Midterm Two Study Guide Solutions

Group 1

Names Paul Tawfic Logan Hector M

Directions: Use **improper fractions** unless otherwise directed. Show all work & simplify your answers for full credit.

Find the x-intercept and y-intercept and then graph the equation.

$42\left(\frac{x}{6}+\frac{y}{7}\right)=1(42)$ $7x+6y=42$

a) Slope-intercept form: $y=-\frac{7}{6}x+7$

b) x-intercept as an ordered pair: $(6,0)$

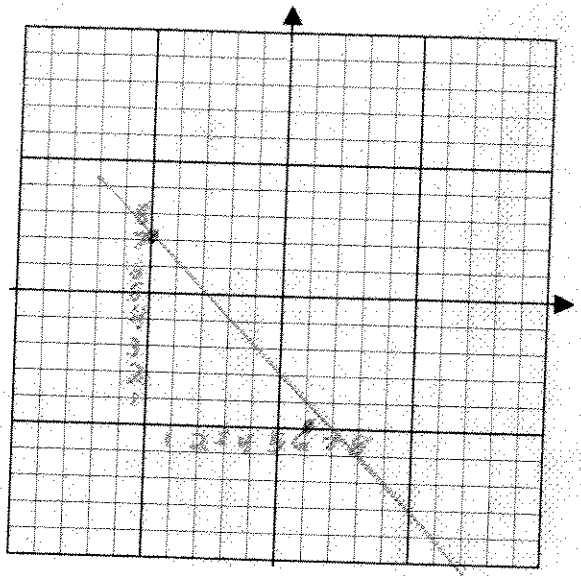
c) y-intercept as an ordered pair: $(0,7)$

$\frac{6y}{6}=\frac{-7x}{6}+\frac{42}{6}$

$y=-\frac{7}{6}x+7$

$\frac{-7x}{-7}=\frac{-42}{-7}$ $x=6$

$6\left(\frac{-7}{6}\right)x=(-7)6$



Use the given information to find the equation of the line. Write your answer in slope-intercept form if appropriate.

a) Passes through $(-6,-2)$ and $(4,6)$

$m=\frac{6+(+2)}{4+(+6)}$ $\frac{8}{10}\ \frac{4}{5}$

$y=\frac{4}{5}x+\frac{14}{5}$

$y=mx+b$

$6=\frac{4}{5}(4)+b$ see below

$6\left(\frac{16}{5}\right)5=b5$

$\frac{56-14}{5}=\frac{b}{5}$ $30=16+5b$

$-16\quad -16$

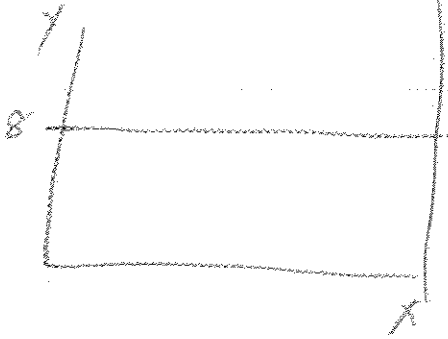
b) Passes through $(5,8)$ and has undefined slope

$x=5$ rise 1 run 0

c) Passes through $(5,8)$ and has a zero slope

$y=\frac{0}{1}x+8$

$y=8$



a) $m=4/5$

$5y=(4/5x+b)5$

$5y=4x+5b$

$5(6)=4(4)+5b$

$30=16+5b$

$-16\quad -16$

$14=5b$ $b=14/5$

$y=\frac{4}{5}x+\frac{14}{5}$

Midterm Two Study Guide Solutions

Group 2

Names Hollystewart, David Han

Directions: Use improper fractions unless otherwise directed. Show all work & simplify your answers for full credit.

A landscaper plans to dig a rectangular garden for which the length is to be 3 feet less than twice the width. If the landscaper has 66 feet of fencing to enclose the garden, what should be the dimensions of the garden?

a) Define each variable.

$L = 2W - 3$

$P = 66$

$P = 2L + 2W$

Defining variables - words only

Let L = length of garden in ft

Let W = width of garden in ft.

b) Write a system of two equations. ***(You do NOT need to solve the problem.)***

$66 = 2L + 2W$

$L = 2W - 3$

~~$66 = 2(2w-3) + 2w$~~

A 10,000 seat amphitheater will sell tickets at $22 and $30 for a Sarah McLachlan concert. How many tickets should be sold at each price for a sellout performance to generate a total revenue of $232,000?

a) Define each variable.

x = # of tickets at 22 $

y = # of tickets at 30 $

b) Write a system of two equations. ***(You do NOT need to solve the problem.)***

$10000 = x + y$

~~$x = 10000 - y$~~

$232\,000 = 22x + 30y$

Midterm Two Study Guide Solutions

Group 3

Names CYNTHIA, MARCUS, DAVID M.

