

Name: Key

Date: _____

Directions: Show ALL work. Circle your final answer.Part I - Averages

1. Did Kyle average an A (93% - 100%) on his tests if he earned an 87%, 95%, 99% and 92%?

Yes

2. Sydney picked three songs to choreograph for a dance recital. One is 3 minutes long, the second is 7 minutes long, and the third is 4 minutes long. She still has one more song to pick for the recital. If she wants her average song length to be between 5 to 6 minutes, write an inequality to represent the length of her fourth song.

$$5 < \frac{3+7+4+x}{4} < 6$$

3. Tara earned the following grades on her tests: 72%, 78%, 80% and 81% and she has one more test to take. Write an inequality to show what must she earn to average at least 80%?

$$\frac{72+78+80+81+x}{5} \geq 80$$

Part II - Writing equations and inequalities - Write an equation or inequality to model each. Don't forget to identify the variables! Solve #4, 5, 10 and 11 on lined paper!

4. The sum of 3 consecutive integers is greater than 50.

 $n = \text{first \#}$

$$3n + 3 > 50$$

$$n = 16, 17, 18$$

5. Terry has \$100 and can save \$35 each week. How long will she have to save in order to have \$1000?

 $w = \text{\# weeks}$

$$100 + 35w = 1000$$

$$w = 26 \text{ weeks}$$

6. Mark is buying pants and shirts for back to school. Pants are \$35 each and shirts are \$15 each. How many of each can he buy if he wants to spend \$175?

 $p = \text{\# pants}$
 $s = \text{\# shirts}$

$$35p + 15s = 175$$

7. Jennie is downloading digital books and mp3's. The books are \$10 each and the songs are \$1.50 each. She wants to spend no less than \$75.

 $b = \text{\# books}$
 $s = \text{\# songs}$

$$10b + 1.50s \geq 75$$

8. The length of a rectangle is 8 less than twice the width. What width would allow the area to be at least 500 in²?

 $w = \text{width (in)}$

$$w(2w-8) \geq 500$$

9. The product of 2 consecutive odd integers is 300.

 $n = \text{first \#}$

$$n(n+2) = 300$$

10. A pool has 10,000 gallons of water and is being emptied at a rate of 15 gallons every minute. When will there no more than 5,000 gallons?

 $m = \text{\# mins.}$

$$10000 - 15m \leq 5000$$

$$m = \text{334 minutes}$$

11. The base of a rectangle is 3 more than half the height. What height would allow a perimeter of 100 inches?

 $h = \text{height}$

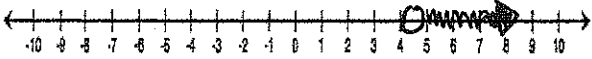
$$3h + 6 = 100$$

$$h = 31\frac{1}{3} \text{ in.}$$

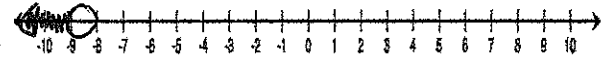
Part III – Inequalities

12. Graph each inequality on the number line provided.

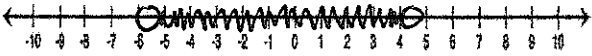
a. $x > 21/5$



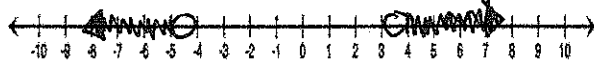
c. $x < -17/2$



b. c. $-40/7 < x < 23/5$

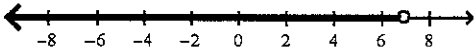


d. $-14/3 > x$ or $x > 18/5$



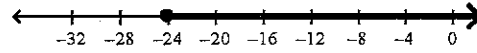
13. Write an inequality for each graph

a.



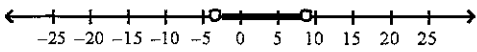
$x < 6.4$

d.



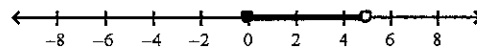
$x \geq -24$

b.



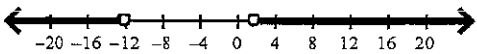
$-4 < x < 9$

e.



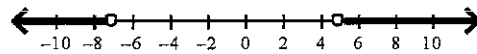
$0 \leq x < 5$

c.



$x < -12$ or $x > 2$

f.



