquad = 12 + 40$
$\qquad = 52$
$\$52 < \$55$
If Toby buys any more tickets, the cost would be greater than $55.
My answer is correct."

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Observations/Documentation			