Directions: Use improper fractions unless otherwise directed. Show all work & simplify your answers for full credit.

The percentage of mothers who smoke cigarettes during pregnancy has declined approximately linearly from 13.9% in 1995 to 12.0% in 2000. Let p be the percentage of mothers who smoke cigarettes during pregnancy at t years since 1990.

Show all work and answer the questions in complete sentences where appropriate. **Round your answers to two decimal places.**

a) Clearly define your variables and identify the independent and dependent variables.

p: % of mothers who smoke (dep.)
t: years since 1990 (ind.)

b) Find an equation of a linear model to describe the data.

t_1, P_1 $(5, 13.9)$
t_2, P_2 $(10, 12)$

$p = mt + b$

$m = \frac{12 - 13.9}{10 - 5} = \frac{-1.9}{5} = -.38$

$p = -.38t + b$

$12 = -.38(10) + b$ ← y-inter

$12 = -3.8 + b$
$+3.8 \quad +3.8$
$15.8 = b$

$p = -.38t + 15.8$

c) What is the slope? What does it mean in this situation?

slope = $-.38$

The % of women who smoke cigarettes during pregnancy goes down by approx. .38 % each year.

no - sign - decreases

d) What is the p-intercept as an ordered pair? What does it mean in this situation?

(0, 15.8) In 1990, 15.8% of women smoked cigarettes during their pregnancy.

e) What is the t-intercept as an ordered pair? What does it mean in this situation? (Round to the nearest year.)

$p = -.38t + 15.8$, (41.58, 0)

$0 = -.38t + 15.8$
$-15.8 \quad -15.8$
$-15.8 = -.38t$

1990 + 42 = 2032

$t = 41.58$

In 2032, the % of women who smoke during their pregnancy will be 0.

f) Predict the total the percentage of mothers who smoke cigarettes during pregnancy in 2009.

1990 + 19 = 2009

$p = -.38(19) + 15.8$

$p = 8.58\%$

The % of mothers who smoke cigarettes during pregnancy in 2009 will be 8.58%.

Midterm Two Study Guide Solutions

Group 4

Names Layla, Daniel, Matt

Directions: Use **improper fractions** unless otherwise directed. Show all work & simplify your answers for full credit.

Simplify the expression or solve the equation, as appropriate.

a) $\left(-8\right)=\left(\frac{4x}{7}\right)7$

$7\cdot-8=\frac{4x}{7}$

$\frac{-56}{4}=\frac{4x}{4}$

$\boxed{x=-14}$

b) $5(x-2)-(3x+6)=6(5x+3)$

$5x-10-3x-6=30x+18$

$2x-16=30x+18$

$-30x \quad -30x$

$-28x-16=18$

$+16 \quad +16$

$\frac{-28x}{-28}=\frac{34}{-28}\div 2=-\frac{17}{14}$

$\boxed{x=-\frac{17}{14}}$

c) $-5.5+4.6(3.5x-9.1)$

$-5.5+16.1x-41.86$

$\boxed{16.1x-47.36}$

d) $\left(\frac{7x+4}{5}\right)=\left(\frac{5x-2}{6}\right)30$

$42x+24=25x-10$

$-25x \quad -25x$

$17x+24=-10$

$-24 \quad -24$

$\frac{17x}{17}=\frac{-34}{17}$

$\boxed{x=-2}$

e) $\frac{2}{9}(15x+6)$

$\frac{2}{9}\cdot\frac{15x}{1}=\frac{30x}{9}\div 3=\frac{10x}{3}$

$\frac{2}{9}\cdot\frac{6}{1}=\frac{12}{9}\div 3=\frac{4}{3}$

$\boxed{\frac{10x}{3}+\frac{4}{3}}$

f) $-4(2x+1)-2(3x-6)=0$

$-8x-4-6x+12=0$

$-14x+8=0$

$-8 \quad -8$

$\frac{-14x}{-14}=\frac{-8}{-14}$

$x=\frac{8}{14}\div 2=\boxed{\frac{4}{7}}$

Midterm Two Study Guide Solutions

Group 5

Names Kristina Martinez, Tarryn Lambert, Christian De Jesus

Directions: Use **improper fractions** unless otherwise directed. Show all work & simplify your answers for full credit.

