

Summer Assignment for HS Model Algebra 1

The HS Model Algebra 1 course will cover all standards from HS Model Algebra 1 described in the 2011 Massachusetts Curriculum Frameworks,

<http://www.doe.mass.edu/frameworks/current.html>. This course expects a high degree of procedural fluency and conceptual understanding in K-8 math content as well as proficiency with mathematical practice standards. In this course, students are working to achieve mastery of the content.

It is important for students to have mastery of the pre-requisite knowledge and skills in order to be successful in this rigorous, accelerated course. Students will need to transfer the skills that they have learned to new concepts. The summer assignment focuses on linear equations and linear functions. Students entering the HS Model Algebra 1 course next year should be able to solve these problems without much of a struggle. The goal for any student taking the HS Model Algebra 1 course next year is to be confident with solving all the types of problems that are on the summer assignment. The answers for all problems and some worked out solutions are provided so that students can check their work and be able to assess their level of understanding with the material. If a student needs some guidance on a topic, the student should research the topic using online resources such as www.khanacademy.com or www.learnzillion.com.

Some of the major topics that are covered on the summer assignment are:

- Solving equations with variables on both sides
- Writing and solving equations given a word problem
- Graphing a scatterplot and best fit line
- Writing linear equations given a table or graph
- Identifying and interpreting slope

If a student struggles with the summer work assignment and in turn does not feel as though he/she is prepared for the HS Model Algebra 1 course, the student can request to be scheduled for Grade 8 Math. This request should be submitted to the MVMMS Principal, Brent Conway, at bconway@melroseschools.com by August 24th so that the student's schedule can be changed before the start of the school year.

Please note that students entering the HS Model Algebra 1 course must complete this summer assignment in addition to the Math 8 IXL summer assignment that all 8th grade students complete.

MVMMS Grade 8 Math Summer Assignment

Melrose Veterans Memorial Middle School

It is important for all students to review math concepts and processes during the summer. Intentional practice of math skills will help students reach mastery of content and increase their ability to use facts and operations easily and accurately. Students can use this opportunity to strengthen or deepen their content knowledge and ensure that they have the pre-requisite skills to be successful in their future math classes. Time spent working on mastery, reinforcement, and enrichment will greatly benefit all students.

Students should do their work on a separate sheet of paper. IXL provides explanations for all problems. If students struggle with a topic and need support, they should read through the explanations. Students can also go to www.khanacademy.com or www.learnzillion.com. The criteria for these IXL assignments is that in order to get full credit, students must spend at least 30 minutes and achieve at least a 70 smart score OR get a Smart Score of 90 or higher, whichever comes first. Students will print out a report from IXL once they have completed the assignment and submit it to their 8th grade teacher by the day after Labor Day.

Directions to print out IXL report:

- Log in to IXL at <https://www.ixl.com/signin/melroseps> (username is first initial last name)
- Click on Usage
- Click on Skills Practices
- Set Date range- Begin: last day of school End: the day after Labor Day.
- Set to Grade 8
- Click Update Report
- Click on the printer icon in the top right hand corner
- Open PDF document
- Print!
- Turn in a copy to the 8th grade teacher!!

	Skill	Track progress (Check the column that applies.)	
		Smart Score of 90+	30+ minutes and achieving at least a smart score of 70
	8th grade IXL topics		
1	A.1 Factors		
2	A.4 Prime Factorization		
3	A.5 Greatest Common Factor		
4	B.3 Absolute Value & Opposite Integers		
5	B.4 Compare & Order Integers		
6	C.3 Add and Subtract Integers		
7	C.6 Integer Multiplication and Division Rules		
8	D.1 Identify Rational & Irrational Numbers		
9	D.4 Round Decimals and Mixed Numbers		
10	D.7 Compare Rational Numbers		
11	E.9 Evaluate Expressions Involving Rational Numbers		
12	F.1 Understanding Exponents		
13	F.2 Evaluate Exponents		
14	H.1 Understanding Ratios		
15	H.2 Equivalent Ratios		
16	H.5 Unit Rates		
17	H.8 Solve Proportions		
18	J.1 Convert between Percents, Fractions, and Decimals		
19	U.1 Which X satisfies an equation?		
20	U.5 Solve One-Step Equations		

For additional fun and basic skill review, visit www.arcademics.com. Free games can be found at the bottom of the home page.

