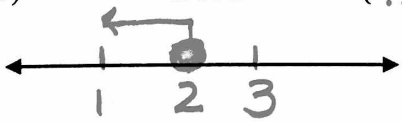
Name:_____

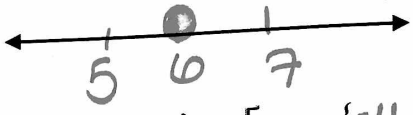
Unit 8 Inequalities Review Sheet

Examples – Graph each given inequality on the number line and state the solution set:

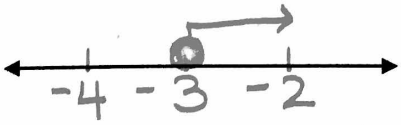
1) $x \le 2$ {...0, 1, 2}



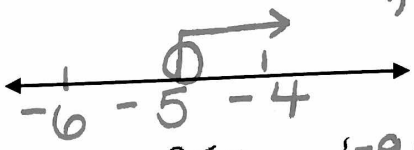
2) $x = 6$ { 6 }



3) $x \ge -3$ {-3, -2, -1...}

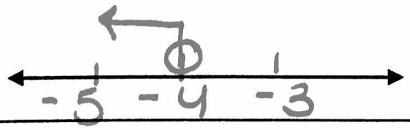


4) $x > -5$ {-4, -3, -2...}



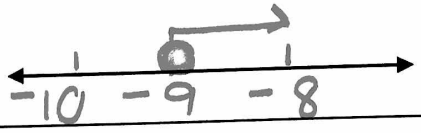
5) $-4 > x$ {...-7, -6, -5}

$x < -4$



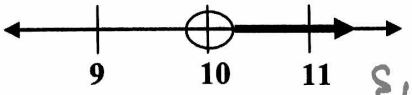
6) $-9 \le x$ {-9, -8, -7...}

$x \ge -9$



Examples – Write an inequality to represent the graph and state the solution set:

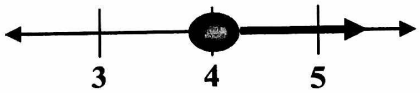
7)



$x > 10$

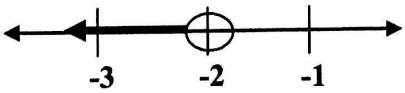
{11, 12, 13...}

8)



$x \ge 4$ {4, 5, 6...}

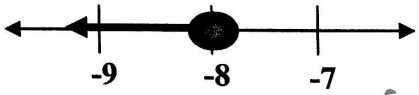
9)



$x < -2$

{...-5, -4, -3}

10)

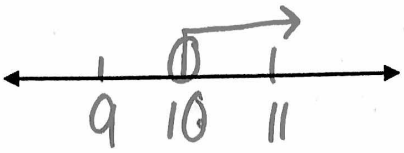


$x \le -8$ {...-10, -9, -8}

For each problem, write an inequality to describe the situation, and graph on a number line:

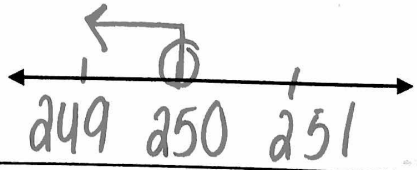
11) The number of hats (h) is greater than 10.

$h > 10$



12) The money earned (m) was less than $250.

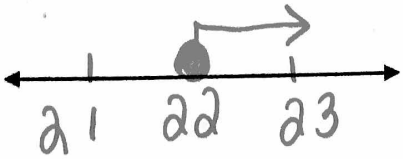
$m < 250$



13) 22 is less than or equal to the number of parts (p).

$22 \le p$

$p \ge 22$



14) 120 is greater than or equal to Ty's weight (w).

$120 \ge w$

$w \le 120$

Examples – Solve the inequality:

15) $x - 8 \le -11$

$+8 \quad +8$

$x \le -3$

16) $\frac{6x}{6} < \frac{30}{6}$

$x < 5$

17) $\frac{-5x}{-5} \le \frac{25}{-5}$

*Flip

$x \ge -5$

18) $(-5)\frac{x}{-5} < -2(-5)$

*Flip

$x > 10$

19) $-24 \ge \frac{1}{4}x$

$\frac{\frac{1}{4}x}{1/4} \le \frac{-24}{1/4}$

$x \le -96$

20) $9x - 11x > -18$

*Flip $\frac{-2x}{-2} > \frac{-18}{-2}$

$x < 9$

21) $-2x + x + 4 \ge -20$

$-1x + 4 \ge -20$

$-4 \quad -4$

*Flip

$-1x \ge -24$

$x \le 24$

22) $\frac{x}{3} - 9 > -15$

$+9 \quad +9$

$(3)\frac{x}{3} > -6(3)$

$x > -18$

23) $x + 12.67 > -9.25$

$-12.67 \quad -12.67$

$x > -21.92$

24) $27 + 3x \ge 6$

$-27 \quad -27$

$\frac{3x}{3} \ge \frac{-21}{3}$

$x \ge -7$

25) $1 < \frac{x}{-2}$

*Flip

$(-2)\frac{x}{-2} > 1(-2)$

$x < -2$

26) $x - \frac{1}{3} < \frac{3}{4}$

$+1/3 \quad +1/3$

$x < 1\frac{1}{12}$

Important Vocabulary:

At Most: $\le$

At Least: $\ge$

Translate the following inequalities:

27) Ryan needs to get at least a 92 to be on honor roll.

