Double Block Algebra Name:

Retest assignment Show all work on lined paper, if needed.

1a. Tommy earned $42, $56, $47 and $51 the past four weeks. Did he meet his goal of earning an average of $48 each week?

yes

b. Tanya texted 87, 67, and 24 times over the last 3 days. If her cell phone plan allows for a 3-day average of 50 texts per day, did she go over her allowance?

yes

c. Marc earned 97%, 82%, 75%, 86% and a 90%. Did he average enough to get a B+ (87%)?

 no

**For #2 – 6 write an inequality or equation that models the situation. Make sure you define your variables if needed. Do not solve.**

2a. Joseph earned $42, $52, $67 and one other amount. He wants his mean earnings to be at least $55. $\frac{42+52+67+x}{4}\geq 55$ x is the other amount

b. Tammy scored 57, 59, 64, 68 and one other score. If she wants to average no more than 65, what does that last score need to be?

 $\frac{57+59+64+68+x}{5}\leq 65$ x is the other score

c. My family has members that are 62 in, 48 in, 57 in and one other height. The mean height is at least 53 inches tall. $\frac{62+48+57+x}{4}\geq 53$ x is the other height

3a. Amanda is working out in the gym and wants to burn 500 calories. She burns 50 calories an hour on the bike and 100 calories an hour on the treadmill. How long will she have to bike and walk to burn more than 1500 calories?

 50b + 100t >1500 b is the hours biking, t is the hours on treadmill

b. A manager of a restaurant is placing an order for food. Donuts cost $10 per dozen and soup costs $12 per gallon. How much food can the manager order if he wants to spend at most $180?

 10d + 12s <180 d is the # of dozens of donuts and s is the gallons of soup

c. Tom runs 12 mph and bikes 15 mph. How long should he run and bike if he wants to go more than 100 miles?

 12r + 15b > 100 r is the hours running and b is the hours biking

4a. Sarah has $300 in her bank account and saves $125 dollars every month. When will she have at least $1500?

 300 + 125m > 1500 m is the # of months

b. There are 1700 students at FHS currently. Each month, 3 additional students join the Fraser community. When will there be more than 1800 students?

 1700 + 3m > 1800 m is the # of months

c. Mark currently weighs 195 lbs and is losing 3 lbs, on average, each week. How long will it take him to weigh less than 175 lbs?

 195 – 3w < 175 w is the # of weeks

5a. The sum of 3 consecutive even integers is greater than 120.

 n + n + 2 + n + 4 > 120 n is the first integer

b. The sum of 2 consecutive odd integers is less than 100.

 n + n + 2 < 100 n is the first integer

c. The sum of 4 consecutive integers is 570.

 n + n + 1 + n + 2 + n + 3= 579 n is the first integer

6a. The width of a rectangle is 3 less than triple the length. What length would allow a perimeter of 300 cm?

 3L – 3 + 3L – 3 + L + L = 300 L is the length

b. The base of a parallelogram is 4 more than twice the height. What height would allow an area of 300 cm2?

 h(4 + 2h) = 300 h is the height

c. The base of a rectangle is three times the height. What dimensions would end up with a perimeter of less than 350 in?

 3h + 3h+ h + h < 350 h is the height

7. Graph each of the following:

a. x > 3/2 b. 5/3 < d c. r > 21/4

8. Graph:

a. x > -7/2 b. -19/3 > r c. d < -4

9. Write an inequality for each:

a.  b.  c.

 **x > 2 x < 9 x > -8**

**Solve and graph # 10 – 13**

10. a. x – 8 < 10 b. r + 6 > -7 c. x – 7 < -10

 x < 18 r > -13 x < -3

11. a. b. c.

