NAME:_____ Math 7.1

Mr. Rogove Date:_____

LEARNING OBJECTIVE: We will solve equations using if-then moves (G7M2L17)

CONCEPT DEVELOPMENT:

Recall these properties of equality.

Addition Property of Equality	**Subtraction Property of Equality**
If $a = b$, then $a + c = b + c$ *Examples*: If $x - 2 = 7$, then $x - 2 + 2 = 7 + 2$	If $a = b$, then $a - c = b - c$ *Examples:* If $x + 3 = 18$, then $x + 3 - 3 = 18 - 3$
Multiplication Property of Equality	**Division Property of Equality**
If $a = b$, then $a \times c = b \times c$ *Examples*: If $\frac{2x}{3} = 6$, then $\frac{2x}{3} \times 3 = 6 \times 3$	If $a = b$ $(and\ c \neq 0)$, then $\frac{a}{c} = \frac{b}{c}$ *Examples*: $If\ 3x = 12$, $then\ \frac{3x}{3} = \frac{12}{3}$

We can use these properties and if-then moves to solve equations.

MAKING ZERO: We can use addition or subtraction properties of equality to make zero.
Example: If $x + 5 = 9$, then $x + 5 - 5 = 9 - 5$

MAKING ONE: We can use the multiplication and division properties of equality to make 1.
Example: If $4x = 24, then\ \frac{1}{4} \cdot 4x = \frac{1}{4} \cdot 24$

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Guided Practice:

Steps for Solving Equations Using If-Then Moves

1. Read the problem carefully.
2. Use addition or subtraction properties of equality and If-Then Moves to make 0.
3. Use multiplication or division properties of equality and If-Then Moves to make 1.
4. Isolate your variable, and interpret your answer.
5. Check your work.

$5x + 4 = 19$	$15x + 14 = 19$
$5(x + 7) = -45$	$4(x + 3) = -24$
$12 - 5x = 47$	$8 - 3y = 14$

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You have $500 in your savings account and you want to get a cell phone. There is a one time connection fee $50 and the plan you're interested in getting will cost $75 a month. How many months of service can you get before you need to deposit more money in your savings account?	Standard shipping costs for ordering from Amazon is $8.00. You have $73 to spend on posters of your favorite band/artist to decorate your room. If posters cost $13 each, how many posters can you put up on your wall?
Nadia gets $15 each week from babysitting and she also gets money for allowance. How much is her allowance each week if she is able to deposit $108 in her savings account in 6 weeks?	Jessica and her 3 friends are on a canoe trip. They have to pay $24 each for the canoe rental. They also have to pay to rent life vests. If their total $116, how much does it cost to rent a life vest?

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Independent Practice:

Steps for Solving Equations Using If-Then Moves

1. Read the problem carefully.
2. Use addition or subtraction properties of equality and If-Then Moves to make 0.
3. Use multiplication or division properties of equality and If-Then Moves to make 1.
4. Isolate your variable, and interpret your answer.
5. Check your work.

$3x - 4 = 14$	$7(x - 5) = 28$
A membership at the El Camino Y cost an individual $40 per month. There is also a one time registration fee of $25 when you sign up. How many months will your membership last if you have $545 in your savings account?	At Pizza My Heart, you and 4 friends each got a slice of pizza, and you split an order of garlic knots that cost $6.00. Your total came to $21.00. How much does a slice of pizza cost?
The trip from California to New York is roughly 2700 miles. If you make the 600 mile flight from San Francisco to Salt Lake City, and then drive the same distance each day for 5 days, how many miles are you driving each day?	Every month, we wash our car and get our oil changed. We spend 2 hours washing our car each month. For the entire year, we spend 60 hours on this type of car care. How many hours does it take for us to change our oil?

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Activating Prior Knowledge:

We can solve problems using tape diagrams

In training for a marathon, you run 4 miles each day, each when you do your long run, which is 13 miles. How many days are you running if you have ran 41 miles?	You are downloading songs from a popular website. The first song takes 30 seconds to download(it's a long song), but every other song takes only 12 seconds to download. How many songs are you downloading if you spent 174 seconds downloading music?

Closure:

Jennifer was solving the following problem. Is this correct? Where is her mistake? What is the correct answer?

$4(x+8)=56$	
$4(x+8)-8=56-8$	Subtraction Property of Equality "Making Zero"
$4x=48$	
$\frac{1}{4}\cdot 4x=\frac{1}{4}\cdot 48$	Multiplication Property of Equality "Making One"
$x=12$	Solution!

Teacher Notes: