

**YOUR EXAM WILL BE IDENTICAL IN FORMAT TO THIS REVIEW. ONLY THE ORDER AND ACTUAL NUMERICAL VALUES OF THE QUESTIONS WILL VARY.**

**Multiple-Choice:** (20 questions—2 points each) See multiple-choice packet. Record all answers to multiple-choice questions here. To clearly distinguish between A and D, it is recommended that you use capital letters

**Free-Response:** (Total 60 points...exact points are listed in *italics* in each problem.) You must show a reasonable amount of work that leads to your answer. Where it is impossible to show work, explain the mental leaps that you made to draw your conclusion.

#21-23: Systems of Equations—Classify each system of equations then solve each system of equations using a method of your choosing (graphing, substitution, or elimination.)

21.  $y = -2x - 7$   
 $4x + 2y = 6$

(6 points)

$$y = \frac{3}{2}x + 4$$

23.  $\frac{2}{3}y - \frac{8}{3} = x$

(6 points)

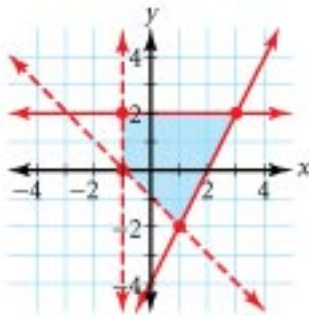
22.  $x + y + z = 7$   
 $2x + 3y = 3$   
 $x = -2y$

(8 points)

#24-25: Systems of Linear Inequalities—For problem 24, graph the system of inequalities. For problem 25, given the graph, write the system of linear inequalities.

24.  $x \geq 0$   
 $y \geq 0$   
 $x + y \leq 4$   
 $x - y \leq 2$

Graph: (7 points)



25.

System of Linear Inequalities: (8 points)

#26-28: Solve each word problem. Be sure to assign variables and ANSWER THE QUESTION IN WORDS.

26. Gina sold games and cakes. Games are sold for \$7 each while cakes are listed at \$10 each. If Gina sold \$125 and only sold 17 items, how many games and cakes did Gina sell?

27. At a local zoo, there are turtles and penguins. If there are a total of 72 feet, and you count 19 heads, how many turtles and penguins are there?

28. Zina made biscuits with two different types of chips! There were only 19 total chips in all of the biscuits, but there were also 15 more potato chips than funny shaped chips. How many potato chips and funny shaped chips did Zina use?

#29-30: Parametric Equations—

(A) Complete the table provided (2 points).

(B) Graph. (2 points)

(C) Write each pair of parametric equations as a single equation in terms of x and y. (1 points)

18.  $x(t) = t - 2$  and  $y(t) = t + 7$

PART A - Fill in the table		
t	x(t)	y(t)
-2		
-1		
0		
1		
2		

19.  $x(t) = 2 - 3t^2$  and  $y(t) = (-1/3)t$

PART A - Fill in the table		
t	x(t)	y(t)
-2		
-1		
0		
1		
2		

Name \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.****Solve the system by elimination.**

1)  $x - 3y = 10$  1) \_\_\_\_\_

$9x - 4y = -2$

A) No solution

B) (-2, -4)

C) (-3, -3)

D) (2, -3)

2)  $4x + 3y = -40$  2) \_\_\_\_\_

$8x = -42 - 6y$

A) (-7, 4)

B) (2, 4)

C) (-7, -4)

D) No solution

3)  $9x - 6y = -3$  3) \_\_\_\_\_

$5x - 4y = 1$

A) (-3, -3)

B) (-4, -3)

C) No solution

D) (-3, -4)

4)  $9x - 4y = 16$  4) \_\_\_\_\_

$5x + 2y = -8$

A) (0, -4)

B) (0, -3)

C) (-1, -3)

D) No solution

**Solve the system by substitution.**

5)  $x - 2y = -11$  5) \_\_\_\_\_

$-7x - 2y = -35$

A) (-3, 6)

B) (3, 7)

C) (4, 6)