Solve the inequality. Describe the solution set as an inequality, in interval notation, and in a graph.

$5(x-2) \geq 15$

$5x - 10 \geq 15$

$+10 \quad +10$

$\frac{5x}{5} \geq \frac{25}{5}$

$x \geq 5$

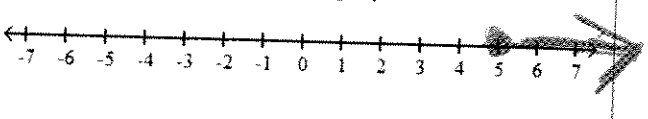
The solution expressed as an inequality:

$x \geq 5$

The solution expressed in interval notation:

$[5, \infty)$

The solution expressed as a graph:



12 $\left(\frac{2b-4}{3} < \frac{3b-4}{4}\right)$ 12

$4(2b-4) < 3(3b-4)$

$8b - 16 < 9b - 12$

$+16 \quad +16$

$8b < 9b + 4$

$-9b \quad -9b$

$-1b < 4$

$\frac{-1b}{-1} > \frac{4}{-1}$

$b > -4$

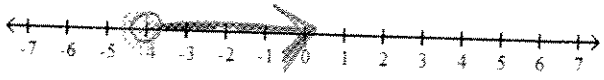
The solution expressed as an inequality:

$b > -4$

The solution expressed in interval notation:

$(-4, \infty)$

The solution expressed as a graph:



Midterm Two Study Guide Solutions

6/23/09

Group 6

Names Ana Melferon, Hector Gomez, Harold

Directions: Use improper fractions unless otherwise directed. Show all work & simplify your answers for full credit.

Solve the system by *substitution*. If the system is inconsistent or dependent, say so. Check your solution if appropriate.

$$6x - 5y = -8$$
$$x + 3y = 14$$

$x + 3y = 14$
$-3y \quad -3y$
$x = -3y + 14$

$6(-3y + 14) - 5y = -8$
$-18y + 84 - 5y = -8$
$-84 \quad -84$
$\frac{-23y}{-23} = \frac{-92}{-23}$
$y = 4$

$6x - 5(4) = -8$
$6x - 20 = -8$
$+20 \quad +20$
$\frac{6x}{6} = \frac{12}{6}$
$x = 2$

$(2, 4)$

check

$6(2) - 5(4) = -8$
$12 - 20 = -8$ ✓

Solve the system by *elimination*. If the system is inconsistent or dependent, say so. Check your solution if appropriate.

$$(4)\ 25x - 10y = 20$$
$$(10)\ -10x + 4y = -8$$

$100x - 40y = 80$
$-100x + 40y = -80$
$0 = 0$

dependent

When is it appropriate to check your solution?

when it one solution system

Names Ricardo Narvaez, Carolyn Gibson

Directions: Use **improper fractions** unless otherwise directed. Show all work & simplify your answers for full credit.

The numbers of men and women who earned a bachelor's degree are listed in the table below for various years. Let n be the number of people (in thousands) who earned a bachelor's degree in the year that is t years since 1980.

	Number of People Who Earned a Bachelor's Degree (thousands)	
Year	**Women**	**Men**
1980	456	474
1985	497	483
1990	560	492
1995	634	526
2000	708	530
2002	742	550

Reasonable models for the women and men are

$n = 13.28t + 440.09$	Women
$n = 3.42t + 468.14$	Men

Use substitution or elimination to estimate when the number of women who earned a bachelor's degree was equal to the number of men who earned a bachelor's degree. What was the number of people?

Remember to clearly define your variables, show all work and answer the question in a complete sentence for full credit. **Round your answers to the nearest whole numbers.**

$13.28t + 440.09 = 3.42t + 468.14$

$13.28t = 3.42t - 28.05$

$9.86t = -28.05$

$t = 2.84$

$t = 3$

t = years since 1980
n = number of people in thousands

$n = 13.28(2.84) + 440.09$

$n = 37.71 + 440.09$

$n = 477.80$

$n = 478$.

use rounded number at end only

In 1983 there where 478 thousand men and women who earned a Bachlores Degree.

At which step should you round your numbers?

The final step is when you round your numbers, ~~or when you need to round to whole numbers~~