

OTHER ANSWERS (NON-BOOK)

Key!

Algebra 1 Final Review 2015

** You will be able to have ONE 4x6 note card (Front and Back) on your final!**

- Prioritize your studies by focusing on targets you scored low on 1st –note your scores next to targets.
- Each target is given at least one problem in this packet
- Review problems are listed next to each target – You will need your book – always check answers!
- Answer keys will be available in the classroom and online at mahonymath.weebly.com

Targets	Learning Targets	Ch 1 Problems
T 1-1	I can convert between algebraic expressions and verbal expressions.	1.1 Pg. 7 #11-30all
T 1-2	I can use dimensional analysis to convert between units.	Dimensional Analysis Worksheet
T 1-3	I can apply order of operations in expressions and equations.	1.2 Pg. 13 #39-54all
T 1-4	I can recognize and apply the properties of numbers to simplify algebraic expressions.	1.3 Number Properties

1. Write an algebraic expression to go with this sentence:

“The difference between the cube of a number and three times that same number.”

$$x^3 - 3x$$

2. Convert 34 meters per hour to millimeters per second. (1 meter = 100 cm, 1 cm = 10 mm)

$$\frac{34 \text{ m}}{1 \text{ hr}} \cdot \frac{100 \text{ cm}}{1 \text{ m}} \cdot \frac{10 \text{ mm}}{1 \text{ cm}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} = \frac{34000 \text{ mm}}{3600 \text{ sec}}$$

3. Evaluate: $-9 + \frac{9+21}{3(4+1)} - (-3)$

$$-9 + \frac{30}{15} + 3$$

$$-4$$

$$9.4 \text{ mm/sec}$$

4. Rewrite this using the commutative property: $3xyz = 3zyx$

Targets	Learning Targets	Ch 2 Problems
T 2-1	I can translate between sentences and equations.	2.1 Pg. 77 #1-20 all
T 2-2	I can solve multi-step equations.	2.2 Pg. 86 #10-15all 2.3 Pg. 94 #1-10all
T 2-3	I can solve equations with variables on both sides	2.4 Pg. 100 #1-9all, 25-31o
T 2-4	I can interpret and use a proportion to solve a problem.	2.6 Pg. 115 #15-19o, 30-36all 2.7 Pg. 122 #1-13all

1. Write a story for the following problem:

a = cost of one adult's ticket to zoo

$a - 4$ = cost of one children's ticket to zoo

$$2a + 4(a - 4) = 38$$

2 adults
4 kids

Children's tickets cost \$4 less than adults.
If 2 adults and 4 children cost \$38.00, how much is one adult?

Solve:

$$2. \frac{3}{4}q - 7 = 8$$

$$\frac{3}{4}q = 15$$

$$q = 3$$

$$3. \frac{3}{12} = \frac{2}{x+6}$$

$$24 = 3x + 18$$

$$6 = 3x$$

$$x = 2$$

$$4. 75 - 9x = 5(-4 + 2x) \quad 19x = 95$$

$$75 - 9x = -20 + 10x$$

$$x = 5$$

$$5. 2(5 - 8x) + 6 = -10 - 16x$$

$$10 - 16x + 6 = -10 - 16x$$

$$16 = -10$$

no sol

6. At Safeway you buy a turkey for thanksgiving it is on sale for 15% off the original price. The original price of the turkey was \$32. As you are checking out the cashier asks if you would like to donate 2% of your total price to the Special Olympics. Of course you donate what now is your total cost?

$$(.15)(32) = 4.8 \quad 32 - 4.8 = 27.2 \quad 27.2(0.02) = 0.54$$

$$\boxed{\$27.74}$$

Targets	Ch 3 Learning Target	Ch 3 Problems
T 3-1	I can find the x and y intercepts and explain what they mean in real world situations.	3.1 Pg. 159 #5-8, 12, 21, 22, 23-28
T 3-2	I can graph linear functions	3.1 Pg. 159 #9-11, 29-34
T 3-3	I can find the slope and the rate of change interpret it in the context of problem.	3.3 Pg. 177 # 1-13all

For # 1-4, find the slope.

1. (243, 85), (121, -105)

$$\frac{85 - (-105)}{243 - 121} = \frac{190}{122} = \frac{95}{61}$$

2. (-13, 56), (-13, -7)

$$\frac{56 - (-7)}{-13 - (-13)} = \frac{63}{0} \quad \boxed{\text{undef}}$$

3. $\begin{matrix} x & | & y \\ 10 & < & -16 \\ & < & -6 \\ 5 & < & -1 \end{matrix} \begin{matrix} -1 \\ -5 \\ -7 \end{matrix} \begin{matrix} > -4 \\ > -2 \end{matrix}$

$$\frac{-4}{10} = -\frac{2}{5}$$

$$\boxed{-\frac{2}{5}}$$

4. $4x - 5y = 15$

$$-5y = 15 - 4x$$

$$y = \frac{4}{5}x - 3$$

$$\boxed{m = \frac{4}{5}}$$

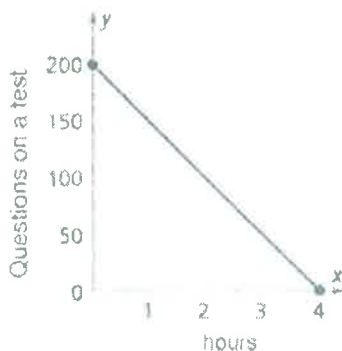
5. Find the x and y intercepts and explain what they mean.

Find the x and y intercepts for the following equation.

6. $4x - y = 4$

$$(0, -4) \text{ y-int}$$

$$(1, 0) \text{ x-int}$$



y-int (0, 200)

At 0 hours (beg of test) there are 200 questions

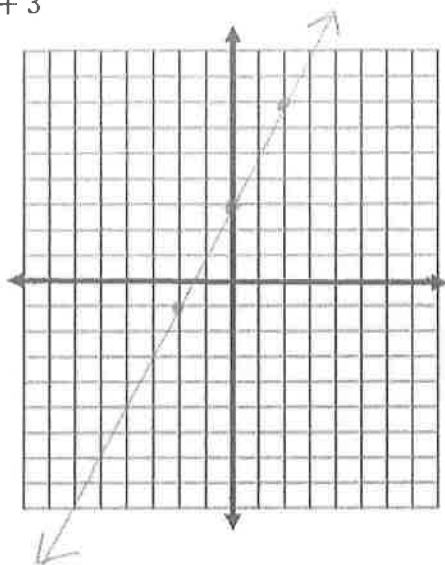
x-int (4, 0)

After 4 hours there are zero questions

Graph the lines using a table:

7. $y = 2x + 3$

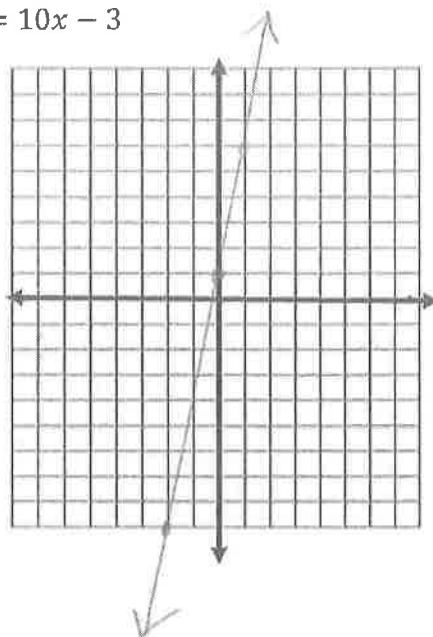
x	y
-2	-1
0	3
2	7



8. $2y - 5 = 10x - 3$

$2y = 10x + 2$
 $y = 5x + 1$

x	y
-2	-9
0	1
1	6
2	11



Targets	Ch 4 Learning Targets	Ch 4 Problems
T4-1	I can graph equations using given information	4.1 Pg. 220 #23-31o 4.3 Pg. 236 #27-33o GRAPH EACH!
T4-2	I can write linear equations in slope intercept form, point slope form and standard form.	4.2 Pg. 229 #11-21o
T4-3	I can write linear equations that are parallel or perpendicular to another line.	4.4 Pg. 243 #11-16, 23-28, 33-38

1. Write an equation in slope-intercept form that has a slope of 4 and passes through (1, 9).

$m = 4$
 $y = mx + b$
 $y = 4x + b$
 $9 = 4(1) + b$
 $9 = 4 + b$
 $-4 \quad -4$
 $5 = b$

$y = 4x + 5$

2. Write an equation of the line that passes through (-1, 6) and (3, -2).

$m = \frac{6 - (-2)}{-1 - 3} = \frac{8}{-4} = -2$
 $y - b = -2(x + 1)$
 $y = -2x - 2 + 6$
 $y = -2x + 4$

3. Slope: -10
Y-intercept: 0

Equation: $y = -10x$

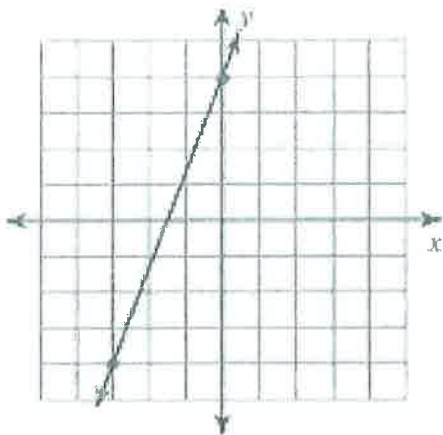
4. Slope: $\frac{5}{6}$
Y-intercept: -8

Equation: $y = \frac{5}{6}x - 8$

5.

Slope: $\frac{8}{3}$
 Y-intercept: $0, 4$

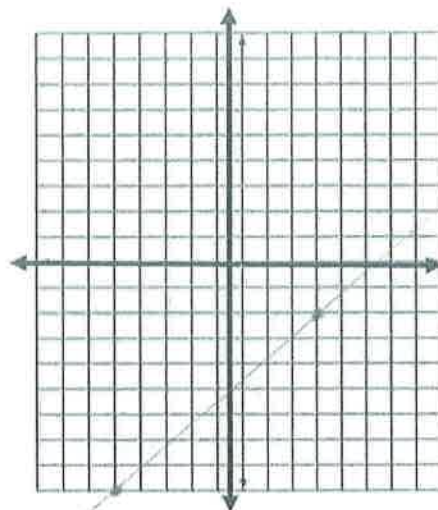
Equation: $y = \frac{8}{3}x + 4$



6. $y + 2 = \frac{7}{8}(x - 3)$

$(3, -2)$

$m = \frac{7}{8}$



7

Below is a table relating the age of a person and the percent of their money that they have spend on entertainment. Make a scatter plot of the data. Label your graph

x	Age	30	40	50	60	70	80
y	Percent Spent on Entertainment	15	13	12	8	6	4

a. Describe the correlation and what it means.

Negative - As you get older you spend less on entertainment.

b. Draw a line of best fit. List two points on the line.

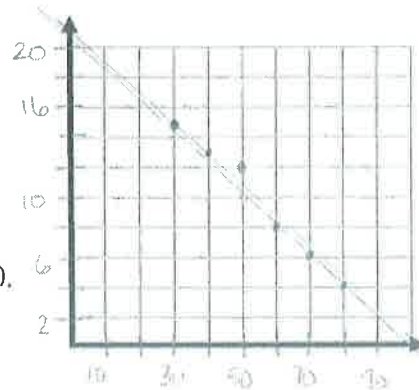
c. Write an equation for the line of best fit. $(50, 10)$ $(90, 2)$

$y - 10 = \frac{1}{20}(x - 50)$

$\frac{10 - 2}{50 - 90} = \frac{8}{-40} = -\frac{1}{5}$

d. Use your equation to predict the percent spent when a person is 20.

$y - 10 = \frac{1}{20}(20 - 50)$ $y = \frac{1}{20}(-30) + 10$
 $y = 16$



State whether the graphs of the following equations are parallel, perpendicular or neither.

1. $y = 2x$
 $y = 2x - 4$

$m = 2$
 $m = 2$ } Same slope

Parallel

2. $2y + 3x = 5 \rightarrow 2y = -3x + 5$
 $3y - 2x = 5$
 $1A \times 2x$

$\frac{3y}{3} = \frac{-3x + 5}{3}$
 $y = -\frac{3}{3}x + \frac{5}{3}$
 $y = -x + \frac{5}{3}$

$2y = -\frac{3x + 5}{2}$
 $y = -\frac{3x + 5}{2}$
 $y = -\frac{3}{2}x - \frac{5}{2}$

perpendicular

3. Write an equation perpendicular to the given line through the point:

(2, 5) and perpendicular to $3x + 5y = 7$

$$y = \frac{5}{3}x + b$$

$$5 = \frac{5}{3}(2) + b$$

$$5 = \frac{10}{3} + b$$

$$-\frac{10}{3} - \frac{10}{3} \quad \frac{15}{3} - \frac{10}{3} = \frac{5}{3} = b$$

$$y = \frac{5}{3}x + \frac{5}{3}$$

4. Write an equation parallel to the given line through the point.

(-6, 5) and parallel to $y = \frac{1}{3}x + 9$.