Common Core Readiness Assessment 1

1. The fare for a taxi cab is a \$2 flat fee plus an additional \$1.50 for each mile. Which equation represents the total cab fare in dollars?

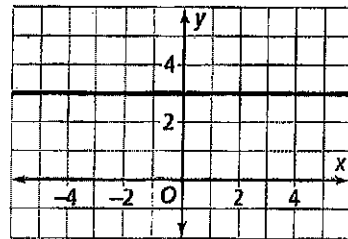
- A $y + 2 = 1.5x$; y represents miles traveled, x represents the total fare
- B $y = 1.5x + 2$; y represents the total fare, x represents miles traveled
- C $1.5y = x + 2$; y represents the total fare, x represents miles traveled
- D $y = (1.5 + 2)x$; y represents miles traveled, x represents the total fare

2. Jimmy's age is one year less than the sum of the ages of his siblings Serena and Tyler. Which equation represents Jimmy's age?

- F $z = x + y - 1$; x represents Tyler's age, y represents Serena's age, and z represents Jimmy's age
- G $x = y + z + 1$; x represents Jimmy's age, y represents Tyler's age, and z represents Serena's age
- H $x = 1 - y + z$; x represents Serena's age, y represents Jimmy's age, and z represents Tyler's age
- J $y = x + z - 1$; x represents Jimmy's age, y represents Serena's age, and z represents Tyler's age

3. Which of the following ordered pairs is not a solution to the equation represented by the graph?

- A $(-3, 3)$
- B $(3, 0)$
- C $(0, 3)$
- D $(3, 3)$



4. Which of the following reasons explains why the sum of $\frac{1}{3} + \frac{\sqrt{16}}{3}$ is a rational number?

- F Since $\frac{1}{3}$ and $\frac{\sqrt{16}}{3}$ both have terminating decimals when written in decimal form, their sum is a rational number.
- G A rational number is any number that can be graphed on a number line. Since $\frac{1}{3}$ and $\frac{\sqrt{16}}{3}$ can both be graphed on a number line, their sum is a rational number.
- H Rational numbers are whole numbers along with their opposites. Since $\frac{1}{3}$ is the opposite of the whole number 3, and $\frac{\sqrt{16}}{3}$ is the opposite of $\frac{3}{\sqrt{16}}$, their sum is a rational number.
- J Both $\frac{1}{3}$ and $\frac{\sqrt{16}}{3}$ are rational numbers. Therefore, their sum is a rational number.

5. Which property should be used next in this solution process?

$$3x + 2 + 3 = 7(x - 1) - 4$$

$$3x + 5 = 7(x - 1) - 4$$

- A Commutative Property of Addition
- B Identity Property of Multiplication
- C Associative Property of Multiplication
- D Distributive Property

6. The formula for how far a moving object travels in terms of the rate, or speed at which it moves, and the travel time, or how long it is moving, is $d = rt$, where d stands for distance, r stands for rate, and t stands for time. Rearrange the quantities in this formula to give a new formula for travel time in terms of distance and rate of travel.

- F $t = rd$
- G $t = \frac{d}{r}$
- H $t = \frac{r}{d}$
- J $t = d - r$

7. A heavy plastic rectangular sheet used in constructing greenhouses has an area of 80 ft by 40 ft. The entire sheet weighs 480 pounds. What is the weight per square foot of the sheet?

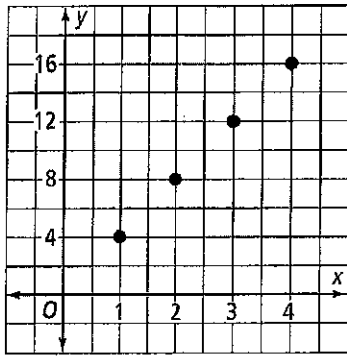
- A 0.15 lb/ft
- B 0.15 ft²/lb
- C 0.15 ft²/lb²
- D 0.15 lb/ft²

8. The table below shows amounts earned for dog-walking. How much is earned for a 7-day job?

Days, x	Dollars, y
1	13
2	26
3	39
4	52

- F 87
- G 89
- H 91
- J 93

9. Which relationship is represented by the graph below?



- A number of quarters needed for h hours of parking if each hour costs \$1
- B number of hours per day Mike spends studying if he spends 30 min on each subject
- C number of tickets needed for r amusement-park rides if each ride takes 6 tickets
- D number of dollars collected at a car wash if each wash costs \$5