$x < -7$ or $x > 5$

14. Solve and graph each inequality

a. $-4x \leq 18$

$x \geq -9/2$

b. $2(x-8) < 23$

~~$x < 19.5$~~
 $x < 19.5$

c. $2x + 9 - 5x \leq 12$

$x \geq -1$

d. $-1/2(x+4) > 9x - 4x$

$x < -4/11$

e. $x - 5 < -12$

$x < -7$

f. $x/6 > -2$

$x > -12$

g. $-3x - 12 > 9$

$x < -7$

h. $12x - 9 > 18x + 4$

$x < -13/6$

i. $4x + 7 > 9 + 4x$

NO solution

j. $3(8 - 2x) < 30 - 6x$

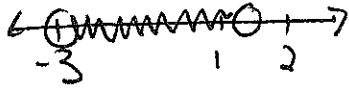
All real numbers

Part IV – Compound Inequalities

15. Solve and graph each inequality

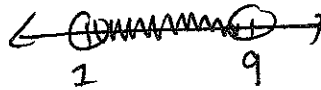
a. $-5 < 3x + 4 < 8$

$$-3 < x < \frac{4}{3}$$



b. $0 < 2(x-3) + 4 < 16$

$$1 < x < 9$$

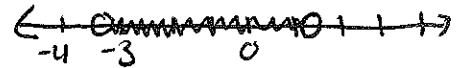


c. $-5 < -4x + 8 - 6x < 40$

$$1.3 > x > -3.2$$

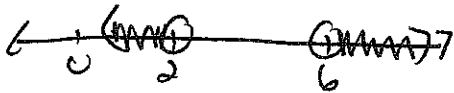
OR

$$-3.2 < x < 1.3$$



d. $4x < 8$ or $-3x < -18$

$$x < 2$$
 or $x > 6$



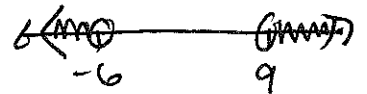
e. $4v + 3 < -5$ or $-2v + 7 < 1$

$$v < -2$$
 or $v > 3$



f. $\frac{3x+1}{4} - 4 > 3$ or $\frac{3-2x}{5} > 3$

$$x > 9$$
 or $x < -6$



Part VI: Review topics

16. Solve each equation

a. $12x - 18 = 14$

$$x = \frac{8}{3}$$

b. $3(x-8) + 2x = 3x - 1$

$$x = \frac{23}{2}$$

c. $\frac{x}{4} - 9 = 10$

$$x = 76$$

d. $7x - 9 = 2x + 15$

$$x = \frac{24}{5}$$
 or $4\frac{4}{5}$

e. $-2(8-5x) = 24$

$$x = -4$$

f. $24 - 8x + 15 = 30$

$$x = \frac{9}{8}$$
 or $1\frac{1}{8}$

g. $3x - 8 = 15 + 3x$

NO
Solution

h. $3(9 - 2x) = 5(4 - x) - 1x + 7$

$x = 0$

17. Let $f(x) = 3x^2 + 4x - 5$ and $g(x) = -3x - 8$

a. find $f(-2)$

$= -1$

b. find $g(8)$

$= -32$

c. find x if $g(x) = -20$

$x = 4$

d. find x if $g(x) = 16$

$x = -3$

e. find $f(x) + g(x)$

$3x^2 + x - 13$

f. find $f(x) - g(x)$

$3x^2 + 7x + 3$

g. find $\frac{1}{2} f(x)$

$\frac{3}{2}x^2 + 2x - \frac{5}{2}$

h. find $f(x) - 2g(x)$

$3x^2 + 10x + 11$

18. The price of a turkey depends on its weight. This can be modeled by the equation $P(w) = 1.59w + 3.00$; where $p(w)$ is the price of the turkey and w is the weight.

a. How much would a 12 pound turkey cost?

$C = \$22.08$

b. How much does the turkey weight if you pay \$13.52 for you turkey? Round to the nearest tenth.

$w \approx 6.6 \text{ lbs}$

19. The height of a ball thrown in the air can be modeled by the equation $h = -16t^2 + 12t + 2$, where height is the height of the ball in feet and t is the time in seconds. How high is the ball after 3 seconds?

$h = -106 \text{ ft}$

*The ball is on the ground
so height = 0 ft.

20. A music store is offering a coupon promotion on its CDs. The regular price for CDs is \$14. With the coupon, customers are given \$4 off the total purchase. The equation $t = 14c - 4$, where c is the number of CDs and t is the total cost of the purchase, models this situation. How many CD's must you buy for a total cost of \$80?

$c = 6 \text{ CDs}$