

Opener

$$Ax + By = C$$

Altogether Jeidan has 25 hardback and paperback books.

1. Define your variables. $h = \text{hardback}$ $p = \text{paperback}$
2. Write an equation representing his library. $h + p = 25$
3. Hardbacks are \$5 and paperbacks are \$2. Write an equation for \$95 worth of books.

$$5h + 2p = 95$$

Questions on 2D Writing Story Problems

2D Writing Story Problems

Name: _____ Per: _____

SHOW YOUR WORK ONLY IN PENCIL. NO WORK NO CREDIT.

Write an equation in Slope-intercept Form for the following situations.



1. Grandma gives Brooklyn a piggy bank with \$25 when she was born. Every year, on her birthday, Brooklyn puts a \$20 in her bank.
 - a. What variables best represent what you need to know (not x and y)? _____
 - b. Define those variables. _____
 - c. Write an equation to tell how much money Brooklyn will have in any given year. _____
 - d. If Brooklyn never used or added more money to the piggy bank, how much money would Brooklyn have in bank on her 15th birthday? _____

2. On your trip to Hawaii you need to rent a convertible. There is a charge for each rented car of \$30 for insurance and the daily cost is \$90 every day.
 - a. What variables represent what you need to know? _____
 - b. Define those variables: _____
 - c. Write an equation to show the total cost to rent the convertible. _____
 - d. If you rented the convertible for 3 days, how much would you need to pay? _____
 - e. If you were charged \$480, how many days did you rent the car? _____



3. Felix is having a birthday party. It costs \$50 to go bowling. He will need shoes at a cost of \$4 for the pairs of rental shoes for each of his friends.
 - a. What variables represent what you need to know? _____
 - b. Define those variables: _____
 - c. Write an equation to show the total cost of his party. _____
 - d. If the party cost \$82, how many people went bowling? _____
 - e. If you had 11 friends come, how much would it cost? _____

Write an equation to answer the questions. Try not to use "x" and "y".

Grandpa just celebrated a birthday at Kneaders and ordered a pumpkin pie for \$12.

- a. What variable(s) represent what you need to know? _____
- b. Define those variable(s): _____
- c. Write the equation that shows how old he is if 400 reduced by twice his age is an unknown number?

- d. How old will he be if the number is 244? _____

x2ec

5. You played a game of basketball with your friends. You scored a total of 53 points (no three points shots). A basket is good for 2 points and free throw 1 point.
 - a. Define your variables _____
 - b. Write an equation. _____
 - c. If you make 23 baskets (2 points each), how many free throws did you make? _____
6. Alex, Bob and Charlie went to Smith's. Each bought a drink for d dollars and a pack of gum for \$2. All together they spent a total of \$24.
 - a. Write an equation to represent the situation. _____
 - b. Solve for d to find the cost of each drink.

Write an equation in **Standard Form** ($Ax + By = C$) for the following situations.

7. You buy 5 hamburgers in a restaurant, and 4 shake. You spend exactly \$36. Let h represent the cost of hamburgers, and s represent the cost of shakes.
- Write an equation to represent the situation. _____
 - If shakes cost \$3.50 each, how much did each hamburger cost. _____
8. A 100-point test has " t " true and false questions worth 2 points apiece and " m " multiple choice questions worth 4 points apiece.
- What do the variables stand for: $t =$ _____, $m =$ _____
 - Write an equation that describes all possible numbers of questions on the test. _____
 - If you have 24 multiple choice questions, how many true and false questions will there be? _____
9. On Saturday, I went to McDonalds with my friends and spent \$24. It took us 15 minutes to ride our bikes there. We bought three drinks and six burgers.
- Write an equation _____
 - Solve your equation for the cost of each burger.
 - If each drink cost \$1, how much was each burger? _____

