

Chili's Dinner receipt

How much do my friends and I owe?

\$46.06 is The Bill.

$$\text{Bill} + \text{Tip} = \text{Total Owed}$$

↑  
20% of Bill

$$\text{Bill} + 0.2\text{Bill} \geq 46.06$$

Amount left has to be at least \$46.06 - you could leave as much money as you want.

Chili's Grill & Bar	
Pasadena, CA 91257	
7001 Theater Dr	
Pasadena, CA 93446	
BEVERAGE	2.59
CUP W/ENTREE	2.89
CUP BP W/ENT	3.09
STRAWBERRY LEMON	9.19
BB WINGS	3.00
PD-TWO-CR\$20 APP	17.00
PD-TWO-CR\$20 ENTREE	10.19
BAC W/O CK SAND	3.89
SIDE SALAD-HOUSE	9.19
FREE APP	
Subtotal	42.65
Tax	3.41
Total	46.06
Balance Due	46.06
Thank You!	
We Welcome Your Comments	
(800) 983-4637	
www.chilis.com	

Budgeting Before Dinner: **What if you were limited by what you could spend?**

What if you and 3 friends only had \$10 each to spend so you had a budget of \$40 for dinner. What would the inequality look like now? Where would the max be?

$$\text{TIP} + \text{Bill} \leq \$40 \leftarrow \text{MAX}$$

You cannot spend more than what you have.

With your budget of \$40, you and your friends decide to leave a 20% tip. What would be the most that your bill including tax could be?

$$B + 0.2B \leq 40$$

$$\frac{1.2B}{1.2} \leq \frac{40}{1.2}$$

$$B \leq \$33.33 \text{ SPEND AS A GROUP}$$

How much could EACH person's meal be, including tax?

↓ ÷4

$$B \leq \$8.33$$

Example 2: Saving for Vacation

You have one month to save money for your vacation. Your October paycheck will go completely towards your Thanksgiving vacation. You are paid a salary of \$1,500 each month. You can also work overtime for \$15 per hour. Your vacation will cost at least \$2,175, but it would be nice to have some extra cash. How many hours of overtime do you need to work?



Identify the variable

$h =$  hours of overtime you need to work

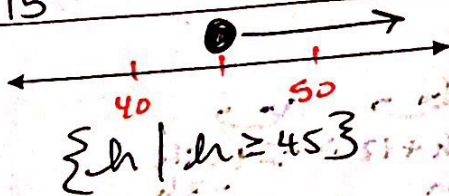
Write the

$$1500 + 15h \geq 2,175$$

$$\begin{array}{r} 1500 + 15h \geq 2,175 \\ -1500 \quad -1500 \\ \hline 15h \geq 675 \\ \frac{15h}{15} \geq \frac{675}{15} \end{array}$$

$h \geq 45$  hours

Express your answer in set notation and on a graph



How many hours would you have to work each week (see a calendar).

ABOUT 4 WEEKS/MONTH, SO  $\frac{45 \text{ hours}}{4 \text{ weeks}} \rightarrow 11.25 \text{ hours/week}$  or 12 hours/week

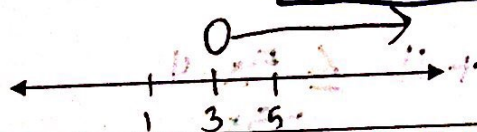
Ex1: Solve the linear inequality. Graph the solution set, and express in set notation.

g.  $4x - 3 + x + 8 > 20$

$$5x + 5 > 20$$

$$\begin{array}{r} 5x + 5 > 20 \\ -5 \quad -5 \\ \hline 5x > 15 \end{array}$$

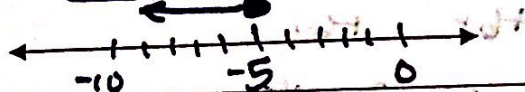
$$\frac{5x}{5} > \frac{15}{5} \quad \{x \mid x > 3\}$$



h.  $-11y - 13 \geq 42$

$$\begin{array}{r} -11y - 13 \geq 42 \\ +13 \quad +13 \\ \hline -11y \geq 55 \\ \frac{-11y}{-11} \geq \frac{55}{-11} \\ y \leq -5 \end{array}$$