10. What is the solution of $-21 = n - 8$?

- F $n = -168$
- G $n = -29$
- H $n = -13$
- J $n = 168$

11. What is the solution of $-81 = \frac{b}{6}$?

- A $b = -486$
- B $b = -75$
- C $b = 13.5$
- D $b = 486$

12. A gym charges \$35 per month for full access to their workout equipment. Mrs. Lewis has a \$140 gift certificate to the gym. For how many months can Mrs. Lewis work out using the gift certificate?

- F 3 months
- G 4 months
- H 5 months
- J 6 months

13. An auto repair shop charged \$75/h for labor plus an additional \$89 for parts. If the shop worked for 2 h, which equation represents the total repair cost C ?

- A $C = 75(2) - 89$
- B $C = 89(2) + 75$
- C $C = 75 + 89$
- D $C = 75(2) + 89$

14. Tara works in a clothing store where she earns a base salary of \$100 per day plus 12% of her daily sales. She sold \$800 in clothing on Saturday and \$1500 in clothing on Sunday. How much did she earn over the two days?

- F \$276
- G \$376
- H \$476
- J \$576

15. A cell phone company offers two different monthly text-messaging plans as shown in the table below. For what number of text messages will both plans cost the same?

Messaging Plan	Monthly Fee	Fee per Message
Plan A	\$35.00	\$0.10
Plan B	\$18.00	\$0.30

- A 55 messages
 B 85 messages
 C 110 messages
 D 140 messages
16. Solve the equation below for y .
- $$8x - 2y = 24$$
- F $y = 4x - 12$
 G $y = 12 - 4x$
 H $y = 8x - 24$
 J $y = 4x - 8$
17. The equation $2w + 5j = 60$ is used to determine the number of water bottles w and the number of juice bottles j that can be bought for \$60. If you purchase 4 bottles of juice, how many bottles of water can you buy?

- A 10
 B 15
 C 20
 D 25

18. The formula for the area of a triangle is $A = \frac{1}{2}bh$, where b is the base of the triangle and h is the height of the triangle. What is the length of the base if the area is 22 cm^2 and the height is 8 cm?

- F 4.5 cm
 G 5 cm
 H 5.5 cm
 J 6 cm

19. Solve the proportion $\frac{15t}{5} = \frac{2t + 3}{6}$.

- A 0.03
 B 0.1875
 C 0.0375
 D 0.15

20. Two rooms in a house are similar rectangles. Room A is 12 ft by 16 ft. The longer side of Room B is 4 ft shorter than twice the length of the shorter side of Room A. What are the dimensions of the second Room B?

- F 15×20
 G 16×20
 H 16×16
 J 14×16

21. A map has a scale of 1 in. : 25 mi. Two cities are 175 mi apart. How far apart are they on the map?

- A 3 in.
 B 5 in.
 C 6 in.
 D 7 in.

22. What is the solution of the proportion

$$\frac{5}{8} = \frac{b}{12}?$$

- F $b = 7$
- G $b = 7.5$
- H $b = 8$
- J $b = 9.5$

23. What is the solution of the proportion

$$\frac{5}{x+4} = \frac{3}{x-2}?$$

- A $x = 9$
- B $x = 10$
- C $x = 11$
- D $x = 12$

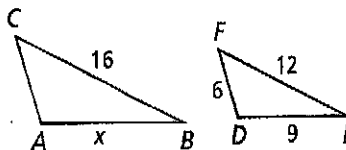
24. A water tank that holds 60 L of water can be emptied in 24 min. How long will it take to empty a water tank that holds 280 L of water?

- F 82 min
- G 96 min
- H 112 min
- J 128 min

25. The formula for the circumference C of a circle, in terms of the radius, is $C = 2\pi r$, where r stands for the radius. Rearrange the quantities in this formula to give a new formula for the radius of a circle in terms of the circumference.

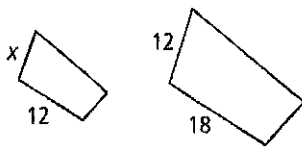
- A $r = \frac{2C}{\pi}$
- B $r = \frac{\pi}{2C}$
- C $r = \frac{C}{2\pi}$
- D $r = \frac{1}{2\pi C}$

26. The figures below are similar. What is the length of x ? $\triangle ABC \sim \triangle DEF$



- F $6\frac{3}{4}$
- G 12
- H 16
- J $21\frac{1}{3}$

27. The figures below are similar. What is the length of x ?



- A 8
- B 12
- C 16
- D 18

28. A dog toy is on sale for 20% off the original price. If the original price of the toy is \$11.50, what is the discounted price?

- F \$2.30
- G \$6.20
- H \$9.20
- J \$9.50

29. The price per share of a professional sports team increased from \$58 to \$65 over the past year. What is the stock's percent increase during this time? Round your answer to the nearest percent.

- A 7%
- B 9%
- C 11%
- D 12%

30. Daniela measures her math book and records its width as 21.9 cm to the nearest tenth of a centimeter. The actual measurement of the book's width is 22.0 cm. What is the percent error of her measurement? Round your answer to the nearest tenth of a percent.

- F 0.2%
- G 0.5%
- H 2.3%
- J 4.5%

ANSWERS:

- | | | |
|-------|-------|-------|
| 1. B | 11. A | 21. D |
| 2. F | 12. G | 22. G |
| 3. B | 13. D | 23. C |
| 4. J | 14. H | 24. H |
| 5. D | 15. B | 25. C |
| 6. G | 16. F | 26. G |
| 7. D | 17. C | 27. A |
| 8. H | 18. H | 28. H |
| 9. A | 19. B | 29. D |
| 10. H | 20. F | 30. G |



Elementary Algebra Skill

Solving Linear Equations: Variable on Both Sides

Solve each equation.

1) $6r + 7 = 13 + 7r$

2) $13 - 4x = 1 - x$

3) $-7x - 3x + 2 = -8x - 8$

4) $-8 - x = x - 4x$

5) $-14 + 6b + 7 - 2b = 1 + 5b$

6) $n + 2 = -14 - n$

7) $n - 3n = 14 - 4n$

8) $7a - 3 = 3 + 6a$

9) $5 + 2x = 2x + 6$

10) $-10 + x + 4 - 5 = 7x - 5$

11) $-8n + 4(1 + 5n) = -6n - 14$

12) $-6n - 20 = -2n + 4(1 - 3n)$

13) $4n - 40 = 7(-2n + 2)$

14) $7(5a - 4) - 1 = 14 - 8a$

15) $-31 - 4x = -5 - 5(1 + 5x)$

16) $38 + 7k = 8(k + 4)$

17) $8x + 4(4x - 3) = 4(6x + 4) - 4$

18) $3(1 - 3x) = 2(-4x + 7)$

19) $4(-8x + 5) = -32x - 26$

20) $-3(x - 1) + 8(x - 3) = 6x + 7 - 5x$

Answers to Solving Linear Equations: Variable on Both Sides

- | | | | |
|----------------------|---------------|------------------|-------------|
| 1) $\{-6\}$ | 2) $\{4\}$ | 3) $\{5\}$ | 4) $\{4\}$ |
| 5) $\{-8\}$ | 6) $\{-8\}$ | 7) $\{7\}$ | 8) $\{6\}$ |
| 9) No solution. | 10) $\{-1\}$ | 11) $\{-1\}$ | 12) $\{3\}$ |
| 13) $\{3\}$ | 14) $\{1\}$ | 15) $\{1\}$ | 16) $\{6\}$ |
| 17) all real numbers | 18) $\{-11\}$ | 19) No solution. | 20) $\{7\}$ |

1) The table shows the cost of visiting a working ranch for one day and night for different numbers of people.

Number of People	4	6	8	10	12
Cost (dollars)	250	350	450	550	650

a) Can the situation be modeled by a linear equation? Explain.

b) What is the slope and what does it represent?

c) Write an equation that gives the cost as a function of the number of people in the group.

2) The table shows the cost of a catered lunch buffet for different numbers of people.

Number of People	Cost (dollars)
12	192
18	288
24	384
30	480
36	576
42	672

a) What is the slope and what does it represent?

b) Write an equation that gives the cost of the lunch buffet as a function of the number of people attending.

c) What is the cost of a lunch buffet for 120 people?

Make a scatter plot of the data in the table. Draw a line of fit. Write an equation of the line.

3)

x	-2	-2	-1	0	1	1	1	2	2	3
y	2	3	2	1	0	1	-1	-1	-2	-2

4) The table shows the number of active woodpecker clusters in a part of the De Soto National Forest in Mississippi.

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
Active Clusters	22	24	27	27	34	40	42	45	51

a) Make a scatter plot of the data. Represent the x-axis as the number of years since 1990.

b) Find the slope and describe what it represents.

c) Write an equation that models the number of active clusters as a function of the number of years since 1990.

d) Use the equation to determine the number of active clusters in the year 2010.

5) The table shows the weight of an alligator at various times during a feeding trial.

Weeks	0	9	18	27	34	43	49
Weight in pounds	6	8.6	10	13.6	15	17.2	19.8

a) Make a scatter plot of the data.

b) Find the slope and describe what it represents.

c) Write an equation of the best fitting line.

d) Use the equation to predict the weight of this alligator at week 52.

6) The table shows the duration of several eruptions of the geyser Old Faithful and the interval between eruptions.

Duration (minutes)	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Interval (minutes)	50	57	65	71	76	82	89	95

a) Make a scatter plot of the data and draw a line of best fit.

b) Write an equation that models the interval as a function of an eruption's duration.

c) Predict the interval between geysers for a duration of 6 minutes.

1) The table shows the cost of visiting a working ranch for one day and night for different numbers of people.

Number of People	4	6	8	10	12
Cost (dollars)	250	350	450	550	650

a) Can the situation be modeled by a linear equation? Explain.

Linear. It is increasing by a constant rate.

b) What is the slope and what does it represent?

$$\frac{650 - 250}{12 - 4} = \frac{400}{8} = 50$$

The price is increasing \$50 when the number of people increase by one.

c) Write an equation that gives the cost as a function of the number of people in the group.

$$C(p) = 50p + 50$$

$$\begin{aligned} 250 &= 50(4) + b \\ 250 &= 200 + b \\ 50 &= b \end{aligned}$$

2) The table shows the cost of a catered lunch buffet for different numbers of people.

Number of People	Cost (dollars)
12	192
18	288
24	384
30	480
36	576
42	672

a) What is the slope and what does it represent?

$$\frac{672 - 192}{42 - 12} = \frac{480}{30} = 16$$

The cost increases \$16 when the number of people increase by one.

b) Write an equation that gives the cost of the lunch buffet as a function of the number of people attending.

$$C(p) = 16p$$

$$\begin{aligned} 672 &= 16(42) + b \\ 672 &= 672 + b \\ 0 &= b \end{aligned}$$

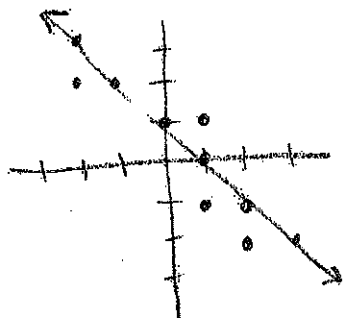
c) What is the cost of a lunch buffet for 120 people?

$$\$16 \cdot 120 = \$1920$$

Make a scatter plot of the data in the table. Draw a line of fit. Write an equation of the line.

3)

x	-2	-2	-1	0	1	1	1	2	2	3
y	2	3	2	1	0	1	-1	-1	-2	-2



$$\frac{\Delta y}{\Delta x} = \frac{-2 - 3}{3 - 2} = \frac{-5}{1} = -5$$

$$y = -x + 1$$

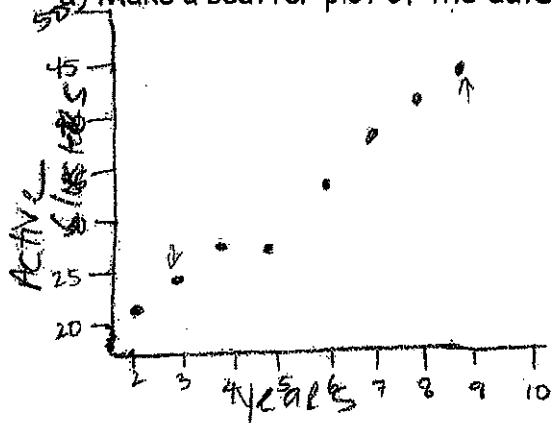
$$3 = -1(-2) + b$$

$$3 = 2 + b \quad b = 1$$

4) The table shows the number of active woodpecker clusters in a part of the De Soto National Forest in Mississippi.