m > 16 r > 21 d > -24

12. a. -3m > -21 b. 4r < 18 c. -5x < -35

m < 7 r < 4.5 x > 7

13. a. -3x – 8 < 32 b. -48 < 4x – 16 c. 3x + 8 > 27

x > -13.3 x > -8 x > 6.3

**Solve # 14 – 16**

14. a. 3(b + 7) > 32 b. -2(m – 7) < 24 c. 4(r – 3) > 48

b > 11/3 m > 5 r > 15

15. a. 15 + 8w > 3(w + 10) b. 8 + 15m < 2(w – 4) c. 6 + 12r > 4(r + 8)

w > 3 m < -1.23 r > 3.25

16. a. 12n – 8 < 13n + 7 b. 8x – 9 > 10x + 12 c. 5d + 8 < 9d – 12

-15 < n x < -10.5 d > 5

17. Solve and graph

a. -4 < 2x – 12 < 14 b. 3 < 5x + 12 < 27 c. -7 < 3x – 9 < 21

4 < x < 13 -1.8 < x < 3 0.67 < x < 10

18. Solve and graph:

a. 4x + 3 < -5 or -2x + 7 < 1 b. 6 – 2x > 7 or 2x – 3 > 5 c. 3x – 1 < -7 or 4x + 1 > 9

x < -2 or x > 4 x < 0.5 or x > 4 x < -2 or x > 2

19 and 20. Solve each equation or inequality.

a. 3x – 9 > 15 + 3x b. 5(2x – 7) < 42 + 10x c. 4(3x – 8) > 2(6x – 16)

no solution all real numbers no solutions

d. 8x – 9 = 3x – 4 + 5x – 5 e. 6(4x – 8) = 20x + 40 + 4x f. 4(3x + 9) = 36 + 12x

all real numbers no solutions all real numbers

**Solve #21 – 24.**

21. a. b. c.

m = -3 ½ r = 6 w = -5 2/3

22. a. 6x – 8 = 4x – 12 b. 8x + 15 = 3x – 20 c. 5x – 12 = 8x + 10

x = -2 x = -7 x = -7 1/3

23. a. 12 – 26 + 7m = 42 b. 12x – 17 + 23 = 38 c. 13x – 7 + 2x = -56

m = 8 x = 2 2/3 x = -3.27

24. a. 2(x + 5) = 24 b. 3(x – 8) = 28 c. -4(x + 3) = 36

x = 7 x = 17 1/3 x = -12

25. a. f(x) = (x – 2)2 + 4. Find f(-5) b. g(x) = 3x2 – 8. Find g(-5). c. h(x) = (x + 4)2 – 7. Find h(3).

 53 67 42

26. a. f(x) = 3x – 7. Find x if f(x) = 32 b. g(r) = 5m + 9. Find r if g(r) = 17 c. h(n) = 8n – 3. Find n if h(n) = -12

x = 13 r = 1 3/5 n = -1 1/8

27 and 35.

a. A sample of 400 ladybugs increases at a rate of 45 ladybugs each week. This can be modeled by the function n(w) = 400 + 45w, where w is the number of weeks you have the ladybugs and n(w) is the number of ladybugs. According to the model, how many weeks have gone by if you have 700 ladybugs?

6.67 weeks or 6 2/3 weeks

b. Tommy has $85 in his account and deposits $23 each week. This situation can be represented by the equation a = 85 + 23w where a is the amount in the account and w is the number of weeks. How many weeks does it take Tommy to have $500?

18.04 weeks

c. A balloon is falling at a rate of 4 feet per minute. It is initially 120 feet above the ground. This scenario can be modeled by the function h(t) = 120 – 4t where h(t) is the height of the balloon and t is the time in minutes. When will it be 50 feet above the ground?

17.5 minutes or 17 ½ minutes or 35/2 minutes

28 and 34

a. Students in an algebra class have bought a 25 lb bag of candy and are eating it at a rate of .45 lbs per hour. This situation is represented by the equation c = 25 - .45h, where c is the amount of candy left and h is the number of hours they are eating it. How much candy will they have left after 12 hours?

19.6 lbs of candy

b. The height of a basketball being thrown at 14 ft/sec from 5 feet off the ground is modeled by the function h(t) = -7t2 + 2.1t + 5, where h is the height in feet and t is the time in seconds that the ball is in the air. According the model, what is the height after 1.5 seconds?

