Algebra 1 Name _____ ID: 3

2014-2015 Final Study Guide

Date _____ Period ____

Solve each equation.

1) $11 + 8x = 3 + 8(1 + 5x)$

2) $x - 27 = -5(-6 - 4x)$

3) $2\frac{2}{3}\left(x - 1\frac{1}{2}\right) = \frac{8}{5}$

4) $-\frac{2}{3}k + \frac{9}{5} = \frac{56}{45}$

5) $\frac{|-5 + m|}{5} = 1$

6) $\left|\frac{r}{9}\right| + 6 = 7$

Write and solve an equation to answer the question.

7) Doug Upp can shovel coal at the rate of 16 tons per day. Three days later, Sid joins him and digs at a rate of 10 tons per day, while Doug continues at the same rate of 16 tons per day.
a) Write and solve an equation to find out how long Doug has been shoveling when the total number of tons shoveled is 100.
b) How many of those 100 tons did each person shovel?

8) Moe Tell starts washing dishes at the Greasy Spoon Cafe at a rate of 9 dishes per minute. Fifteen minutes later Fran Tick joins him, washing at a rate of 16 dishes per minute, and both wash until all the dishes are done.
a) Write and solve an equation to find out how long Moe has been washing dishes where the total number of dishes washed is 760.
b) How many of the 760 dishes did each person wash?

Write and solve a system of equations to answer the question.

9) Aliyah and James are selling pies for a school fundraiser. Customers can buy blueberry pies and pumpkin pies. Aliyah sold 8 blueberry pies and 5 pumpkin pies for a total of $213. James sold 6 blueberry pies and 12 pumpkin pies for a total of $300. What is the cost each of one blueberry pie and one pumpkin pie?

10) At a professional basketball game, the turnstile showed the 17,406 people paid admission. The total cash received was $133,372. Without actually counting the ticket stubs, find out how many paid for reserve seats ($10.00 each) and how many paid for general admission ($6.00 each).

Solve each inequality.

11) $-10 + \frac{b}{10} \leq -9$

12) $-8(-10 + v) > 144$

13) $|a + 4| + 5 < 7$

14) $\left|\frac{b}{5}\right| - 6 \leq -4$

Find the slope of the line through each pair of points.

15) $(7, 6), (13, -18)$

16) $(-16, 16), (0, 14)$

Solve each system by elimination.

17) $x + 5y = 14$
$-x - y = -6$

18) $-x - 4y = 10$
$x - y = 10$

Simplify. Your answer should contain only positive exponents.

19) $\frac{x^{-4}y^4}{(xy^2)^2}$

20) $\frac{(-x^{-2})^2}{x^4y^{-3}}$

Factor each completely.

21) $5m^2 - 18m - 35$

22) $2b^2 + 5b - 42$

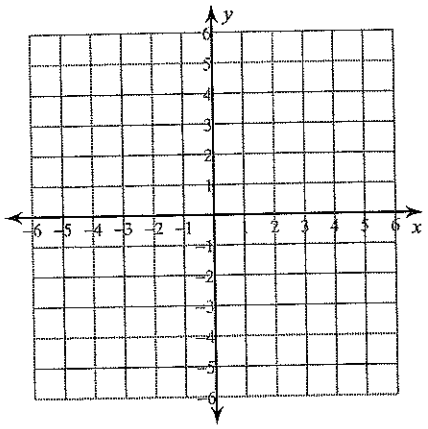
Simplify each difference.

23) $(8n^2 + 5n - 5n^4) - (7n^2 + 1 - 8n)$

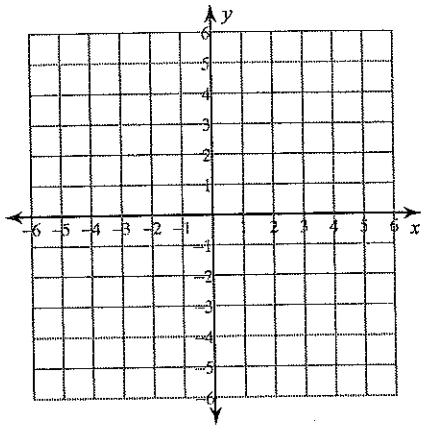
24) $(6x^2 + 8x^4 + 3) - (2 - 3x^2 + 5x^4)$

Graph. Label the intercepts.

