U1A L6 Writing & Solving Equations and Inequalities	Name: _____ HR: _____

Target Skill(s): Translate a real situation into an expression, equation, or inequality; solve it; and interpret the answer in context.

BIG IDEA: Algebra describes a situation BEFORE it solves it.

A MODELING ROUTINE

1. Define the variable and its units.

2. Build an expression for the quantity.

3. Choose the relationship: exact, maximum, or minimum.

4. Solve using the same equation/inequality skills you already know.

5. Interpret the answer in the situation.

Linear Models have something that changes at a constant RATE. Look for two key words:

_____ or _____

Fixed amount + (rate)(number of units)

At the ice cream bar an empty bowl cost $3.00 and then $0.50 per ounce for the ice cream and toppings you put in the bowl. Write an expression that calculates the cost of your dessert.

1. Build the expression first

Example: A streaming service charges a $15 start-up fee plus $8 each month.

Let m =.

Total cost expression:

Determine total cost for the given number of months of service:

6 months:

11 months:

2. SAME situation - different relationships

EXACT amount *one target*	**MAXIMUM amount** *55 or less*	**MINIMUM amount** *55 or more*
The bill was exactly $55. Meaning of the answer:	**You can spend no more than $55.** Meaning of the answer:	**You must spend at least $55.** Meaning of the answer:

3. Translate the comparison words by meaning

exactly / is	**less/fewer than**	**at most / no more than**	**More/greater than**	**at least / no less than**
$=$	$<$	$\leq$	$>$	$\geq$
= one value	does NOT include limit	includes the limit	Does NOT include limit	includes the limit

U1A L6 Guided Notes - Modeling with Equations & Inequalities	Name: _____

4. Solve AND interpret: the algebra answer may not be the final answer

Key question: Does the situation describe one exact value, values up to a limit, or values starting at a minimum?

Example: Concert tickets cost $12 each plus a $5 service fee. You have at most $75 to spend. Let t = **Model:** **Solve:** **Interpret:** You can buy at most _____ whole tickets.	**WHY CONTEXT MATTERS** A calculator might give a decimal. But some quantities must be whole numbers: • tickets • people • text messages • games played **The situation decides what answers make sense.**

5. Guided Practice - MODEL first, then solve

1. **I DO:** A carnival charges $4 to enter and $3 for each game. Jordan spent exactly $22. How many games did Jordan play? **Define:** **Model:** **Solve:** **Interpret:**	**2. WE DO:** A carnival charges $4 to enter and $3 for each game. You have no more than $22. How many games can you play? **Define:** **Model:** **Solve:** **Interpret:**
3. YOU DO: A fundraiser already has $18 and earns $6 for each item sold. The goal is at least $60. How many items must be sold? **Define:** **Model:** **Solve:** **Interpret:**	**4. YOU DO:** A phone plan costs $25 per month plus $0.10 per text. One bill was exactly $32. How many texts were sent? **Define:** **Model:** **Solve:** **Interpret:**
Some examples of rates of change: $17 per hour 55 miles per hour 50 words per minute $12 per pound	**Summary**