$$y = \frac{1}{3}x + b$$

$$5 = \frac{1}{3}(-6) + b$$

$$5 = -2 + b$$

$$-5 = -2 + b$$

$$-3 = b$$

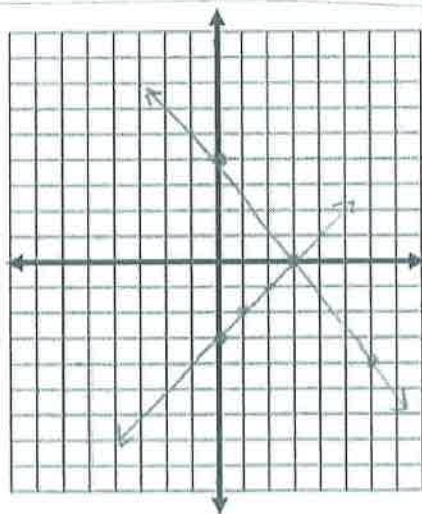
$$y = \frac{1}{3}x - 3$$

Targets	Ch 6 Learning Targets	Ch 6 Retake Problems
T 6-1	I can solve systems of equations by graphing and determine the number of solutions. I can use this to solve real world situations.	6.1 pg. 339 #25, 26, 27-37o
T 6-2	I can solve systems of equations by using substitution and determine the number of solutions. I can use this to solve real world situations.	6.2 pg. 347 #8-16all Word Problem Worksheet
T 6-3	I can solve systems of equations by using elimination and determine the number of solutions. I can use this to solve real world situations	6.4 pg. 360 #13-18all Word Problem Worksheet

1. $-x + y = -3$
 $4x + 3y = 12$
 $-4x \quad -4x$

$$\frac{3y}{3} = \frac{-4x + 12}{3}$$

$$y = -\frac{4}{3}x + 4$$



$$-x + y = -3$$

$$y = x - 3$$

Solution: (3, 0)

check ✓
 $-(-3) + 0 = -3$
 $-3 = -3$ ✓
 $4(3) + 3(0) = 12$
 $12 = 12$ ✓

Solve using substitution.

1. $-7x - 2y = -13$
 $x - 2y = 11$
 $+7x \quad +2y$
 $x = 2y + 11$

$$-7(2y + 11) - 2y = -13$$

$$-14y - 77 - 2y = -13$$

$$-16y - 77 = -13$$

$$-16y = 64$$

$$y = -4$$

$$x - 2(-4) = 11$$

$$x + 8 = 11$$

$$-8 \quad -8$$

$$x = 3$$

(3, 4)

$$3 - 2(4) = 11$$

$$3 + 8 = 11$$

$$-1(3) - 2(4) = 13$$

$$-3 - 8 = -11$$

$$-11 = -11$$

Solve using Elimination.

2. $(-4x - 2y = 14) \cdot 5$
 $(-10x + 7y = -25) \cdot -2$
 $-20x - 10y = 70$
 $+ 20x - 14y = 50$

$$-24y = 120$$

$$y = -5$$

$$-4x - 2(-5) = 14$$

$$-4x + 10 = 14$$

$$-4x = 4$$

$$x = -1$$

(-1, -5)

$$-4(-1) - 2(-5) = 14$$

$$4 + 10 = 14$$

$$-10(-1) + 7(-5) = -25$$

$$10 - 35 = -25$$

3. Tickets to a concert are \$5 for balcony seats and \$10 for orchestra seating. The attendance was 600 and the total money received was \$4750. How many people purchased each type of seat?

250 balcony seats
350 orchestra seats were sold

$x = \text{balcony} \#$ $y = \text{orchestra} \#$
 $5x + 10y = 4750$
 $x + y = 600$
 $x = 600 - y$
 $5(600 - y) + 10y = 4750$
 $3000 - 5y + 10y = 4750$
 $3000 + 5y = 4750$
 $5y = 1750$
 $y = 350$
 $x + 350 = 600$
 $x = 250$

Targets	Ch 7 Learning Targets	Ch 7 Problems
T 7-1	I can multiply monomials using the properties of exponents and simplify expressions.	7.1 pg. 394 #7-19o 7.4 Pg. 417 #1-4all, 7-14all
T 7-2	I can divide monomials using the properties of exponents and simplify expressions.	7.2 Pg. 402 #1-14all, skip 10,
T 7-3	I can use all properties of exponents to solve exponents.	7.2 Pg. 403 #31-41o, 47-56all
T 7-4	I can evaluate, rewrite and solve expressions involving rational exponents	7.3 Pg. 410 #1-15all

1. $(2gh^4)^3((-2g^4h)^3)^2 = 512g^{27}h^{18}$

$(2g^3h^{12})(-2g^{12}h^3)^2$
 $(8g^3h^{12})(4g^{24}h^6)$
 $(8g^3h^{12})(64g^{24}h^6)$
 $512g^{27}h^{18}$