25) $x + y = 2$



26) $2x - y = 0$



Write the slope-intercept form of the equation of the line described.

27) through: $(-3, -3)$, parallel to $y = \frac{7}{8}x + 5$

28) through: $(-5, 1)$, perp. to $y = -\frac{5}{4}x + 5$

Simplify.

29) $\frac{2\sqrt{6}}{3\sqrt{24}}$

30) $\frac{4\sqrt{5}}{4\sqrt{80}}$

Solve each equation by factoring completely, if possible, or quadratic formula. Round to the nearest hundredths if necessary.

31) $2x^2 = 11x - 3$

32) $-5p^2 + 22 = 12p + 7 + 6p^2$

33) $0 = -5x^2 - 9x + 2$

34) $2n^2 - 105 = n$

Simplify each and state the excluded values.

35) $\frac{15p - 24}{9p - 30}$

36) $\frac{24a + 48}{24a - 48}$

Name each polynomial by degree and number of terms.

37) $-3x^3 + 6x^4 + 6x^6$

38) $-9a^5 + 3$

Find the GCF of each.

39) $48y^2x, 32x^2y$

40) $63, 54v$

State the quadrant or axis that each point lies in.

41) $J(-2, 8)$ $K(-10, -3)$ $L(3, 8)$

42) $T(-9, 6)$ $U(4, 1)$ $V(3, -4)$

State if the three sides lengths form a right triangle.

43) 17, 144, 145

44) 105, 140, 171

Systems of Equations -Word Problems

1. Mr. Wolensky and Mrs. Decker are preparing for their next unit and need a few supplies. Mr. Wolensky goes to Target and spends $60 on 6 flags and 14 Declaration of Independence books. Mrs. Decker goes to Walmart and spends $9 on 1 flag and 2 Declaration of Independence books. What is the cost of 1 flag and 1 Declaration of Independence books?
2. Since Mrs. Roth is a math teacher, she has two favorite numbers instead of one. The sum of the two numbers is 49. Their difference is 5. What are her two favorite numbers?
3. Mr. Thaker secretly owns a huge farm on the outskirts of West Chester. In one pasture, he keeps the chickens with the pigs. When he's taking inventory, the animals won't stop moving, but he counted 100 heads and 270 legs. How many chickens and pigs were there?
4. Over spring break, the teachers at Stetson plan to go to HersheyPark together. The teachers at Fugett hear about it and decide to go too. The teachers at Stetson rented and filled 4 cars and 6 vans with a total of 62 teachers. The teachers at Fugett filled 5 cars and 5 vans with a total of 60 teachers. Find the number of teachers each car and van can hold.
5. Mr. Stolzer used to work at the Regal Cinemas when she was in high school She was in charge of letting the manager know how many tickets were sold each night. One Saturday it was slow there were a total of 325 tickets sold and the total amount of money earned was $2675. If adults were charged $9.00 and children were charged $7.00, how many of each type of ticket were sold on that Saturday?
6. In a parking lot, there are 26 cars and motorcycles. If there are a total of 94 wheels, how many of each kind of vehicle are present? (You should assume that all cars have 4 wheels and all motorcycles have 2 wheels.)
7. There are pencils and pens in a bag. There are a total of 15 pencils and pens. Pencils cost $0.50 and pens cost $0.75 at the store. If you spend a total of $9.50, how many of each can you buy?
8. Mrs. Holladay has an addition to chocolate and attends weekly chocolate lovers meetings. Every meeting, attendees receive a bag of Hershey's Kisses and miniature Hershey's bars. Kisses contain 26 calories and miniatures contain 42 calories. If you were to eat the entire bag of 8 candies, you would consume 240 calories. How many of each candy is in the bag?
9. Mr. Froio likes to knit. He brings hot pink knitting bag to school and inside there are ten pieces of yarn. Some are 8" blue pieces and some are 5" pink pieces. Determine how many of each color are in the bag if they measure a total of 68."
10. During a long weekend, Mrs. Schechterly watched 8 TV shows. Short shows were 30 minutes and long shows were 60 minutes. If she spent 5 hours watching TV, how many short and long shows did she watch?
11. When Ms. Claffy opens her wallet, she counts a total of $105. She only has $20 bills and $5 bills. If she has three times as many $5 bills as $20 bills, how many of each does she have?