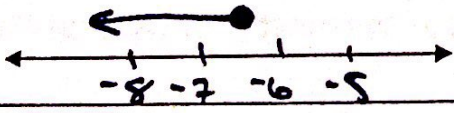
$$\{x \mid x \leq -5\}$$



i.  $23 \leq 10 - 2w$

$$\begin{array}{r} 10 - 2w \geq 23 \\ -10 \quad -10 \\ \hline -2w \geq 13 \\ \frac{-2w}{-2} \geq \frac{13}{-2} \end{array}$$

$$\{w \mid w \leq -6.5\}$$

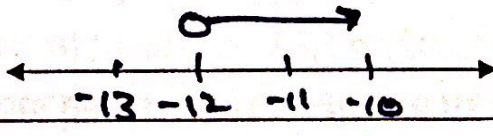


j.  $\frac{2x}{3} + 5 > -3$

$$\begin{array}{r} \frac{2x}{3} + 5 > -3 \\ -5 \quad -5 \\ \hline \frac{2x}{3} > -8 \end{array}$$

$$\{x \mid x > -12\}$$

$$\frac{2x}{2} > \frac{-24}{2}$$



Ex2: Solve the linear inequality. Graph the solution set, and express in set notation.

a.  $4(3t-5) + 7 > 8t + 3$

$$12t - 20 + 7 > 8t + 3$$

$$12t - 13 > 8t + 3$$

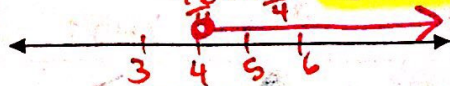
$$-8t \quad -8t$$

$$4t - 13 > 3$$

$$+13 \quad +13$$

$$4t > 16$$

$$\{t \mid t > 4\}$$



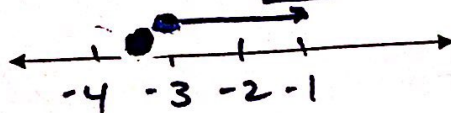
b.  $6(5z-3) \leq 36z$

$$30z - 18 \leq 36z$$

$$-30z \quad -30z$$

$$-18 \leq 6z$$

$$-3 \leq z \rightarrow \{z \mid z \geq -3\}$$



c.  $2(h+6) > -3(8-h)$

$$2h + 12 > -24 + 3h$$

$$-3h \quad -3h$$

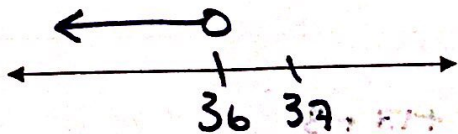
$$-h + 12 > -24$$

$$-12 \quad -12$$

$$-h > -36$$

$$\cdot (-1) \quad \cdot (-1)$$

$$\{h \mid h < 36\}$$



d.  $\frac{3f-10}{5} < 7 \cdot 5$

$$3f - 10 < 35$$

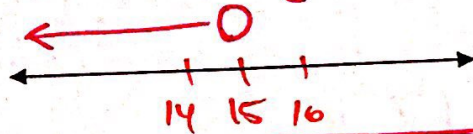
$$+10 \quad +10$$

$$3f < 45$$

$$\cdot 3 \quad \cdot 3$$

$$f < 15$$

$$\{f \mid f < 15\}$$



Ex3: Define a variable, write an inequality, and solve the inequality. Graph the solution set, and express in set notation.

a. Five minus six times a number is more than four times the number plus forty-five.

$$5 - 6x > 4x + 45$$

$$+6x \quad +6x$$

$$5 > 10x + 45$$

$$-45 \quad -45$$

$$-40 > 10x \rightarrow x \mid x < -4$$



b. The sum of twice a number and 11 is less than or equal to the difference of five times a number and 4.

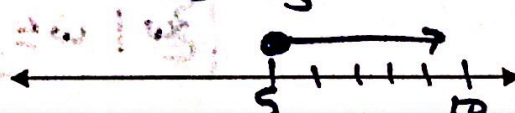
$$2x + 11 \leq 5x - 4$$

$$-5x \quad -5x$$

$$-3x + 11 \leq -4$$

$$-11 \quad -11$$

$$-3x \leq -15 \quad x \geq 5$$



Exit ticket: You and \_\_\_\_\_ friends go out to dinner. You tell everyone to bring \$10 for the bill and you plan to bring \$20. You want to leave a \_\_\_\_\_ tip. What is the most your bill could be including tax so you aren't left paying more than \$20?