$\frac{8a^5b^8}{40a^7b^3} = \frac{1b^5}{5a^2} = \frac{b^5}{5a^2}$

2. $3(7d^2)^4 = 7203g^8$

$3(7^4d^8)$
 $3(2401d^8)$
 $7203d^8$

$\frac{-8x^{12}y^3}{10y^{10}x^6} = \frac{-4x^6}{5y^7}$

5. $\left(\frac{2x^{-4}}{3y^3}\right)^4 = \frac{16}{81x^{16}y^{12}}$

$\frac{2^4 x^{-16}}{3^4 y^{12}} = \frac{16}{81x^{16}y^{12}}$

6. $\left(\frac{7x^3y^5}{6x^{-9}y^{-3}}\right)^{-2} = \frac{36}{49x^{24}y^{16}}$

$\frac{7^2 x^{-6} y^{-10}}{6^2 x^{18} y^9} = \frac{49}{36x^{24}y^{16}}$
 $\frac{36}{49x^{24}y^{16}}$

Ch. 8 Problems

Targets	Ch 8 Learning Targets	Ch 8 Problems
T 8-1	I can write polynomials in standard form, name leading coefficient, name degree and perform addition and subtraction on polynomials.	Pg. 468 #1-18all, 52, 53
T 8-2	I can multiply polynomials using the distributive & double distributive method.	Pg. 474 #1-15o Pg. 483 #1-7o
T 8-3	I can multiply polynomials using FOIL method.	Pg. 483 #13-23o Pg. 488 #1-7o

T 8-4	I can factor polynomials using the GCF (distributive property).	8.5 Pg. 498 #15-26all
T 8-5	I can factor trinomials and binomials with a leading coefficient of one using any method.	8.6 Pg. 507 #12-19all Also complete the following problems: $x^2 - 16$ $m^2 - 256$ $c^2 - 100$
T 8-6	I can factor trinomials and binomials with a leading coefficient greater than one using any method	8.7 Pg. 513 #10-21all Also complete the following problems: $4b^2 - 25$ $25g^2 - 9$ $81y^2 - 16$
T 8-7	I can use factoring and the zero product property to solve quadratic equations.	Solve by Factoring Retake Worksheet

Simplify

1. $(5a^2 + 6a + 2) + (7a^2 + 7a + 5)$

$-2a^2 + 13a - 3$

Simplify

2. $6t(2t - 3) - 5(2t^2 + 9t - 3)$

$12t^2 - 18t - 10t^2 - 45t + 15$
 $2t^2 - 63t + 15$

Multiply

3. $(4h - 2)(4h - 1)$

$16h^2 - 4h - 8h + 2$

$16h^2 - 12h + 2$

Multiply

4. $(w + 4)(w^2 + 3w - 6)$

$w(w^2 + 3w - 6) + 4(w^2 + 3w - 6)$
 $w^3 + 3w^2 - 6w + 4w^2 + 12w - 24$

$w^3 + 7w^2 + 6w - 24$

Factor

7. $t^2 - 15t + 56$

$(t - 7)(t - 8)$

Factor

8. $-12 - 9m + 3m^2$

$\frac{3m^2 - 9m - 12}{3} = \frac{3m^2 - 9m - 12}{3}$
 $3(m^2 - 3m - 4)$
 $3(m - 4)(m + 1)$

Solve

9. $h^2 + 2h = 35$

$h^2 + 2h - 35 = 0$

$(h + 7)(h - 5) = 0$

$h + 7 = 0$ $h - 5 = 0$

$h = -7$ $h = 5$

Solve

10. $a^2 + 14a = -45$

$a^2 + 14a + 45 = 0$

$(a + 9)(a + 5) = 0$

$a = -9$ $a = -5$

Solve

11. $3h^2 + 2h - 16 = 0$

$(3h + 8)(h - 2) = 0$

$h - 2 = 0$ $3h + 8 = 0$

$h = 2$ $h = -8/3$

Solve

12. $15n^2 - n = 2$

$15n^2 - n - 2 = 0$

$(3n + 1)(5n - 2) = 0$

$(3n + 1)(5n - 2) = 0$

$n = -1/3$

$n = 2/5$

For 1-18, name the property used by each statement.

