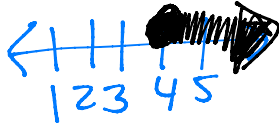# Warmup

Solve and Graph

1) $4x - 3 \geq 13$ (# line)

$+3 \qquad +3$

$\dfrac{4x}{4} \geq \dfrac{16}{4}$

$x \geq 4$

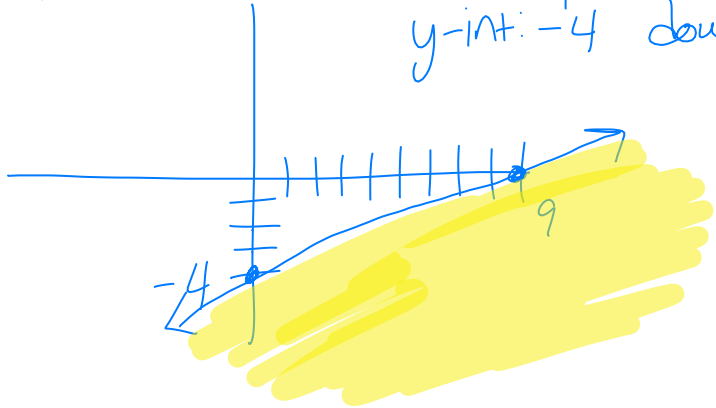## Solve, graph & shade

2) $4x - 9y \geq 36$

$-4x \qquad -4x$

$\dfrac{-9y}{-9} \geq \dfrac{-4x}{-9} + \dfrac{36}{-9}$

$y \leq \dfrac{4}{9}x - 4$

Slope: $\dfrac{4}{9}$ Solid

y-int: -4 down

4.5 May I Have More, Please?

A Solidify Understanding Task

Elvira, the cafeteria manager, has to be careful with her spending and manages the cafeteria so that they can serve the best food at the lowest cost. To do this, Elvira keeps good records and analyzes all of her budgets.

1. Elvira's cafeteria has those cute little cartons of milk that are typical of school lunch. The milk supplier charges $0.35 per carton of milk, in addition to a delivery charge of $75. What is the maximum number of milk cartons that Elvira can buy if she has budgeted $500 for milk?

   a. Write and solve an inequality that models this situation.

   $$0.35x + 75 \leq 500$$
   $$-75 \qquad -75$$

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b. Describe in words the quantities that would work in this situation

$0.35 \rightarrow$ Charge per Carton
$x \rightarrow$ # milk Cartons
$75 \rightarrow$ deliv charge
$500 \rightarrow$ Max $

c. Write your answer in both interval and inequality notation

$[0, 1214]$ Interval
$0 \leq x \leq 1214$ Ineq.

$$0.35x \leq 425$$
$$\frac{0.35x}{0.35} \qquad \frac{425}{0.35}$$
$$x \leq 1214$$

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2. Students love to put ranch dressing on everything, so Elvira needs to keep plenty in stock. The students eat about 2.25 gallons of ranch each day! Elvira started the school year with 130 gallon of ranch dressing. She needs to have at least 20 gallons left when she reorders to have enough in stock until the new order comes. For how many days will her ranch dressing supply last before she needs to reorder?

   a. Write and solve an inequality that models this situation.

   $$130 - 2.25x \geq 20$$
   $$-130 \qquad -130$$
   $$-2.25x \geq -110$$
   $$\frac{-2.25x}{-2.25} \qquad \frac{-110}{-2.25}$$
   $$x \leq 49$$

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b. Describe in words the quantities that would work in this situation.

$130 \rightarrow$ starting ranch gals
$2.25 \rightarrow$ gals kids eat/day
$x \rightarrow$ Days
$20 \rightarrow$ Min gals to Reorder

c. Write your answer in both interval and inequality notation.

$[0, 49]$
$0 \leq x \leq 49$

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3. The prices on many of the cafeteria foods change during the year. Elvira finds that she has ordered veggie burgers four times and paid $78, $72, $87, and $90 on the orders. To stay within her budget, Elvira needs to be sure that the average order of veggie burgers is not more than $82. How much can she spend on the fifth order to keep the average order within her budget?

   a. Write and solve an inequality that models this situation.

   $$\frac{327 + x}{5} \leq 82$$
   $$327 + x \leq 410$$
   $$-327 \qquad -327$$

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b. Describe in words the quantities that would work in this situation.

$327 \rightarrow$ price 4 orders
$x \rightarrow$ 5th order price
$5 \rightarrow$ # orders
$82 \rightarrow$ Budget

c. Write your answer in both interval and inequality notation.

$[0, 83]$
$0 \leq x \leq 83$
$x \leq 83$

4. Elvira can purchase ready-made pizzas for $14.50 each. If she makes them in the cafeteria, she can spend $44.20 on ingredients and $6.25 per pizza on labor. For how many pizzas is it cheaper for the cafeteria to make the pizzas themselves rather than buy them ready-made?

a. Write and solve an inequality that models this situation.

$$44.20 + 6.25x < 14.50x$$
$$-6.25x \qquad -6.25x$$

b. Describe in words the quantities that would work in this situation.	c. Write your answer in both interval and inequality notation.
$44.20 \rightarrow$ $/Ingredients $6.25 \rightarrow$ $ Labor/cafeteria $14.50 \rightarrow$ Ready Made $	$[6, \infty)$ $6 \leq x < \infty$ $\dfrac{44.20}{8.25} < \dfrac{8.25x}{8.85}$ $\boxed{x \geq 6}$ $5.35 < x \rightarrow x > 5.35$

5. Elvira is comparing prices between two different suppliers of fresh lettuce. Val's Veggies charges $250 for delivery plus $1.50 per bag of lettuce. Sally's Salads charges $100 for delivery plus $4.00 per bag of lettuce. How many bags of lettuce must be purchased for Val's Veggies to be the cheaper option?

a. Write and solve an inequality that models this situation.

$$250 + 1.5x < 100 + 4x$$
$$-1.5x \qquad -1.5x$$
$$250 < 100 + 2.5x$$
$$-100$$

b. Describe in words the quantities that would work in this situation.	c. Write your answer in both interval and inequality notation.
$250 \rightarrow$ Val deliv charge $1.5 \rightarrow$ bag $ lettuce Val $100 \rightarrow$ Sally deliv $4 \rightarrow$ price bag lett Sally $x \rightarrow$ # bags lettuce	$(60, \infty)$ $60 < x < \infty$ $\dfrac{150}{2.5} < \dfrac{2.5x}{2.5}$ $60 < x \rightarrow x > 60$

6. Each student that buys school lunch pays $2.75. The cafeteria typically brings in between $1168.75 and $1438.25. How many students does the cafeteria usually serve?

a. Model this situation using an inequality.

$$\dfrac{1168.75}{2.75} \leq \dfrac{2.75x}{2.75} \leq \dfrac{1438.25}{2.75}$$

b. Describe in words the quantities that would work in this situation.	c. Write your answer in both interval and inequality notation.
$1168.75 \rightarrow$ Minimum $ made $1438.25 \rightarrow$ Max $ made $2.75 \rightarrow$ lunch charge $x \rightarrow$ # students	$425 \leq x \leq 523$ $\boxed{[425, 523]}$