Writing Linear Equations (in Slope-Intercept Form)

Write an equation for the line that is perpendicular to the given line and that passes through the given point.

13. $(6,4); y = 3x - 2$
14. $(-5,5); y = -5x + 9$
15. $(-1,-4); y = \frac{1}{6}x + 1$
16. $(1,1); y = -\frac{1}{4}x + 7$
17. $(12,-6); y = 4x + 1$
18. $(0,-3); y = -\frac{4}{3}x - 7$

Write an equation for the line that is parallel to the given line and that passes through the given point.

22. $(3,4); y = 2x - 7$
23. $(1,3); y = -4x + 5$
24. $(4,-1); y = x - 3$
25. $(4,0); y = \frac{3}{2}x + 9$
26. $(-8,-4); y = -\frac{3}{4}x + 5$
27. $(9,-7); -7x - 3y = 3$

Name_____ Geometry Worksheet Slope

Find the slope between the two lines, then determine whether the lines are *parallel*, *perpendicular* or *neither*.

1) Line 1: (0,3) and (2, 4)
   Line 2: (2, 1) and (8, 4)

2) Line 1: (-1, 3) and (0, 5)
   Line 2: (2, 1) and (6, -1)

3) Line 1: (-1, 3) and (4, 4)
   Line 2: (3, 1) and(-2, 2)

4) Line 1: (0, -3) and (-2, -7)
   Line 2: (2, 1) and (0, 3)

5) Line 1: (-2, 2) and (1, -3)
   Line 2: (-2, 1) and (3, 4)

6) Line 1: (-2, 5) and (1, 4)
   Line 2: (4, 0) and (5, 3)

Write each set notation in Interval notation. The 1st two are done for you.

1. $-3 < x \leq 5 = (-3, 5]$
2. $x > 0 = (0, \infty)$
3. $x = -1$
4. $-2 \leq x \leq 4$
5. $x \leq -3$
6. $-7 < x < 5$
7. $x < -3$
8. all real #s
9. $-3 < x < 4$
10. $-3 \leq x < 1$
11. $x = 0$
12. $0 \leq x \leq 6$
13. $-4 < x < 5$
14. $-7 < x < 0$
15. $x \leq 5$
16. $-4 \leq x \leq 4$
17. $x = 4$
18. $-6 \leq x < 6$
19. $-2 < x < 6$
20. $x \leq 0$
21. $0 \leq x \leq 1$
22. $-5 < x \leq -1$
23. $x \geq 2$
24. $-6 \leq x < 3$
25. $x = 3$
26. $-7 < x < 2$
27. $2 < x \leq 5$
28. $x \geq -5$
29. $x < 4$
30. $x = 1$

Find the best fit line for the data using a graphing calculator.

① Enter data.
[STAT] → 1: Edit → [ENTER]
x's in L1
y's in L2

② Calculate line
[STAT] → Calc (using ▶) → 4: LinReg → [ENTE

③ TI 84: Xlist: L1
Ylist: L2
▼ to calculate → [ENTER]
TI 83: LinReg (L1, L2) → [ENTER]

④ a = slope
b = y-intercept

①

x	y
1	7
2	5
3	-1
4	3
5	-5

②

x	y
1	6
2	15
3	-5
4	1
5	-2

③

x	y
1	5
4	8
8	3
13	10
19	13

④

x	y
12	28
15	50
18	14
21	28
24	36

⑤

x	y
1	17
2	20
3	22
4	26
5	28
6	31

⑥

x	y
1	18
2	20
3	24
4	30
5	28
6	33

Answers to 2014-2015 Final Study Guide (ID: 3) pg 1-2

1) $\{0\}$ 2) $\{-3\}$ 3) $\left\{\frac{21}{10}\right\}$ 4) $\left\{\frac{5}{6}\right\}$

