Name: Answer Key Period: ____

U3 Day 4 Notes: Writing Real-World Inequalities

A-CED.1: *I can set up an inequality to model a real-world problem with one unknown variable. I can solve this inequality to answer the real world problem.*

1. Debbie has at most $60 to spend on clothes. She wants to buy a pair of jeans for $20 and spend the rest on t-shirts. Each t-shirt costs $8. $\leq$ x = # of t-shirts

Part A: Write an inequality to describe the scenario.

$20 + 8x \leq 60$

Part B: Solve to figure out the maximum number of t-shirts Debbie can buy.

$20 + 8x \leq 60$
$-20 \quad -20$
$8x \leq 40$

$\frac{8x}{8} \leq \frac{40}{8}$

$x \leq 5$ shirts

2. Jorge receives a salary of $2,000 and deposits that amount into his bank account. He wants to have a minimum of $500 in the account. He withdraws $30 per month for gifts and chocolate. $\geq$ x = # of months

Part A: Write an inequality to show how many times Jorge can withdraw money.

$2000 - 30m \geq 500$

Part B: How many months can Jorge withdraw money for gifts and chocolate?

$2000 - 30m \geq 500$
$-2000 \quad -2000$
$-30m \geq -1500$

$\frac{-30m}{-30} \geq \frac{-1500}{-30}$

$m \leq 50$ months

3. Dakota is going on a picnic with her family. She buys $6 worth of plastic silverware and needs to buy several 2-liters of soda that are $1.50 each. She wants to spend no more than $15. $\leq$

Part A: Write an inequality to describe the scenario.

$6 + 1.50x \leq 15$

Part B: Solve to figure out how many 2-liter bottles Dakota can purchase.

$6 + 1.50x \leq 15$
$-6 \quad -6$
$1.50 \leq 9$

$\frac{1.50x}{1.50} \leq \frac{9}{1.50}$

$x \leq 6$ bottles

4. A candidate running for office is putting on a gala as a fundraiser, with the hopes of raising more than $8,300 in contributions (donations). An anonymous donor has already donated $610. Tickets are being sold to the gala for $69 each. $>$

Part A: Which inequality represents the scenario?

A) $69x + 610 < 8{,}300$
B) $69x + 610 > 8{,}300$
C) $69x + 610 \leq 8{,}300$
D) $69x + 610 \geq 8{,}300$

$69x + 610 > 8300$
$-610 \quad -610$
$69x > 7960$

$\frac{69x}{69} > \frac{7960}{69}$

Part B: Solve to see how many tickets have to be sold in order for the candidate to reach their goal.

$x > 115.3$

$x > 114$ tickets

5. A charitable organization is hosting a black tie benefit for charity, and the organization's members hope to bring in at least $3,200. Standard tickets are available for $26 each, and they've already raised $1,224.

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Part A: Which inequality represents the scenario?

A) $1,224 + 26x < 3,200$

B) $1,224 + 26x \leq 3,200$

C) $1,224 + 26x > 3,200$

D) $1,224 + 26x \geq 3,200$

$1224 + 26x \geq 3200$

$-1224 \quad -1224$

$26x \geq 1976$

$x \geq 76$

Part B: Solve to see how many tickets have to be sold in order for the organization to raise at least $3,200.

$x \geq 76$ tickets

6. The AVID club wants to go skating at Polar Ice. They will be having a car wash at TGB to raise money for the social. Each car washed will be $10, but it costs them $1 to wash each car. They need to raise **at least** $180 for the social.

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Part A: Write an inequality representing how many cars they need to wash.

Inequality: $10x - 1x \geq 180$ OR $9x \geq 180$

Part B: Determine how many cars do they need to wash?

$\frac{9x}{9} \geq \frac{180}{9}$

Answer: $x \geq 20$ cars

Part C: If the AVID Club washes 30 cars, but spends $50 on snacks, determine if the AVID Club has enough money for the social.

$9(30) - 50 \geq 180$

$270 - 50 \geq 180$

$220 \geq 180$

yes, they have enough money for the social.

8. Grace babysits for extra money. She charges $30 every day that she babysits. She spends an average of $5 in gas per trip to babysit. Her sister wants her to go on a trip and she needs to save at least $500 in order to be able to afford to go.

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Part A: Write an inequality representing how many times Grace needs to babysit to save **at least** $500.

Inequality: $30x - 5x \geq 500$ OR $25x \geq 500$

Part B: Determine how many times she needs to babysit to reach her savings goal.

$\frac{25x}{25} \geq \frac{500}{25}$

Answer: $x \geq 20$ times

$60

Part C: If Grace babysits 22 times, but spent some of her money buying two concert tickets for $30 each, determine if Grace has saved enough money to cover her trip.

$25(22) - 60 \geq 500$

$550 - 60 \geq 500$

$490 \not\geq 500$

NO, Grace doesn't have enough money.