D) No solution

6)  $x + 6y = 36$  6) \_\_\_\_\_

$3x + 7y = 42$

A) (1, 5)

B) No solution

C) (-6, 0)

D) (0, 6)

7)  $x + 5y = 11$  7) \_\_\_\_\_

$-2x - 10y = -12$

A) (1, 2)

B) (2, 2)

C) No solution

D) (1, 1)

**Solve the problem.**

8) A theatre sells two types of tickets to their plays; children's tickets and adult tickets. For today's performance they have sold a total of 1240 tickets. Also, they have sold 80 more adult tickets than children's tickets. How many adult tickets have they sold? 8) \_\_\_\_\_

A) 665

B) 658

C) 645

D) 660

9) The total number of cars sold at a used car lot for the years 1996 and 1997 was 1236. From 1996 to 1997 the number of cars sold declined by 158. How many cars were sold in 1996? 9) \_\_\_\_\_

A) 685

B) 675

C) 703

D) 697

10) In one study the maximum heart rates of conditioned athletes were examined. A group of athletes was exercised to exhaustion. Let  $x$  represent an athlete's heart rate five seconds after stopping exercise and  $y$  represent an athlete's heart rate ten seconds after stopping exercise. It was found that the maximum heart rate  $H$  for these athletes satisfied the following two equations.

$$H = 0.491x + 0.468y + 11.2$$

$$H = -0.981x + 1.872y + 26.4$$

If an athlete had a maximum heart rate of  $H = 158$ , determine the value of  $x$  graphically to the tenths place.

A)  $x = 155.3$

B)  $x = 154.2$

C)  $x = 154.7$

D)  $x = 155.0$

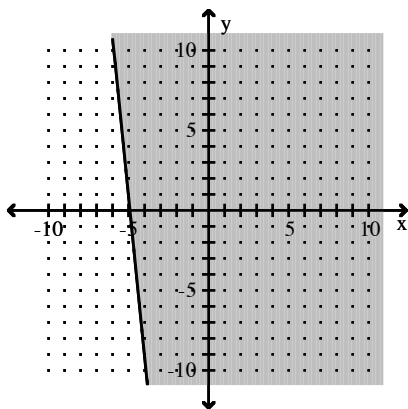
10) \_\_\_\_\_

**Graph the linear inequality.**

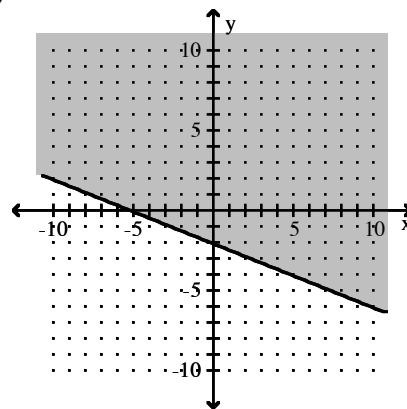
11)  $-2x - 5y \leq 10$

11) \_\_\_\_\_

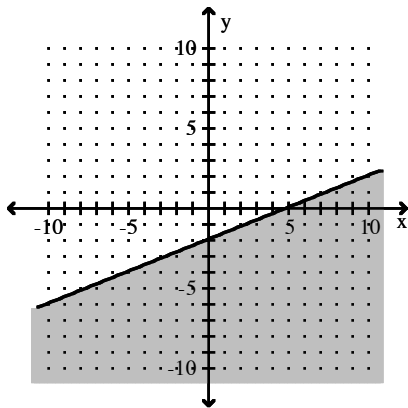
A)



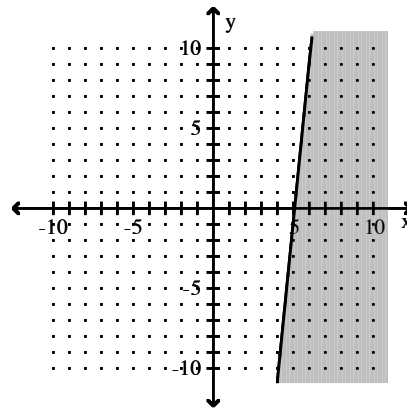
B)



C)



D)



**Solve the problem.**

12) Zach is planning to invest up to \$45,000 in corporate and municipal bonds. The least he will invest in corporate bonds is \$6000 and he does not want to invest more than \$26,000 in corporate bonds. He also does not want to invest more than \$33,840 in municipal bonds. The interest is 8.3% on corporate bonds and 6.3% on municipal bonds. This is simple interest for one year. What is the maximum income?

A) \$29,355

B) \$3355

C) \$22,355

D) \$7961

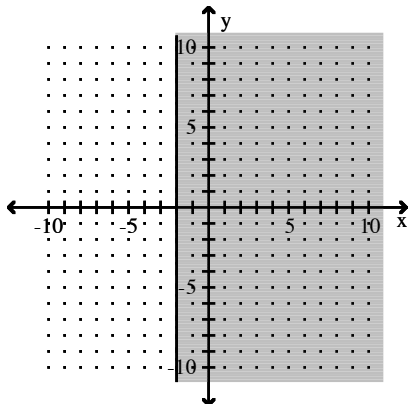
12) \_\_\_\_\_

Graph the linear inequality.

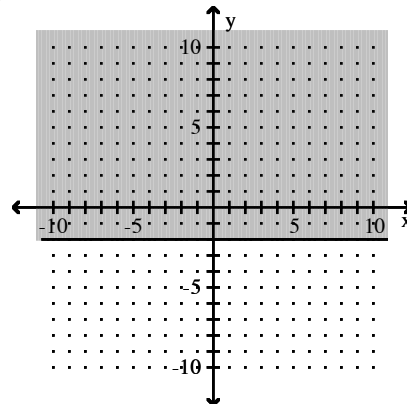
13)  $x \geq -2$

13) \_\_\_\_\_

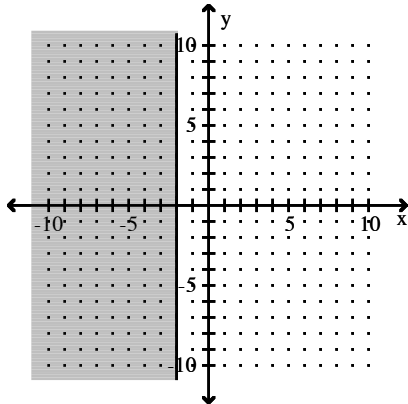
A)



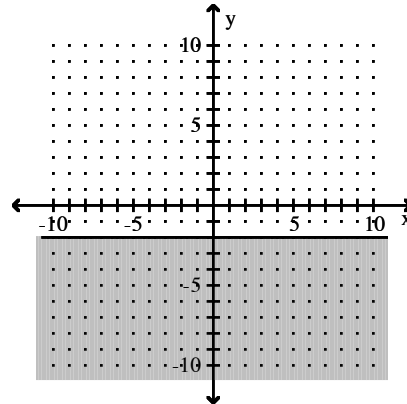
B)



C)



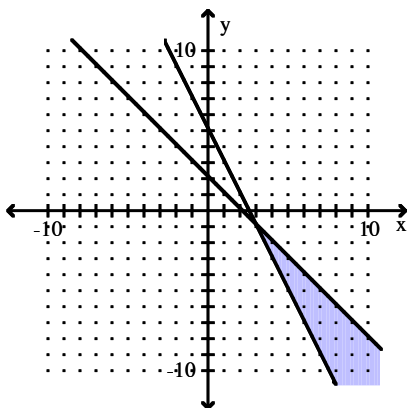
D)



Write a system of inequalities whose solution set is the region shown.