5) $\{10, 0\}$ 6) $\{9, -9\}$

7) a) 5 days; b) Sid shoveled 20 tons, Doug shoveled 80 tons

8) a) 40 minutes b) Moe washed 360 dishes and Fran washed 400 dishes

9) blueberry pie: \$16, pumpkin pie: \$17

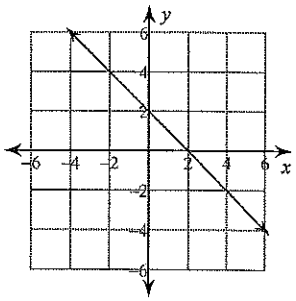
10) 7,234 reserved and 10,172 general admission

11) $b \le 10$ 12) $v < -8$ 13) $-6 < a < -2$ 14) $-10 \le b \le 10$

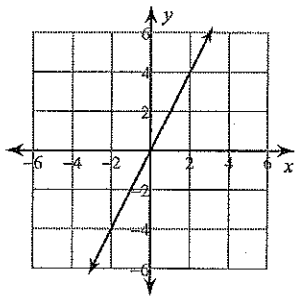
15) -4 16) $-\frac{1}{8}$ 17) $(4, 2)$ 18) $(6, -4)$

19) $\frac{1}{x^6}$ 20) $\frac{y^3}{x^8}$ 21) $(5m+7)(m-5)$ 22) $(2b-7)(b+6)$

23) $-5n^4 + n^2 + 13n - 1$ 24) $3x^4 + 9x^2 + 1$ 25)



26)



27) $y = \frac{7}{8}x - \frac{3}{8}$ 28) $y = \frac{4}{5}x + 5$

29) $\frac{1}{3}$ 30) $\frac{1}{4}$ 31) $\{5.212, 0.288\}$ 32) $\{-1.834, 0.743\}$

33) $\{0.2, -2\}$ 34) $\{7.5, -7\}$ 35) $\frac{5p-8}{3p-10}$; $\left\{\frac{10}{3}\right\}$ 36) $\frac{a+2}{a-2}$; $\{2\}$

37) sixth degree trinomial 38) quintic binomial 39) $16yx$

40) 9 41) J: II K: III L: I 42) T: II U: I V: IV 43) Yes

44) No

pg 3 Word Problems

1. Flags \$3
   Dec. \$3

2. 22 and 27 are favorite #s

3. 65 chickens and 35 pigs

4. Cars hold 5 people
   vans hold 7 people

5. 200 adult
   125 children

6. 21 cars
   5 motorcycles

7. 7 pencils
   8 pens

8. 6 Hershey kisses
   2 mints

9. 6 blue
   4 pink

10. 6 short shows
    2 long shows

11. 3 \$20 Bills
    9 \$5 Bills

pg 3 Equations

13. $y = -\frac{1}{3}x + 6$
14. $y = \frac{1}{3}x + 6$
15. $y = -6x - 10$
16. $y = 4x - 3$
17. $y = -\frac{1}{4}x - 3$
18. $y = \frac{3}{4}x - 3$
22. $y = 2x - 2$
23. $y = -4x + 7$
24. $y = x - 5$
25. $y = \frac{3}{2}x - 6$
26. $y = -\frac{3}{4}x - 10$
27. $y = -\frac{7}{3}x + 14$

1-3

ANSWERS

Name_____ Geometry Worksheet Slope

Find the slope between the two lines, then determine whether the lines are *parallel*, *perpendicular* or *neither*.