- | | |
|--|---|
| 1. $9 \cdot 3 = 3 \cdot 9$ Symm. / Commute | 10. $6(300 + 10) = 6(300) + 6(10)$ Distrib. |
| 2. $3 \cdot (4 \cdot 2) = (3 \cdot 4) \cdot 2$ Associative | 11. $3(100 - 3) = 3(100) - 3(3)$ Distrib. |
| 3. $234 \cdot 1 = 234$ Multi id | 12. $x + (5 + 6) = x + 11$ Substitution |
| 4. $56 \cdot 11 = 11 \cdot 56$ Symm. / Commut. | 13. $x + 4 = x + 4$ Reflex. |
| 5. $7,547,375 \cdot 0 = 0$ zero property | 14. If $10 + 3 = 13$, then $13 = 10 + 3$ Symmetric |
| 6. $4 \cdot 8 \cdot 3 = 4 \cdot 3 \cdot 8$ Commute. | 15. $357 - 10 = 357 - 10$ Reflex. |
| 7. $5 + (7 + 2) = (5 + 7) + 2$ Associative | 16. If $42 = y$, then $y = 42$ Symmet. |
| 8. $5y(3 + k) = 5y(3) + 5y(k)$
Distrib. | 17. $x + 4 - 4 = x$ Add Inverse |
| 9. $235 + 0 = 235$
Add id. | 18. $5 \cdot \frac{1}{5} = 1$ Multi Inverse |

For 19-26, rewrite the expression using the property given. DO NOT EVALUATE!

19. Commutative Property

- a. $3 + 4 + 29 = 4 + 3 + 29$
b. $3xy + 2mk + m = 2mk + 3xy + m$

20. Associative Property

- c. $(x + y) + mk = x + (y + mk)$
d. $5x(8m \cdot 7) = 5x \cdot 8(m \cdot 7)$

21. Multiplicative Inverse or Identity

- e. $4x \cdot \frac{1}{4x} = 1$
f. $\frac{2}{3} \cdot \frac{3}{2} = 1$

22. Additive Inverse or identity

- g. $-4x + 4x = 0$

26. Transitive Property

- a. If $10 + 2 = 12$ and $12 = 2(6)$ then $10 + 2 = 2(6)$
b. If $x + 3 = y$ and $y = z + 2$, then $x + 3 = z + 2$

23. Symmetric Property

- h. $x + y = y + x$
i. $2x + y - 4z = -4z + y + 2x$

24. Reflexive Property

- j. $497 + 12,345 = 497 + 12,345$
k. $7t - 9r = 7t - 9r$

25. Distributive Property

- l. $5(x) + 5(4) = 5(x + 4)$
m. $x(2 - y + t) = 2x - xy + xt$

T 8-7: Factoring (to solve) RETAKE WS

Solve each equation.

1. $(x+3)(x-5) = 0$

$x+3=0$ $x-5=0$

$x = -3$ $x = 5$

2. $4x(x-7) = 0$

$4x=0$ $x-7=0$

$x = 0$ $x = 7$

3. $2x(x-5)(2x-9) = 0$

$2x=0$ $x-5=0$ $2x-9=0$

$x=0$ $x=5$

$2x=9$
 $x = \frac{9}{2}$

4. $(x-4)^2 = 0$

$(x+4)(x-4) = 0$

$x-4=0$ $x-4=0$

$x = 4$ $x = 4$

5. $\frac{20p^2}{5p} - \frac{15p}{5p} = 0$

$5p(4p-3) = 0$

$5p=0$ $4p-3=0$

$p = 0$

$4p=3$
 $p = \frac{3}{4}$

6. $x^2 + 12 - 7x = 0$

$x^2 - 7x + 12 = 0$

$(x-3)(x-4) = 0$

$x-3=0$ $x-4=0$

$x = 3$ $x = 4$

$\frac{12}{-3} \mid -7$
 $-3 \cdot 4 = -3 \cdot -4$

7. $40 - 22x = -x^2$

$+x^2$ $+x^2$

$x^2 - 22x + 40 = 0$

$(x-20)(x-2) = 0$

$x-20=0$ $x-2=0$

$x = 20$ $x = 2$

$\frac{40}{-20} \mid -22$
 $-20 \cdot 2 = -20 \cdot -2$

8. $x^2 - 49 = 0$

$(x-7)(x+7) = 0$

$x-7=0$ $x+7=0$

$x = 7$ $x = -7$

$\frac{-49}{7} \mid 0$
 $7 \cdot -7 = 7 \cdot -7$

$$9. -2x^2 + 13x = 15$$

$$-2x^2 + 13x - 15 = 0$$

$$\frac{-2x^2 + 13x - 15}{-x \quad -x} = \frac{0}{5}$$

$$-x(2x-3) + 5(2x-3) = 0$$

$$(2x-3)(-x+5) = 0$$

$$\begin{array}{r|l} 30 & 15 \\ 5 \cdot 6 & 5+10 \\ \hline X = \frac{3}{2} \\ X = 5 \end{array}$$