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000
Active Clusters	22	24	27	27	34	40	42	45	51

a) Make a scatter plot of the data. Represent the x-axis as the number of years since 1990.



b) Find the slope and describe what it represents.

$$\frac{(3, 24) \quad (9, 45)}{9 - 3} = \frac{45 - 24}{6} = \frac{21}{6} = \frac{7}{2}$$

Clusters increase by 7 every 2 years. Or 3.5/yr

c) Write an equation that models the number of active clusters as a function of the number of years since 1990.

$$24 = \frac{7}{2}(3) + b \quad C(y) = 3.5y + 13.5$$

$$\frac{18}{2} = \frac{21}{2} + b \quad b = \frac{27}{2} = 13.5$$

d) Use the equation to determine the number of active clusters in the year 2010.

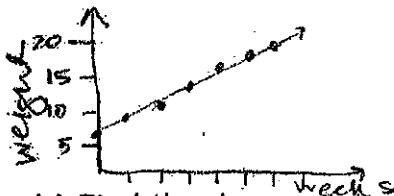
$$C(20) = 3.5(20) + 13.5$$

$$70 + 13.5$$

5) The table shows the weight of an alligator at various times during a feeding trial.

Weeks	0	9	18	27	34	43	49
Weight in pounds	6	8.6	10	13.6	15	17.2	19.8

a) Make a scatter plot of the data.



b) Find the slope and describe what it represents.

$$\frac{19.8 - 8.6}{49 - 9} = \frac{11.2}{40} = .28$$

Each week the alligator's weight increases .28 lbs.

c) Write an equation of the best fitting line.

$$8.6 = .28(9) + b$$

$$8.6 = 2.52 + b$$

$$6.08 = b \leftarrow \text{use } b \text{ because you were given the } y\text{-intercept}$$

$$W(t) = .28t + 6$$

d) Use the equation to predict the weight of this alligator at week 52.

$$W(52) = .28(52) + 6$$

$$14.56 + 6$$

$$= 20.56 \text{ lb}$$

6) The table shows the duration of several eruptions of the geyser Old Faithful and the interval between eruptions.

Duration (minutes)	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Interval (minutes)	50	57	65	71	76	82	89	95

a) Make a scatter plot of the data and draw a line of best fit.



b) Write an equation that models the interval as a function of an eruption's duration.

$$\frac{95 - 65}{5.0 - 2.5} = \frac{30}{2.5} = 12$$

$$95 = 12(5.0) + b$$

$$95 = 60 + b$$

$$35 = b$$

$$I(d) = 12d + 35$$

c) Predict the interval between geysers for a duration of 6 minutes.

$$I(6) = 12(6) + 35$$

$$= 72 + 35$$

$$= 107 \text{ min}$$

Name: _____ Date: _____ Section: _____

Unit 1 - Lesson 3

Word problems with variables on both sides



DIRECTIONS: For each problem

- a. Highlight the question.
- b. Write an equation to model the situation.
- c. Solve the equation.
- d. Write the answer to the highlighted question in a full sentence.

1. Hans needs to rent a moving truck. Suppose Company A charges a rate of \$40 per day and Company B charges \$60 fee plus \$20 per day. For what number of days is the cost the same?

2. Suppose a video store charges nonmembers \$4 to rent each video. A store membership costs \$21 and members pay only \$2.50 to rent each video. For what number of videos is the cost the same?

3. Suppose your club is selling candles to raise money. It costs \$100 to rent a booth from which to sell the candles. If the candles cost your club \$1 each and are sold for \$5 each, how many candles must be sold to equal your expenses.

4. A hairdresser is considering ordering a certain shampoo. Company A charges \$4 per 8-oz bottle plus a \$10 handling fee per order. Company B charges \$3 per 8-oz bottle plus a \$25 handling fee per order. How many bottles must the hairdresser buy to justify using Company B?