14)

14) \_\_\_\_\_



A)  $y \leq x + 2$   
 $y \geq 2x + 5$

B)  $y \leq -x + 2$   
 $y \geq -2x + 5$

C)  $y \geq -x + 2$   
 $y \leq -2x + 5$

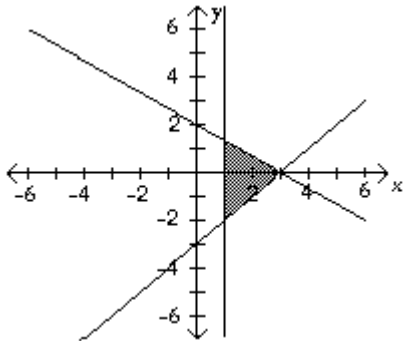
D)  $y \geq x + 2$   
 $y \leq 2x + 5$

**Solve the system of inequalities.**

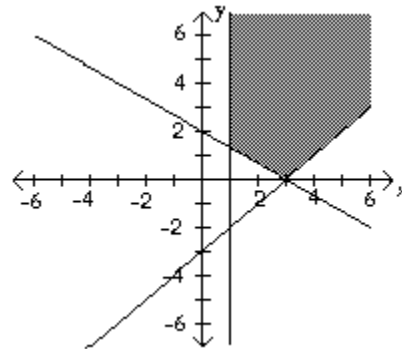
15)  $2x + 3y \geq 6$   
 $x - y \geq 3$   
 $x \geq 1$

15) \_\_\_\_\_

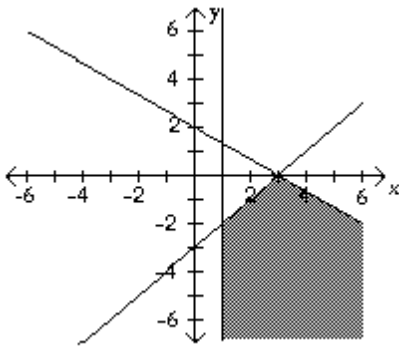
A)



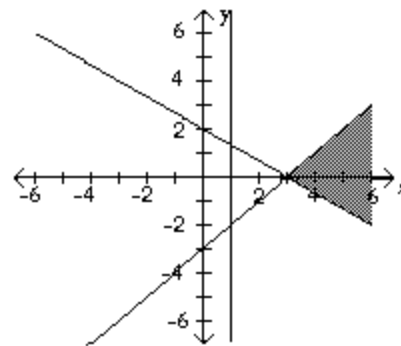
B)



C)



D)



**Solve the problem.**

16) Find the maximum value of  $P = 8x + 12y$  subject to the following constraints.

16) \_\_\_\_\_

$40x + 80y \leq 560$   
 $6x + 8y \leq 72$   
 $x \geq 0$   
 $y \geq 0$

- A) Maximum of 96  
 C) Maximum of 92

- B) Maximum of 120  
 D) Maximum of 100

17) Find the minimum value of  $P = 2x + 4y$  subject to the following constraints.

17) \_\_\_\_\_

$x + 2y \geq 10$   
 $3x + y \geq 10$   
 $x \geq 0$   
 $y \geq 0$

- A) Minimum of 10  
 C) Minimum of 20

- B) Minimum of 30  
 D) Minimum of 0

18) The Acme Class Ring Company designs and sells two types of rings: the VIP and the SST. They can produce up to 24 rings each day using up to 60 total man-hours of labor. It takes 3 man-hours to make one VIP ring and 2 man-hours to make one SST ring. How many of each type of ring should be made daily to maximize the company's profit, if the profit on a VIP ring is \$40 and on an SST ring is \$35?

18) \_\_\_\_\_

- A) 12 VIP and 12 SST
- C) 18 VIP and 6 SST

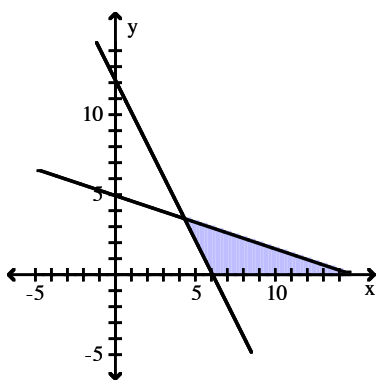
- B) 14 VIP and 10 SST
- D) 16 VIP and 8 SST

**Solve the system of inequalities.**

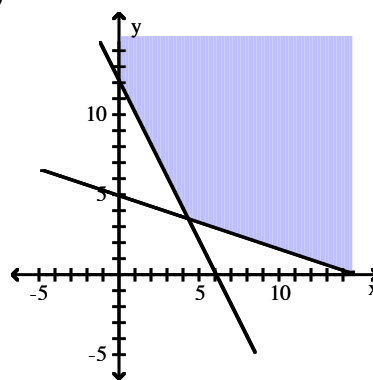
19)  $2x + y \leq 12$   
 $x + 3y \leq 15$   
 $x \geq 0$   
 $y \geq 0$

19) \_\_\_\_\_

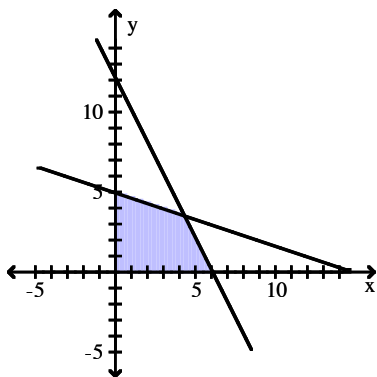
A)



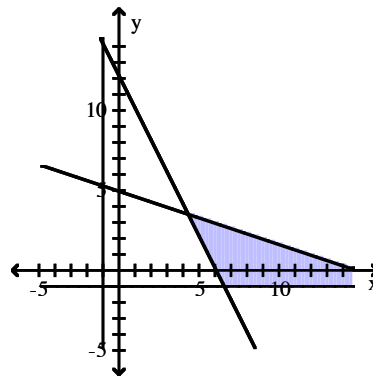
B)



C)



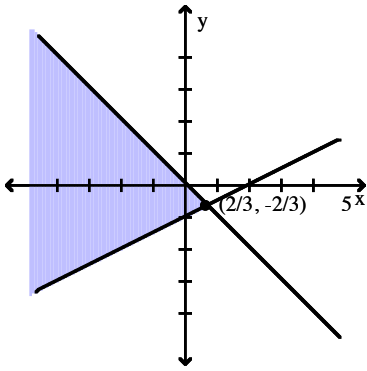
D)



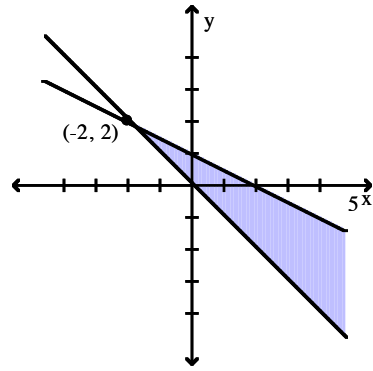
20)  $x + 2y \leq 2$   
 $x + y \geq 0$

20) \_\_\_\_\_

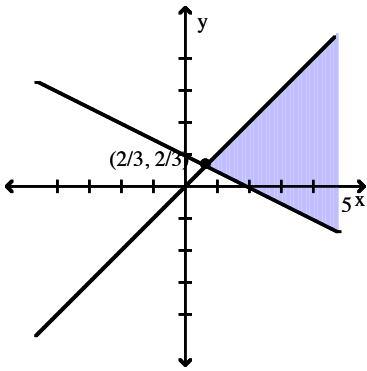
A)



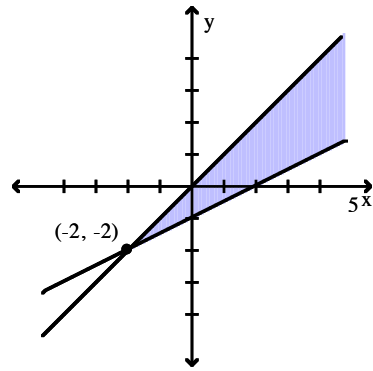
B)



C)



D)





## Answer Key

Testname: HA2PC\_CH3(A2)\_REVIEW

- 1) B
- 2) D
- 3) D
- 4) A
- 5) B
- 6) D
- 7) C
- 8) D
- 9) D
- 10) C
- 11) B
- 12) B
- 13) A
- 14) B
- 15) D
- 16) D
- 17) C
- 18) A
- 19) C
- 20) B