-7.6 feet, so really on the ground

c. The number of bacteria doubles every hours. If you begin with 250 bacteria, this situation can be modeled by the function b(t) = 250(2)t , where b(t) is the number of bacteria and t is the number of hours. How many bacteria will there be after 5 hours? 8000 bacteria

**For problems 29 - 33, let f(x) = 5x – 4, g(x) = 3x2 – 7x + 5, and h(x) = 15 – 8x. Simplify each expression.**

29a. f(x) + g(x) b. g(x) + h(x) c. h(x) + f(x)

3x2 – 2x + 1 3x2 – 15x + 20 -3x + 11

30a. f(x) – g(x) b. g(x) – h(x) c. h(x) – f(x)

-3x2 + 12x – 9 3x2 + 1x – 10 -13x + 19

31a. -f(x) b. -g(x) c. -h(x)

-5x + 4 -3x2 + 7x – 5 8x – 15

32a. – ½ f(x) b. 1/3 g(x) c. – ¾ h(x)

-5/2 x + 2 x2 – 7/3 x + 5/3 6x – 45/4

33a. 2f(x) + g(x) b. g(x) + 3h(x) c. 4h(x) + 2f(x)

3x2 + 3x – 3 3x2 – 31x + 50 -22x + 52

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| --- | --- | --- | --- |
|  | Tom’s money can be modeled by the equation m(d) = 8d + 250, where m(d) is his money and d is days. | The height of a plant can be modeled by the equation h(t) = 15 + 2.5t, where t is time (days) and h(t) is the height in cm. | The distance to a ball is modeled by the equation d(t) = 4200 – 3t, where t is time (sec) and d(t) is distance. |
| 36. | a. How much will he have after 3 weeks?$418 | b. How tall will the plant be after 2 weeks?50 cm | c. How far will the ball be after 3 minutes?3660 |
| 37. | a. How many weeks will it take to have $500?31.25 days = 4.46 weeks | b. If it is 100cm tall, how many weeks was it?34 days = 4.86 weeks | c. How many minutes does it take the ball to hit the ground?1400 sec = 23.33 minutes |

Constructed Response ReTEST assignment

**For #1 and 2, define your variables and write an equation or inequality to model the scenario. Do not solve. For #2, draw and label the shape.**

1a. Amanda is buying shoes ($75 each) and socks ($3 each). How many could she buy if she wants to spend no more than $350?

 h = # of shoes, k = #of socks 75h + 3k < 350

b. A caterer is placing an order for food. Steak cost $9 per pound and shrimp costs $12 per pound. How much food can the caterer order if she wants to spend at most $350?

s = lbs of steak, h = lbs of shrimp 9s + 12h < 350

c. Tom walks at 2 mph and jogs at 5 mph. For how long should he walk and jog if he wants to go more than 20 miles?

 w = hrs walking, j = hrs jogging 2w + 5j > 20

2a. The width of a rectangle is 6 more than four times the length. What length would allow a perimeter of 1000 cm?

 L is length, W is width 6 + 4L + 6 + 4L + L + L = 1000

 L

 W = 6 + 4L

b. The base of a parallelogram is 10 less than twice the height. What height would allow an area of 1500 cm2?

b = base, h = height h(2h – 10) = 1500 h

 b = 2h - 10

c. The base of a rectangle is five times the height. What dimensions would end up with a perimeter of less than 400 inches?

 b = base, h = height 5h + 5h + h + h < 400 h

 b = 5h

**For each scenario, define your variables, write an equation or inequality, and solve it. Then answer the question.**

3a. The sum of 3 consecutive even integers is 102. What are they?

b. The sum of 2 consecutive odd integers is 100. What are they? c. The sum of 3 consecutive integers is 51. Find them.

n = first integer

n + n + 2 + n + 4 = 102

92, 94, and 96

4a. Joseph earned $37, $49, $58 and one other amount. What must the last one be if he wants his mean earnings to be at least $50?

x = other amount

$$\frac{37+49+58+x}{4}\geq 50$$

x > 56

n = first integer

n + n + 2 = 100

49 and 51

b. Tammy scored 91, 79, 32, 87 and one other score. If she wants to average no more than 70, what does that last score need to be?

x= other score $\frac{91+79+32+87+x}{5}\leq 70$

x < 61

n = first integer

n + n + 1 + n + 2 = 51

16, 17 and 18

c. My family has members that are 60 in, 47 in, 59 in and one other height. What is the remaining height if the mean is 53 inches tall?

x = other height

$$\frac{60+47+59+x}{4}=53$$

x = 46

**5. Solve and graph**

a. 3x – 25 – 15x + 32 > 25 – 2(5x – 10) b. 37 – 4(3x – 10) > 14x – 9 + 7x + 23

-19 > x 21/11 > x