5.1.3- Writing and Solving Multi-Step Inequalities Name: _____

1)

NMS is ordering new textbooks. Company A charges $50 per textbook plus a $100 delivery fee ~~for each order.~~ Company B changes $60 per textbook plus a $10 delivery fee ~~for each order.~~

t : # of textbook

Write and solve an inequality representing the number of textbooks for which Company A offers a lower price for ordering textbooks than Company B.

Company A Company B

$50t + 100 < 60t + 10$

$-50t \quad -50t$

$100 < 10t + 10$

$-10 \quad -10$

$90 < 10t$

$\frac{90}{10} < \frac{10t}{10}$

$9 < t$

Explain your answer in the context of the situation (using words):

Company A has a lower price when the # of textbooks is more than 9.

2)

The 5 Middle School Algebra teachers each need new class sets of 35 calculators and 35 textbooks. Each calculator costs $15. How much can they spend on each textbook so they spend less than the budget of $12,250?

C : cost of each textbook

Write and solve an inequality representing the amount they can spend on each textbook to stay within their spending limit.

$5(35 \cdot 15 + 35 \cdot C) < 12{,}250$

$5(525 + 35c) < 12{,}250$

$2625 + 175c < 12{,}250$

$-2625 \quad -2625$

$175c < 9625$

$\frac{175c}{175} < \frac{9625}{175}$

$c < 55$

Explain your answer in the context of the situation (using words):

They spend less than the budget if each textbook costs less than $55

Additional Practice: Solve the following inequalities and graph the solution on the number line.

3) $-5n + 9 + 2n > 3$

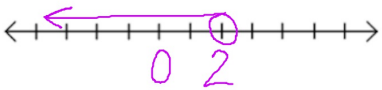
$-3n + 9 > 3$

$-9 \quad -9$

$-3n > -6$

$\frac{-3n}{-3} > \frac{-6}{-3}$

$n < 2$




4) $5(6 + 3r) + 7 \geq 127$

$30 + 15r + 7 \geq 127$

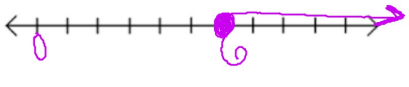
$37 + 15r \geq 127$

$-37 \quad -37$

$15r \geq 90$

$\frac{15r}{15} \geq \frac{90}{15}$

$r \geq 6$




5) $1a - 6 < 15 + 8a$

$-1a \quad -1a$

$-6 < 15 + 7a$

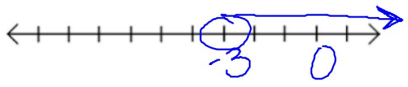
$-15 \quad -15$

$-21 < 7a$

$\frac{-21}{7} < \frac{7a}{7}$

$-3 < a$

$a > -3$




6) $28 - k \geq 7(k - 4)$

$28 - k \geq 7k - 28$

$+k \quad +k$

$28 \geq 8k - 28$

$+28 \quad +28$

$56 \geq 8k$

$\frac{56}{8} \geq \frac{8k}{8}$

$7 \geq k$

$k \leq 7$