Solve for y and simplify for an exact answer

10. $2y^3 + 2 = 18$

12. $3(2 + y^2) - 2 = 40$

13. $-2 + 2(y^2 - 5) = 6 + y^2$

12. $\frac{y+9}{10} = \frac{2}{8}$

13. $\frac{7y-1}{4} = \frac{3}{10}$

$$\cancel{3}(y-3) \quad 14. \frac{7}{4} = \frac{4}{y-3} \quad \cancel{4}(3)$$

$$7(y-3) = 4 \cdot 3$$

15. $\left|\frac{y}{7}\right| = 5$

16. $\frac{|-8-8y|}{6} = 5$

17. $|y - 5| = 7$

18. $2 = -4 + \sqrt{a}$

19. $-7\sqrt{2a+9} = -35$

20. $2\sqrt{\frac{h}{4}} = 6$



Grade 2D Writing Story Problems

Lesson 2E: Getting Ready

Mark is purchasing a new computer. The cost of the computer is \$2400 after tax. He will make monthly payments of \$150.

Rate of Change Problem: $y = mx + b$

$$m = -150$$

$$b = 2400$$

a) Define your variables

$$y = \text{Amt to pay off} \quad x = \# \text{ of months}$$

b) Write an equation which describes the balance on the account after any given number of months.

$$y = -150x + 2400$$

c) How long will it take Mark to pay off the balance?

$$0 = -150x + 2400$$

$$-2400 = -150x$$

$$16 = x \quad 16 \text{ mos.}$$

Rate of Change Problem: $y = mx + b$

Passengers on a commercial flight are able to make in-flight calls using the built-in telephone system. The calls cost \$3 to connect plus \$1.85 each minutes.

$t =$ price of phone call, $n =$ # of minutes

a) Define you variables.

$$t = 1.85x + 3$$

b) Write an equation that represents the total cost t , to make a call which lasts n number of minutes.

c) How much will he be charged if he made a 5 minute call?

$$t = 1.85(5) + 3 = 8.55$$

Total Cost: \$8.55

You are running a concession stand at the basketball game. You sell hot dogs for \$1 and sodas for \$0.50. At the end of the night, you made \$200. Let x represent the number of hot dogs sold and y represent the number of sodas sold.

Define your variables.

$$h = \text{hotdogs}, s = \text{sodas}$$

Write your equation.

$$1h + .5s = 200$$

You know you sold 100 hotdogs, how many sodas did you sell?

$$100 + .5s = 200$$

$$.5s = 100$$

$$s = 200$$

200 Sodas Sold

Standard Form
 ~~$Ax + By = C$~~

Solve the following. List the ENTIRE NAME of your properties to the side.

$$\frac{6(c^2 + 3)}{6} = \frac{144}{6}$$

$$c^2 + 3 = 24$$

$$\frac{-3}{-3} \quad \frac{-3}{-3}$$

$$\sqrt{c^2} = \sqrt{21}$$

$$c = \pm \sqrt{21}$$

Given

Reflexive w/ Division Prop.
of Equality

Reflexive w/ Addition
Property of Equality

Square Root

Write an equation and solve to answer the question. Then check your answer.

Ten less than three times a number is the same as 4 and that number.

$$\begin{array}{r} 3n - 10 = 4 + n \\ -n \qquad \qquad -n \end{array}$$

$$2n - 10 = 4$$

$$2n = 14$$

$$n = 7$$

$$\begin{array}{l} \text{Check: } 3(7) - 10 = 4 + 7 \\ 21 - 10 = 11 \\ 11 = 11 \checkmark \end{array}$$

Solve for y . List the slope and y -intercepts.

$$-x - 6y = 2 + 4(y - 10)$$

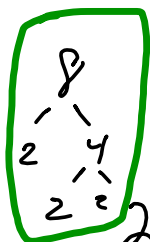
$$-x - 6y = 2 + 4y - 40$$

$$-x - 6y = 4y - 38$$

$$\frac{-10y}{-10} = \frac{x - 38}{-10}$$

$$y = \frac{1}{10}x + \frac{19}{5}$$

Simplify the following roots. Give exact answers. No decimals.