1) Line 1: (0,3) and (2, 4)
Line 2: (2, 1) and (8, 4)

Line 1 $m = \frac{1}{2}$
Line 2 $m = \frac{3}{6} = \frac{1}{2}$
Parallel

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2) Line 1: (-1, 3) and (0, 5)
Line 2: (2, 1) and (6, -1)

Line 1 $m = \frac{2}{1} = 2$
Line 2 $m = \frac{-2}{4} = -\frac{1}{2}$
Perpendicular

---

3) Line 1: (-1, 3) and (4, 4)
Line 2: (3, 1) and(-2, 2)

Line 1 $m = \frac{1}{5}$
Line 2 $m = \frac{1}{-5}$
Neither

---

4) Line 1: (0, -3) and (-2, -7)
Line 2: (2, 1) and (0, 3)

Line 1 $m = \frac{-4}{-2} = 2$
Line 2 $m = \frac{2}{-2} = -1$
Neither

---

5) Line 1: (-2, 2) and (1, -3)
Line 2: (-2, 1) and (3, 4)

Line 1 $m = \frac{-5}{3}$
Line 2 $m = \frac{3}{5}$
Perpendicular

---

6) Line 1: (-2, 5) and (1, 4)
Line 2: (4, 0) and (5, 3)

Line 1 $m = \frac{-1}{3}$
Line 2 $m = \frac{3}{1}$
Perpendicular

Answers

Write each set notation in Interval notation. The 1st two are done for you.

1. $-3 < x \leq 5 = (-3, 5]$
2. $x > 0 = (0, \infty)$
3. $x = -1$ $[-1, -1]$
4. $-2 \leq x \leq 4$ $[-2, 4]$
5. $x \leq -3$ $(-\infty, -3]$
6. $-7 < x < 5$ $(-7, 5)$
7. $x < -3$ $(-\infty, -3)$
8. all real #s $(-\infty, \infty)$
9. $-3 < x < 4$ $(-3, 4)$
10. $-3 \leq x < 1$ $[-3, 1)$
11. $x = 0$ $[0, 0]$
12. $0 \leq x \leq 6$ $[0, 6]$
13. $-4 < x < 5$ $(-4, 5)$
14. $-7 < x < 0$ $(-7, 0)$
15. $x \leq 5$ $(-\infty, 5]$
16. $-4 \leq x \leq 4$ $[-4, 4]$
17. $x = 4$ $[4, 4]$
18. $-6 \leq x < 6$ $[-6, 6)$
19. $-2 < x < 6$ $(-2, 6)$
20. $x \leq 0$ $(-\infty, 0]$
21. $0 \leq x \leq 1$ $[0, 1]$
22. $-5 < x \leq -1$ $(-5, -1]$
23. $x \geq 2$ $[2, \infty)$
24. $-6 \leq x < 3$ $[-6, 3)$
25. $x = 3$ $[3, 3]$
26. $-7 < x < 2$ $(-7, 2)$
27. $2 < x \leq 5$ $(2, 5]$
28. $x \geq -5$ $[-5, \infty)$
29. $x < 4$ $(-\infty, 4)$
30. $x = 1$ $[1, 1]$

Answers

Find the best fit line for the data using a graphing calculator.

① Enter data
STAT → 1: Edit → ENTER
x's in L1
y's in L2

② Calculate line
STAT → Calc (using ▶) → 4: LinReg → ENTE

③ TI 84: xlist: L1
ylist: L2
▼ to calculate → ENTER
TI 83: LinReg (L1, L2) → ENTER

④ a = slope
b = y-intercept

①

x	y
1	7
2	5
3	-1
4	3
5	-5

$y \approx -2.6x + 9.6$

②

x	y
1	6
2	15
3	-5
4	1
5	-2

$y \approx -3x + 12$

③

x	y
1	5
4	8
8	3
13	10
19	13

$y \approx 1.8x + 2.4$

④

x	y
12	28
15	5[illegible]
18	14
21	28
24	36

$y \approx -.6x + 3$[illegible]

⑤

x	y
1	17
2	20
3	22
4	26
5	28
6	31

$y \approx 2.8x + 14.2$

⑥

x	y
1	18
2	20
3	24
4	30
5	28
6	33

$y \approx 3x + 15$