

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Solve the equation.**

$$1) \frac{1}{2}(4x - 8) = \frac{1}{3}(12x - 6)$$

1) \_\_\_\_\_

A)  $\frac{1}{8}$

B) -8

C) 1

D) -1

$$2) 7[6m - (5m + 3) + 4] = 5m + 4$$

2) \_\_\_\_\_

A)  $\frac{3}{2}$

B)  $-\frac{3}{2}$

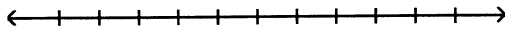
C)  $\frac{11}{12}$

D)  $-\frac{45}{2}$

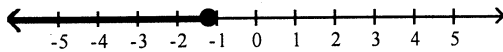
**Solve the inequality and graph the solution.**

$$3) 8x - 7 \leq 3x - 13$$

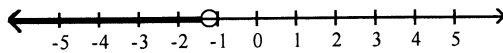
3) \_\_\_\_\_



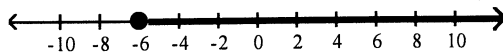
A)  $\left[-\infty, -\frac{6}{5}\right]$



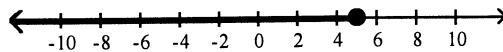
B)  $\left(-\infty, -\frac{6}{5}\right)$



C)  $[-6, \infty)$



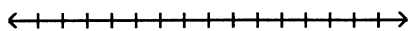
D)  $(-\infty, 5]$



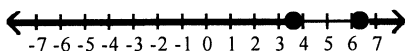
Solve the inequality, then graph the solution.

4)  $6 < \frac{11x - 10}{5} < 12$

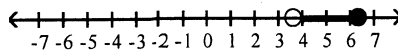
4) \_\_\_\_\_



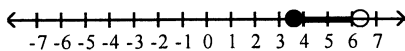
A)  $\left(-\infty, \frac{40}{11}\right) \cup \left(\frac{70}{11}, \infty\right)$



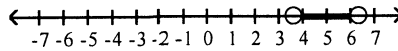
B)  $\left[-\frac{70}{11}, \frac{40}{11}\right)$



C)  $\left[-\frac{40}{11}, \frac{70}{11}\right)$



D)  $\left(\frac{40}{11}, \frac{70}{11}\right)$



Find an equation in slope-intercept form (where possible) for the line.

5) Through (3, -2) and (7, 11)

5) \_\_\_\_\_

A)  $y = \frac{4}{13}x - \frac{38}{13}$

B)  $y = \frac{13}{4}x - \frac{47}{4}$

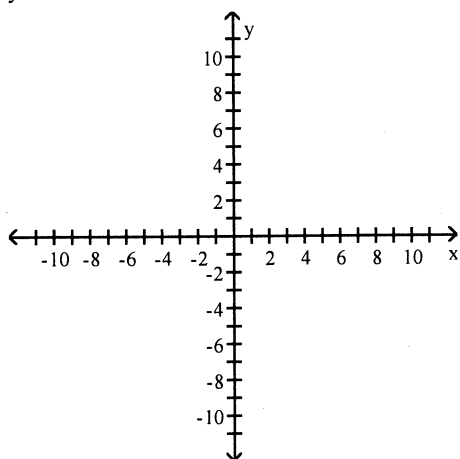
C)  $y = -\frac{13}{4}x + \frac{31}{4}$

D)  $y = \frac{13}{4}x - \frac{14}{13}$

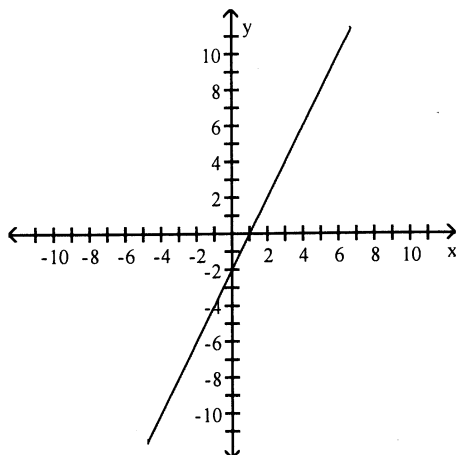
Graph the equation.

6)  $y = -2x - 2$

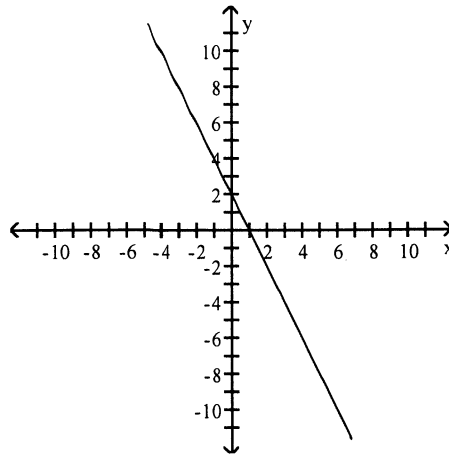
6) \_\_\_\_\_



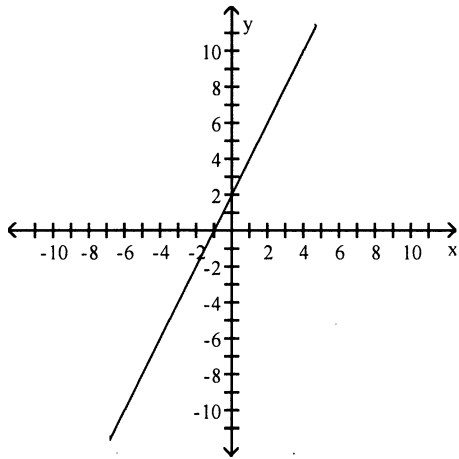
A)