$$\sqrt{8} + \sqrt{18}$$

$$2\sqrt{2} + 3\sqrt{2}$$

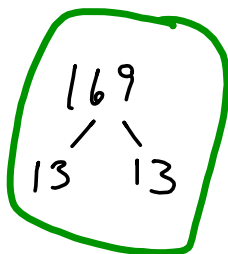
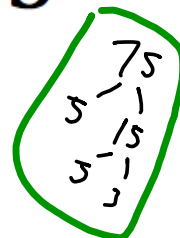
$$5\sqrt{2}$$



$$\sqrt{12} + \sqrt{75}$$

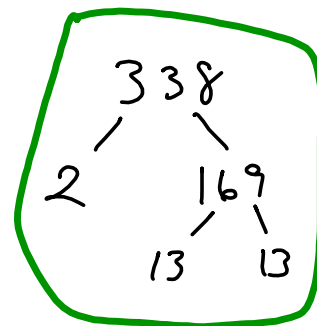
$$2\sqrt{3} + 5\sqrt{3}$$

$$7\sqrt{3}$$

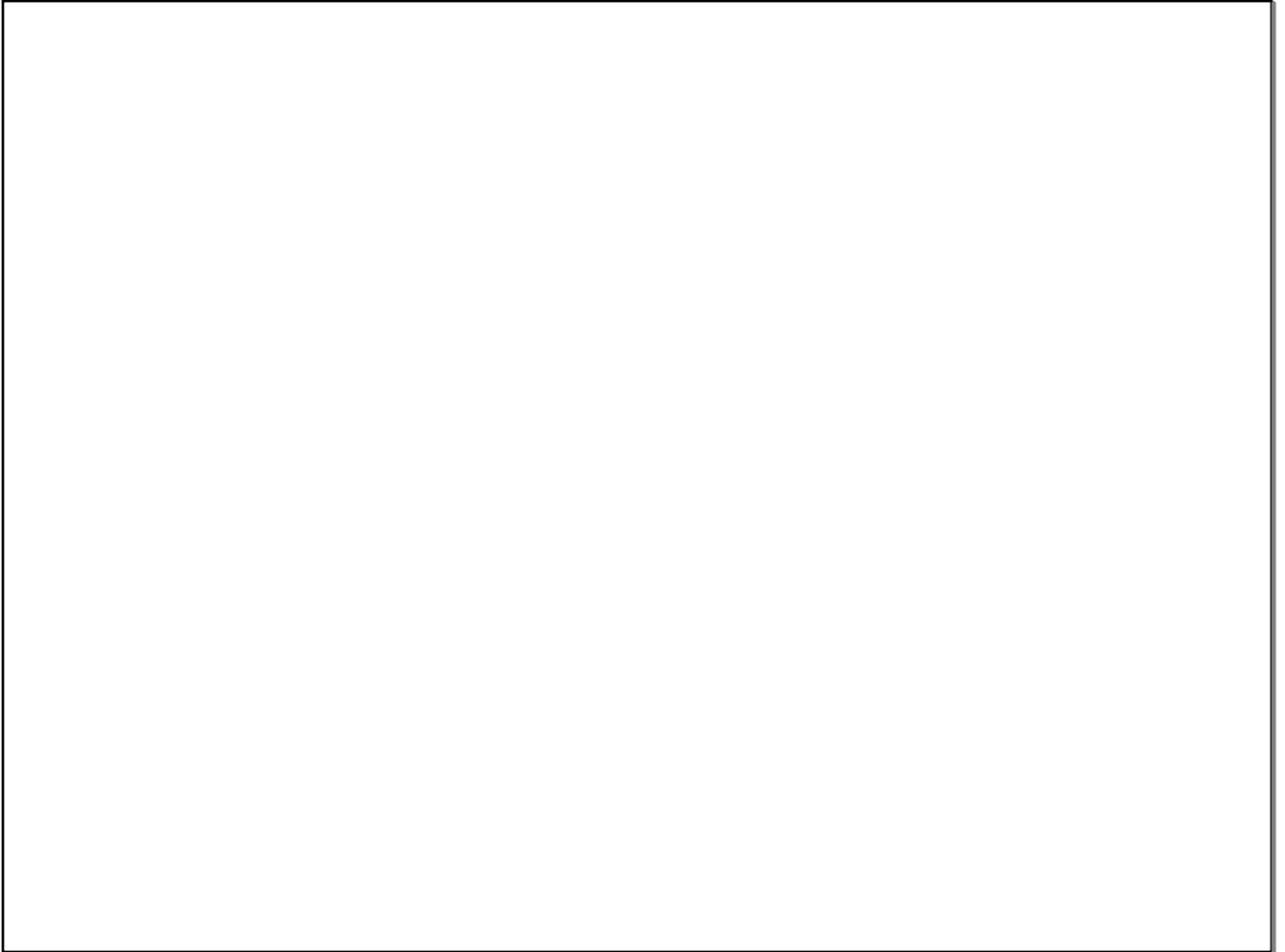


$$\sqrt{169} + \sqrt{338}$$

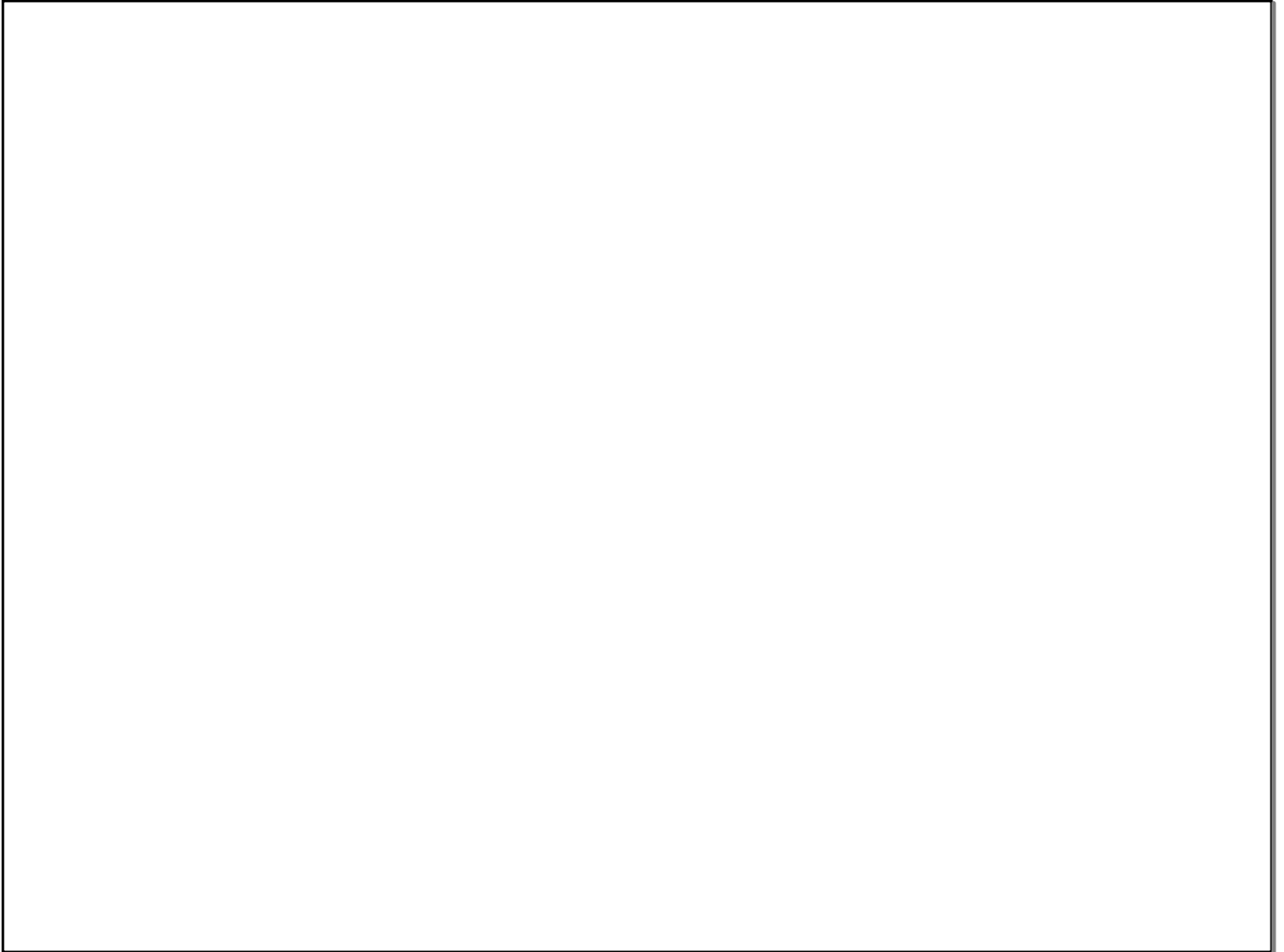
$$13 + 13\sqrt{2}$$



September 27, 2017



September 27, 2017



2D Writing Story Problems

Name: Key Per: _____

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4

Write an equation in Slope-intercept Form for the following situations.
Grandma gives Brooklyn a piggy bank with \$25 when she was born. Every year, on her birthday, Brooklyn puts a \$20 in her bank.

- What variables best represent what you need to know (not x and y)? m, n
- Define those variables. m = Total amt, n = # of years
- Write an equation to tell how much money Brooklyn will have in any given year. $m = 20n + 25$
- If Brooklyn never used or added more money to the piggy bank, how much money would Brooklyn have in bank on her 15th birthday? \$ 325.00

