Linear Inequalities LI7

Multi-Step Inequalities Day 2

Extra Practice

1) Identify the variable (s)
2) Set up the inequality
3) Solve (Algebraic method)

Name_____

Date_____ Period____

Write and solve each inequality.

1. A crate weighs 6 kg when empty. A lemon weighs about 0.2 kg. For economical shipping the crate with lemons must weigh at least 45 kg. How many lemons should be put in the crate?

Lemons (l)

$6 + 0.2l \geq 45$
$-6 \quad -6$
$\frac{0.2l}{0.2} \geq \frac{39}{0.2}$
$l \geq 195$

195 lemons or more

2. Jillene is playing in a basketball tournament and scored 24 points in her first game. If she averages over 20 points for both games, she will receive a trophy. How many points can Jillene score in the second game to receive a trophy?

Points (p)

Average: ADD, DIVIDE

$\frac{(24+p)}{2} > 20$ (2)
$24 + p > 40$
$-24 \quad -24$
$p > 16$

more than 16 points

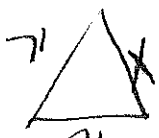
3. Bink brought $23 with her to the county fair. She purchased a $5 tee-shirt and now wants to purchase plants for $2.50 each. What number of plants can she purchase with her money?

Plants: (p)

$5 + 2.50p \leq 23$
$-5 \quad -5$
$\frac{2.50p}{2.50} \leq \frac{18}{2.5}$
$p \leq 7.2$

7 plants or less

4. Suppose a triangle has sides that measure 7 feet and 9 feet. Given the perimeter of the triangle is between 20 and 32, what are the possible values for the third side?



$P = s+s+s$ (compound) perimeter

$20 < (7+9+x) < 32$
$20 < 16 + x < 32$
$-16 \quad -16 \quad -16$
$4 < x < 6$

possible 5 feet

5. Ms. Cramer took her dog Snickers to the vet. The veterinarian wants Snickers to weigh between 62 lbs and 68 lbs. Snickers currently weighs 74 lbs. Ms. Cramer thinks that Snickers will lose two pounds a week when they go jogging. Which inequality represents how many weeks Ms. Cramer needs to jog with Snickers to achieve the goal weight? ~~x~~ : weeks

-2

no ≤ to

~~a. $62 \leq 74 - 2x \leq 68$~~

b. $62 < 2x - 74 \leq 68$

c. $62 < 74 - x < 68$

d. $62 < 74 - 2x < 68$

→ Variables on one side
→ constants on the other

Solve and graph each inequality.

8. $3 - 2(x+4) > 3$

$3 - 2x - 8 > 3$

CUT $-2x - 5 > 3$ (+5 +5)

$-2x > 8$

$\frac{-2x}{-2} > \frac{8}{-2}$ ★

$x < -4$

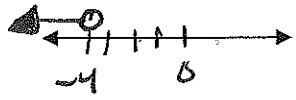
check $x = -5$

$3 - 2(-5+4) > 3$

$3 - 2(-1) > 3$

$3 + 2 > 3$

$5 > 3$ ✓



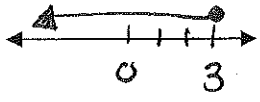
9. $12(x-3) + 2x \leq 6$

$12x - 36 + 2x \leq 6$

CUT $14x - 36 \leq 6$ (+36 +36)

$\frac{14x}{14} \leq \frac{42}{14}$

$x \leq 3$



10. $-4m - 3 \leq 2m + 6$

$+4m \quad +4m$

$-3 \leq 6m + 6$

$-6 \quad -6$

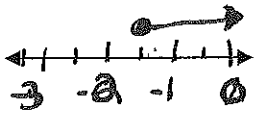
$\frac{-9}{6} \leq \frac{6}{6}m$

$-1.5 \leq m$ OR $m \geq -1.5$

Check $m = 0$

$-4(0) - 3 \leq 2(0) + 6$

$-3 \leq 6$ ✓



Benedict, Ricardo, and Charlie are considering opportunities for summer work. The table below shows the jobs open to them and the pay for each. Use this information to answer the following questions.

Job	Pay
Mowing Lawns	$15 per lawn
Baby-Sitting	$5.50 per hour
Tutoring	$9 per session

11. Benedict has saved $91 from last year and would like to baby-sit (5.50 per hour) to earn enough to buy a mountain bike. A good quality bike costs at least $300. ($\geq 300$) What number of hours h can Benedict baby-sit to reach his goal?

a. $h \geq 14$ b. $h \geq 23$ c. $h \geq 38$ d. $h \geq 71$

$91 + 5.5h \geq 300$

$-91 \quad -91$

$\frac{5.5h}{5.5} \geq \frac{209}{5.5}$

$h \geq 38$

12. Ricardo has agreed to tutor for the school. He owes (-59) his older brother $59 and would like to end the summer with at least $400 in savings. How many sessions can Ricardo tutor to meet his goal?

($9 per session; s = number of sessions; $\geq$ = at least)

a. $s \geq 31$ b. $s \geq 38$ c. $s \geq 51$ d. $s \geq 81$

$9s - 59 \geq 400$

$+59 \quad +59$

$\frac{9s}{9} \geq \frac{459}{9}$

$s \geq 81$

13. Charlie has agreed to mow his neighbor's lawn (+ $15 per lawn) once a week and will also baby-sit (+ 5.50 per h) some hours. If he makes $100 or more each week his parents will charge him rent. How many hours h should Charlie agree to baby-sit each week to avoid paying rent?

a. $h \leq 15$ b. $h \geq 15$ c. $h \leq 21$ d. $h \geq 21$

$15 + 5.50h < 100$

$-15 \quad -15$

$\frac{5.50h}{5.50} < \frac{85}{5.50}$

$h < 15.45$