$$10. 4x^2 + 17x + 15 = 0$$

$$(4x^2 + 5x) + (12x + 15) = 0$$

$$x(4x+5) + 3(4x+5) = 0$$

$$(4x+5)(x+3) = 0$$

$$4x+5 = 0 \quad x+3 = 0$$

$$x = -\frac{5}{4} \quad x = -3$$

$$\begin{array}{r|l} 60 & 15 \\ 3 \cdot 20 & 3+20 \\ 2 \cdot 30 & \\ 12 \cdot 5 & 12+5 \end{array}$$

$$11. 64x^2 - 1 = 0$$

$$(64x^2 - 8x) + (8x - 1) = 0$$

$$8x(8x-1) + 1(8x-1) = 0$$

$$(8x-1)(8x+1) = 0$$

$$8x+1 = 0 \quad 8x-1 = 0$$

$$X = -\frac{1}{8} \quad X = \frac{1}{8}$$

$$\begin{array}{r|l} -64 & 0 \\ 8 \cdot 8 & 8+8 \end{array}$$

$$12. 9 - 54x = -81x^2$$

$$81x^2 - 54x + 9 = 0$$

$$81x^2 - 27x + 27x - 9 = 0$$

$$27x(3x-1) - 9(3x-1) = 0$$

$$(27x-9)(3x-1) = 0$$

$$9(3x-1)(3x-1) = 0$$

$$X = \frac{1}{3} \quad X = \frac{1}{3}$$

$$\begin{array}{r|l} 729 & 81 \\ 9 \cdot 81 & \\ -27 \cdot 27 & -27+27 \\ \hline 5 \cdot 243 \end{array}$$

13. GEOMETRY The area of a square is represented by $9x^2 - 42x + 49$. Find the length of each side.

$$9x^2 - 42x + 49$$

$$(9x^2 - 21x) + (-21x + 49)$$

$$3x(3x-7) - 7(3x-7)$$

$$(3x-7)(3x-7) = 0$$

$$3(x-7)(3x-7) = 0$$

$$X = 1 \quad X = 7/3$$

$$\begin{array}{r|l} 441 & -42 \\ -21 \cdot 21 & -21+21 \end{array}$$

14. Ling is designing a poster. The top of the poster is 4 inches long and the rest of the poster is 2 inches longer than the width. If the poster requires 616 square inches of poster board, find the width of the poster.

$$616 = w(w+4)$$

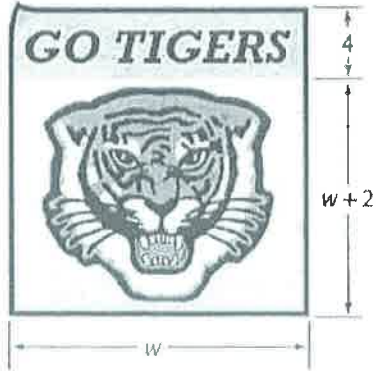
$$616 = w^2 + 4w$$

$$0 = w^2 + 4w - 616$$

$$0 = (w+28)(w-22)$$

$$w = 22$$

$$\begin{array}{r|l} 616 & 4 \\ 28 \cdot 22 & 28+22 \\ 56 \cdot 11 & \end{array}$$



22 x 26 poster

15. Soccer: The width of a high school soccer field is 45 yards shorter than its length. Write an expression for the area of the field. If the area of the field is 9,000 square yards, find the field dimensions.

$$9000 = l \cdot w$$

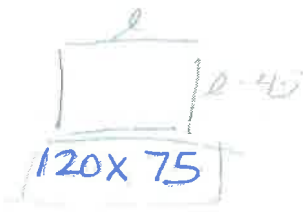
$$9000 = l(l-45)$$

$$0 = l^2 - 45l - 9000$$

$$0 = (l-120)(l+75)$$

$$l = 120 \quad l = -75$$

$$\begin{array}{r|l} -9000 & -45 \\ 30 \cdot 300 & -20 \\ 60 \cdot 150 & -90 \\ 45 \cdot 200 & -155 \\ 90 \cdot 110 & -10 \\ 75 \cdot 120 & -45 \end{array}$$



T6-2 and T6-3 Word Problem RETAKE Worksheet

Write a system of equations for the problem, make sure and define your variables. Choose the best method to solve the system, state the method and write your answer in a sentence.