5

On your trip to Hawaii you need to rent a convertible. There is a charge for each rented car of \$30 for insurance and the daily cost is \$90 every day.

- What variables represent what you need to know? C, d
- Define those variables: C = Rental Charge, d = # of days
- Write an equation to show the total cost to rent the convertible. $C = 90d + 30$
- If you rented the convertible for 3 days, how much would you need to pay? \$300.00
- If you were charged \$480, how many days did you rent the car? 3 days



5

Felix is having a birthday party. It costs \$50 to go bowling. He will need shoes at a cost of \$4 for the pairs of rental shoes for each of his friends.

- What variables represent what you need to know? b, s
- Define those variables: b = Cost to bowl, s = # of shoes
- Write an equation to show the total cost of his party. $b = 4s + 50$
- If the party cost \$82, how many people went bowling? 8 people
- If you had 11 friends come, how much would it cost? 94

Write an equation to answer the questions. Try not to use "x" and "y".

2x
E.C.

Grandpa just celebrated a birthday at Kneaders and ordered a pumpkin pie for \$12.

- What variable(s) represent what you need to know? _____
- Define those variable(s): _____
- Write the equation that shows how old he is if 400 reduced by twice his age is an unknown number? _____
- How old will he be if the number is 244? _____

5. You played a game of basketball with your friends. You scored a total of 53 points (no three points shots). A basket is good for 2 points and free throw 1 point.

- Define your variables b = # basket, f = free throws
- Write an equation. $1b + 2f = 53$
- If you make 23 baskets (2 points each), how many free throws did you make? 15 free throws

6. Alex, Bob and Charlie went to Smith's. Each bought a drink for d dollars and a pack of gum for \$2. All together they spent a total of \$24.

- Write an equation to represent the situation. $A \cdot d + 2 \cdot p = 24$
- Solve for d to find the cost of each drink.

$$\begin{aligned} A \cdot 3 + 2 \cdot 3 &= 24 \\ 3A + 6 &= 24 \\ 3A &= 18 \\ A &= 6 \end{aligned}$$

\$6 drinks!
Holy cow!

Write an equation in **Standard Form** ($Ax + By = C$) for the following situations.