$R \ge 92$

28) Kait is going to the mall. She can spend at most $155.

$K \le 155$

29) Four less than two times a number is less than or equal to negative 5.

$2n - 4 \le -5$

30) Three times the sum of a number and 6 is at least 7

$3(n+6) \ge 7$

Translate and Solve the following inequalities:

31) Tom is going on a road trip with his friends and they need to rent a car. It costs $300 a week plus $0.20 per mile. What is the greatest number of miles they can travel in one week if they want to spend at most $555?

$300 + .20m \le 555$
$-300 \qquad -300$
$\frac{.20m}{.20} \le \frac{255}{.20}$
$m \le 1275$

1275 miles

32) Tyler needs at least $230 for a new WII system. He has already saved $55. He earns $8 an hour at his job. how many hours he will need to work to buy the system?

$55 + 8h \ge 230$
$-55 \qquad -55$
$\frac{8h}{8} \ge \frac{175}{8}$
$h \ge 21.875$
$h \ge 21\frac{7}{8}$

22 hours

33) Colleen and her brother went to the movies. They had $44 altogether and spent $10.50 per ticket. Colleen and her brother bought the same amount of money in snacks. What is the amount that each person spent on snacks.

$10.50(2) + 2S \le 44$
$21 + 2S \le 44$
$-21 \qquad -21$
$\frac{2S}{2} \le \frac{23}{2}$
$S \le 11.50$

$11.50

34) Mike and Audrey are planning to paint their house. The house has a surface area of 6,300 square feet. They know each can of paint covers 400 square feet.

a) Mike and Audrey must purchase at least how many cans of paint?

$\frac{400p}{400} \ge \frac{6300}{400}$
$p \ge 15.75$

b) What is the smallest number of cans of paint they can purchase?

16 cans

Mixed Review:

Unit 1 and 2:

35) State whether the number is Rational or Irrational:

a) 3 — R
b) -10 — R
c) 1.2345… — I
d) 3.14343… — I
e) $\frac{2}{3}$ — R

36) Simplify:

a) $2x - 5x + 10$
$-3x + 10$

b) $3(4x - 2) + 3x$
$12x - 6 + 3x$
$15x - 6$

c) $|-3 + 8|$
$|5|$
5

d) $-5(3x - 2) + 2x$
$-15x + 10 + 2x$
$-13x + 10$

37) Factor:

a) $\frac{4x}{4} - \frac{16}{4}$

$4(x-4)$

b) $\frac{36x}{12} + \frac{12}{12}$

$12(3x+1)$

c) $\frac{2}{3}x - 1\frac{1}{3}$

$\frac{2}{3}x - 4/3$

$\frac{2}{3}(x-2)$

Unit 3:

38) Solve for x:

a) $2.25 + 5x = 30$

$-2.25 \quad -2.25$

$\frac{5x}{5} = \frac{27.75}{5}$

$x = 5.55$

b) $2(x - 8) = 24$

$2x - 16 = 24$

$+16 \quad +16$

$\frac{2x}{2} = \frac{40}{2}$

$x = 20$

c) $5x - 8 = 3x + 20$

$-3x \quad -3x$

$2x - 8 = 20$

$+8 \quad +8$

$\frac{2x}{2} = \frac{28}{2}$

$x = 14$

Unit 4:

39) Simplify using rules of exponents:

a) $x^5 \cdot x^9$

x^{14}

b) $(-2x^4y^{-2})(5x^{-3}y^{-5})$

$-10xy^{-7} = \frac{-10x}{y^7}$

c) $x^5 \div x^5$

$x^0 = 1$

d) $3x^0$

$3(1)$

3

e) $(4x^6)^2$

$16x^{12}$

Unit 5:

40)

Minutes (x)	Cost (y)
2	$5.00
3	$9.00
4	$12.00
5	$15.00

$k = y/x$

$5/2 = 2.5$

$9/3 = 3$

Is the relationship proportional? NO

Explain The constant is not the same

Unit 6:

41) During hurricane Sandy, Mrs. Trombetta when to Bed Bath and Beyond and saw a 4 pack of candles for $5 and a 12 pack of candles for $14.40. Which pack is the better deal?

$\frac{\$5}{4}$ $\$1.25$

$\frac{\$14.40}{12}$ $\$1.20$

42) $\frac{3}{n} = \frac{18}{24}$

$\frac{18n}{18} = \frac{72}{18}$

$n = 4$

43) $\frac{4}{x-8} = \frac{8}{2}$

$8x - 64 = 8$

$8(x-8) = 8$

$8x - 64 = 8$

$+64 \quad +64$

$\frac{8x}{8} = \frac{72}{8}$

$x = 9$

44) There are 8 pencils in 2 boxes. How many boxes are needed for 20 pencils?

$\frac{8p}{2b} = \frac{20p}{x}$

$\frac{8x}{8} = \frac{40}{8}$

$x = 5$