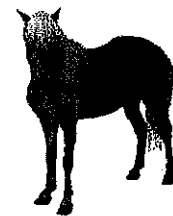
Yes, there is a back



Name: _____ Date: _____ Section: _____

Unit 1 - Lesson 3

Word problems with variables on both sides



5. One telephone company charges \$16.95 per month and \$.05 per minute for local calls. Another company charges \$22.95 per month and \$.02 per minute for local calls. For what number of minutes of local calls per month is the cost of the plans the same?

6. One health club charges a \$44 sign-up fee and \$30 per month. Another health club charges a \$99 sign-up fee and \$25 per month. For what number of months is the cost the same?

7. The perimeters of the rectangles below are equal. Find the length and width of each rectangle.



$2x$

$4x + 2$



$4x$

$4x$

KEY



Unit 1 - Lesson 3

Word problems with variables on both sides

Name: _____

Date: _____ (Horse)

DIRECTIONS: For each problem

- Highlight the question.
- Write an equation to model the situation.
- Solve the equation.
- Write the answer to the highlighted question in a full sentence.

1. Hans needs to rent a moving truck. Suppose Company A charges a rate of \$40 per day and Company B charges \$60 fee plus \$20 per day. For what number of days is the cost the same?

$$\begin{array}{r} 40d \\ - 20d \\ \hline 20d \\ 20 \end{array} \quad \begin{array}{r} 60 + 20d \\ - 20d \\ \hline 60 \\ 20 \end{array}$$

$d = 3$ days.

The fee would be the same for 3 days.

2. Suppose a video store charges nonmembers \$4 to rent each video. A store membership costs \$21 and members pay only \$2.50 to rent each video. For what number of videos is the cost the same?

$$\begin{array}{r} 4v \\ - 2.50v \\ \hline 1.5v \\ 21 \end{array}$$

$$v = 14$$

THE COST IS THE SAME FOR 14 VIDEOS

3. Suppose your club is selling candles to raise money. It costs \$100 to rent a booth from which to sell the candles. If the candles cost your club \$1 each and are sold for \$5 each, how many candles must be sold to equal your expenses.

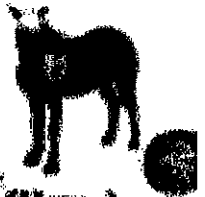
$$5c - 1c = 100$$

$$4c = 100$$

$$c = 25$$

You must sell 25 candles to equal your expenses.





Unit 1 - Lesson 3

Name: _____

Word problems with variables on both sides

Date: _____ (Horse)

4. A hairdresser is considering ordering a certain shampoo. Company A charges \$4 per 8-oz bottle plus a \$10 handling fee per order. Company B charges \$3 per 8-oz bottle plus a \$25 handling fee per order. How many bottles must the hairdresser buy to justify using Company B?

$$4b + 10 = 3b + 25$$

$$b = 15$$

They must buy 16 bottles to justify using Company B

5. One telephone company charges \$16.95 per month and \$.05 per minute for local calls. Another company charges \$22.95 per month and \$.02 per minute for local calls. For what number of minutes of local calls per month is the cost of the plans the same?

$$16.95 + .05m = 22.95 + .02m$$

$$\begin{array}{r} .03m = 6.00 \\ \hline .03 \quad .03 \\ m = 200 \end{array}$$

$$\begin{array}{r} 22.95 \\ -16.95 \\ \hline 6.00 \end{array}$$

The plan costs the same for 200 min.

6. One health club charges a \$44 sign-up fee and \$30 per month. Another health club charges a \$99 sign-up fee and \$25 per month. For what number of months is the cost the same?

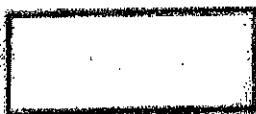
$$44 + 30m = 99 + 25m$$

$$5m = 55$$

$$m = 11$$

For 11 months the cost are the same

7. The perimeters of the rectangles below are equal. Find the length and width of each rectangle.



$$2x = 2$$



$$4x = 4$$

$$4x + 2 = 6$$

$$4x = 4$$

$$4x + 2 + 2x + 4x + 2 + 2x = 4x + 4x + 4x + 4x$$

$$12x + 4 = 16x$$

$$4 = 4x$$

$$1 = x$$

Rectangle 1

$$\text{length} = 6$$

$$\text{width} = 2$$

Rectangle 2