2. You buy 5 hamburgers in a restaurant, and 4 shake. You spend exactly \$36. Let h represent the cost of hamburgers, and s represent the cost of shakes.

a. Write an equation to represent the situation. $5h + 4s = 36$

b. If shakes cost \$3.50 each, how much did each hamburger cost. $\$4.40$

3. A 100-point test has " t " true and false questions worth 2 points apiece and " m " multiple choice questions worth 4 points apiece.

a. What do the variables stand for: $t =$ t/f questions, $m =$ # of m/c questions

b. Write an equation that describes all possible numbers of questions on the test. $2t + 4m = 100$

c. If you have 24 multiple choice questions, how many true and false questions will there be? 2 t/f questions

3. On Saturday, I went to McDonalds with my friends and spent \$24. It took us 15 minutes to ride our bikes there. We bought three drinks and six burgers. $d =$ drinks, $b =$ burgers

a. Write an equation $3d + 6b = 24$

b. Solve your equation for the cost of each burger. $b = \frac{1}{6}(24 - 3d) = 4 - \frac{1}{2}d$

c. If each drink cost \$1, how much was each burger? $\$3.50$

12. Solve for y and simplify for an exact answer

10. $2y^3 + 2 = 18$

$y = 2$

12. $3(2 + y^2) - 2 = 40$

$y = \pm 2\sqrt{3}$

13. $-2 + 2(y^2 - 5) = 6 + y^2$

$y = \pm 3\sqrt{2}$

12. $\frac{y+9}{10} = \frac{2}{8}$

$y = -\frac{13}{2}$

13. $\frac{7y-1}{4} = \frac{3}{10}$

$y = \frac{22}{70} = \frac{11}{35}$

14. $\frac{7}{3} = \frac{4}{y-3}$

$y = \frac{33}{7}$

15. $\left|\frac{y}{7}\right| = 5$

$y = 35$ or $y = -35$

16. $\frac{|-8-8y|}{6} = 5$

$y = -\frac{17}{4}$ or $\frac{11}{4}$

17. $|y - 5| = 7$

$y = 12$ or -2

18. $2 = -4 + \sqrt{a}$
 $36 = a$

19. $-7\sqrt{2a+9} = -35$
 $a = 8$

20. $2\sqrt{\frac{h}{4}} = 6$
 $h = 36$

Write an equation in **Standard Form** ($Ax + By = C$) for the following situations.

7. You buy 5 hamburgers in a restaurant, and 4 shake. You spend exactly \$36. Let h represent the cost of hamburgers, and s represent the cost of shakes.

a. Write an equation to represent the situation. $5h + 4s = 36$

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c. If you have 24 multiple choice questions, how many true and false questions will there be? 2 t/f questions

9. On Saturday, I went to McDonalds with my friends and spent \$24. It took us 15 minutes to ride our bikes there. We bought three drinks and six burgers.

a. Write an equation $3d + 6b = 24$

b. Solve your equation for the cost of each burger. $b = \frac{1}{6}(24 - 3d)$

c. If each drink cost \$1, how much was each burger? $\$3.50$

Solve for y and simplify for an exact answer

10. $2y^3 + 2 = 18$

$y = 2$

12. $3(2 + y^2) - 2 = 40$

$y = \pm 2\sqrt{3}$

13. $-2 + 2(y^2 - 5) = 6 + y^2$

$y = \pm 3\sqrt{2}$

12. $\frac{y+9}{10} = \frac{2}{8}$

$y = -\frac{13}{2}$

13. $\frac{7y-1}{4} = \frac{3}{10}$

$y = \frac{22}{7}$

14. $\frac{7}{3} = \frac{4}{y-3}$

$y = \frac{33}{7}$

15. $\left|\frac{y}{7}\right| = 5$

$y = 35$ or $y = -35$

16. $\frac{|-8-8y|}{6} = 5$

$y = -\frac{17}{4}$ or $\frac{11}{4}$

17. $|y - 5| = 7$

$y = 12$ or -2

18. $2 = -4 + \sqrt{a}$
 $36 = a$

19. $-7\sqrt{2a+9} = -35$
 $a = 8$

20. $2\sqrt{\frac{h}{4}} = 6$
 $h = 36$