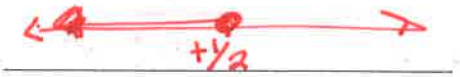
Module 7 – Study Guide
Multi-Step Inequalities

Name: Answer Key

	Answer	Number Line
Graph the inequality. 1. $b > 15$ 2. $j \geq -5$ 3. $-2 > y$ or $y < -2$		1.  2.  3. 
Solve the inequality and then graph its solution. 4. $x + 3 > 7$ (−3 −3) 5. $-5 + m \leq -12$ (+5 +5) 6. $-7x \leq 14$ (÷ −7) 7. $\frac{1}{3}z \geq -6$ (×3) 8. $\frac{x}{3} - 22 \leq 48$ (+22 +22) $\frac{x}{3} \leq 70$ (×3) 9. $55 > 6 + -7d$ (−6 −6) $\frac{49}{-7} > \frac{-7d}{-7}$ 10. $-16p + 127 \geq -65$ (−127 −127) $\frac{-16p}{-16} \geq \frac{-192}{-16}$ 11. $-6x + 3 \geq 0$ (−3 −3) $\frac{-6x}{-6} \geq \frac{-3}{-6}$ 12. $-14 \leq -2(x - 3)$ $-14 \leq -2x + 6$ (−6 −6) $\frac{-20}{-2} \leq \frac{-2x}{-2}$ $10 \geq x$ 13. $-(-x + 6) > -12$ $x + 6 > -12$ (+6 +6) $x > -6$	4. $x > 4$ 5. $m \leq -7$ 6. $x \geq -2$ 7. $z \geq -18$ 8. $x \leq 210$ $-7 < d$ or 9. $d > -7$ 10. $p \leq 12$ $x \leq 0.5$ 11. $x \leq \frac{1}{2}$ $10 \geq x$ or 12. $x \leq 10$ 13. $x > -6$	4.  5.  6.  7.  8.  9.  10.  11.  12.  13. 

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14. Tony wants to buy a ticket for $14.75. He has $10.25. Write and solve an inequality to show how much he could earn to buy the ticket.

$10.25 + x \geq 14.75$
$-10.25 \quad -10.25$

$x \geq 4.5$

Tony needs at least $4.50.

15. Tito opened a savings account with $100. He saves $25 per month. Write and solve an inequality that shows the least number of months it will take Tito to save $800.

$25x + 100 \geq 800$
$-100 \quad -100$
$\frac{25x}{25} \geq \frac{700}{25}$
$x \geq 28$

It will take Tito at least 28 months to save.

16. Arthur earned $146 in three weeks. He goes back to school in one more week. He needs at least $179 to buy the new coat that he wants for school. Write and solve an inequality to show how much Arthur must earn.

Total

$146 + x \geq 179$
$-146 \quad -146$
$x \geq 33$

Arthur must earn $33. at least

17. To cover her rectangular screened-in porch with outdoor carpet, Kendra needs at least 80 square feet of carpet. The length of Kendra's porch is 25 feet. What are the possible widths of Kendra's porch?

$l \cdot w$

$l \cdot w$
$\frac{25x}{25} \geq \frac{80}{25}$

$x \geq 3.2$

The possible widths are 4.2, 5.2, 6.2, ...

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18. Carl is having a party. He has brought 36 brownies and is making 5 more batches of brownies. The inequality $36 + 5b \geq 141$ can be used to determine how many brownies, b, must be in each batch so that all 141 guests get at least 1 brownie. Determine which of the given values, if any, make the inequality true: b = 5; b =15; b= 25.

$36+5(5) \geq 141$
$61 \not\geq 141$

$36+5(15) \geq 141$
$111 \not\geq 141$

$36+5(25) \geq 141$
$161 \geq 141$ ✓
yes

19. Charlene is a writer who is going on a trip. She has brought several copies of her latest book in her suitcase. The suitcase itself weighs 4 pounds and each book weighs 3 pounds. If her full suitcase can weigh no more than 55 pounds, how many books can she bring?

multiply

$4 + 3x \leq 55$
$-4 \quad -4$
$3x \leq 51$
$\frac{3x}{3} \leq \frac{51}{3}$
$x \leq 17$

She can bring at most 17 books.

20. Connie's dog Fido weighs 45 pounds. Her vet placed Fido on a diet. What inequality can you write to find the average number of pounds Fido must lose monthly to reach a healthier weight of 38 pounds within 6 months?

$45 - 6m \leq 38$
$-6m \leq -7$
$m \geq 1.17$

on average lose approx. 1.17 lbs. per month.

21. Jerome spent $25 on supplies to make 60 cookies for a bake sale. What inequality can you write to find the price Jerome should charge for each cookie if he wants to have a profit of more than $70?

$60x + 25 \geq 70$
$60x \geq 90$
$x \geq 75$
$x \geq 1.58$

$1.58 per cookie