1. You sell tickets for admission to your school play and collect a total of \$104. Admission prices are \$6 for adults and \$4 for children. You sold 21 tickets. How many adult tickets and how many children tickets did you sell?

$$\begin{aligned} x &= \text{Adult \#} & y &= \text{Children \#} \\ 104 &= 6x + 4y & 104 &= 6(21 - y) + 4y \\ 21 &= x + y & 104 &= 126 - 6y + 4y \\ -y & & -104 &= 126 - 2y \\ 21 - y &= x & -22 &= -2y \\ & & -2 &= -2 \end{aligned}$$

$$\begin{aligned} 21 &= x + y \\ -11 &= -11 \\ \hline 10 &= x \end{aligned}$$

10 adults and 11 children will attend!

2. You bought the meat for Saturday's cookout. A package of hot dogs cost \$1.60 and a package of hamburger cost \$5. You bought a total of 8 packages of meat and you spent \$23. How many packages of hamburger meat and how many packages of hot dogs did you buy?

$$\begin{aligned} x &= \# \text{ of hamburger} & y &= \# \text{ of hot dog} \\ 23 &= 1.60y + 5x & 23 &= 1.60(8 - x) + 5x \\ 8 &= x + y & 23 &= 12.8 - 1.60x + 5x \\ -1 &= -x & 23 &= 12.8 + 3.4x \\ 8 - x &= y & -12.8 &= -12.8 \\ & & 10.2 &= 3.4x \\ & & 3.4 &= 3.4 \\ & & 3 &= x \end{aligned}$$

$$\begin{aligned} 8 &= x + y \\ -3 &= -3 \\ \hline 5 &= y \end{aligned}$$

3 hamburger pkgs and 5 hot dog pkgs

3. To rent a compact car from Rent-A-Car you must pay \$397 for the week and \$0.25 per mile. Renting the same car from Enterprise costs you \$269 for a week and \$0.50 per mile. How many miles with each car need to travel before they will have the same total cost?

$$x = \# \text{ of miles} \quad y = \text{total cost}$$

$$\begin{aligned} y &= 397 + 0.25x \\ y &= 269 + 0.50x \end{aligned}$$

$$\begin{aligned} 397 + 0.25x &= 269 + 0.50x \\ -269 - 0.25x &= -269 - 0.25x \end{aligned}$$

$$\begin{aligned} 128 &= 0.25x \\ 0.25 &= 0.25 \end{aligned}$$

$$512 = x$$

$$\begin{aligned} y &= 397 + 0.25(512) \\ y &= 397 + 128 \\ y &= 525 \end{aligned}$$

They drove 512 miles and it cost \$525.

T1-2 Dimensional Analysis Retake Problems

(Unit Conversion)

Conversions

1 hour = 60 minutes

1 mile = 5280 feet

1 yard = 3 feet

1 meter = 3.28 feet

1 km = 0.62 miles

1 light second = 300,000,000 meters

1 kg = 2.2 lbs

1 lb = 0.45 kg

1 quart = 0.946 liters

1 m/s = 2.2 miles/hour

1 foot = 12 inches

1 inch = 2.54 cm = 25.4 mm

1000 m = 1 kilometer

1000 mm = 1 meter

100 cm = 1 meter

10 mm = 1 centimeter

1 minute = 60 seconds

Convert the following quantities using Dimensional Analysis and showing ALL of your work including the units. ANSWERS MUST HAVE UNITS!!

A. 565,900 seconds into days

$$\frac{565900 \text{ sec}}{1} \cdot \frac{1 \text{ hr}}{60 \text{ sec}} \cdot \frac{1 \text{ day}}{24 \text{ hrs}} = \frac{565900 \text{ day}}{86400} = 6.55 \text{ days}$$

B. 17 years into minutes

$$\frac{17 \text{ yrs}}{1} \cdot \frac{365 \text{ days}}{1 \text{ year}} \cdot \frac{24 \text{ hrs}}{1 \text{ day}} \cdot \frac{60 \text{ mins}}{1 \text{ hr}} = 8,935,200 \text{ minutes}$$

C. 60 miles per hour into meters per second

$$\frac{60 \text{ miles}}{1 \text{ hr}} \cdot \frac{1 \text{ hr}}{60 \text{ mins}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} \cdot \frac{1 \text{ meter}}{3.28 \text{ ft}} = \frac{316800 \text{ meter}}{11880 \text{ seconds}} = 26.83 \text{ m/sec}$$

D. 130 meters per second into miles per hour

$$\frac{130 \text{ m}}{1 \text{ sec}} \cdot \frac{3.28 \text{ ft}}{1 \text{ m}} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = \frac{1535040 \text{ m}}{5280 \text{ hr}} = 290.73 \text{ miles/hr}$$

E. 1100 feet per second into miles per hour

$$\frac{1100 \text{ ft}}{1 \text{ sec}} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} = \frac{3960000 \text{ miles}}{5280 \text{ hr}} = 750 \text{ mph}$$