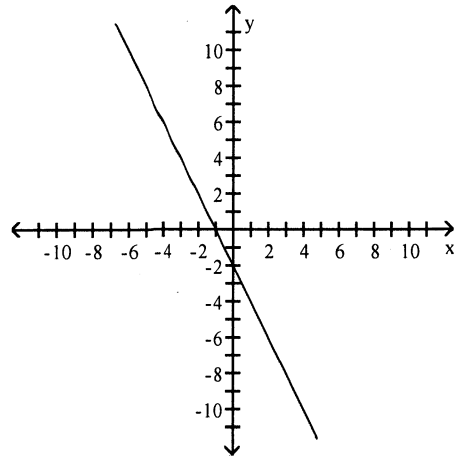
B)



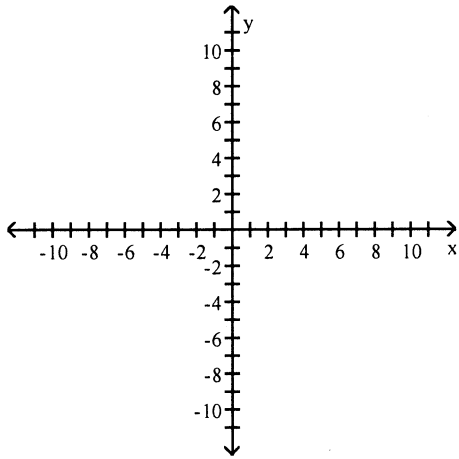
C)



D)

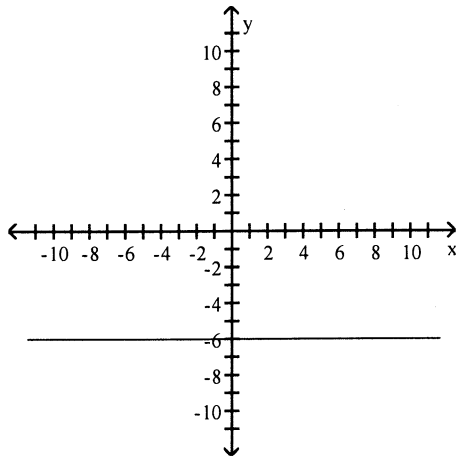


7)  $x + 6 = 0$

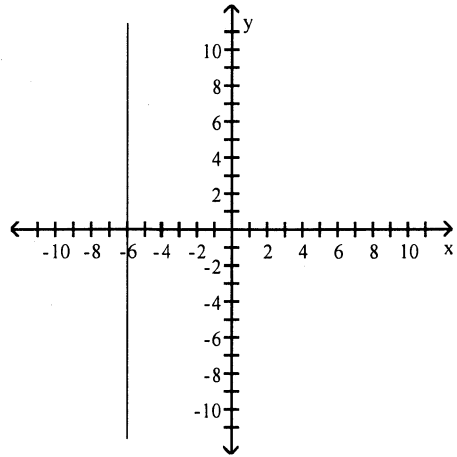


7) \_\_\_\_\_

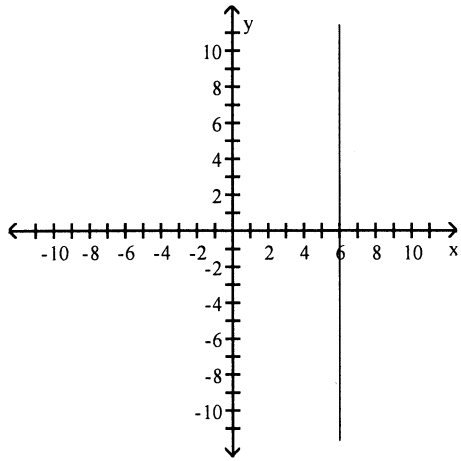
A)



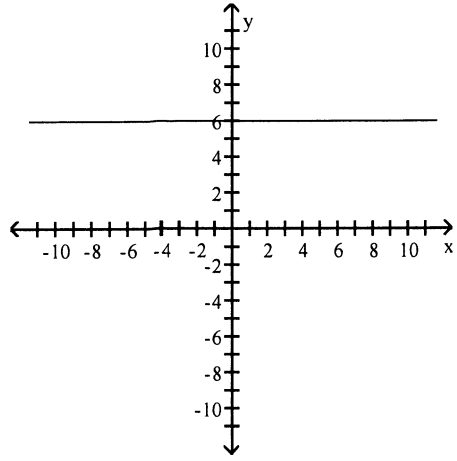
B)



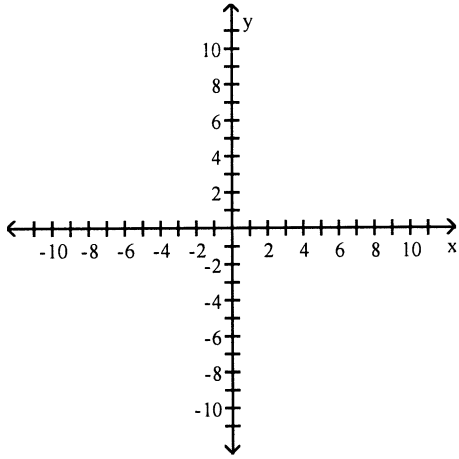
C)



D)

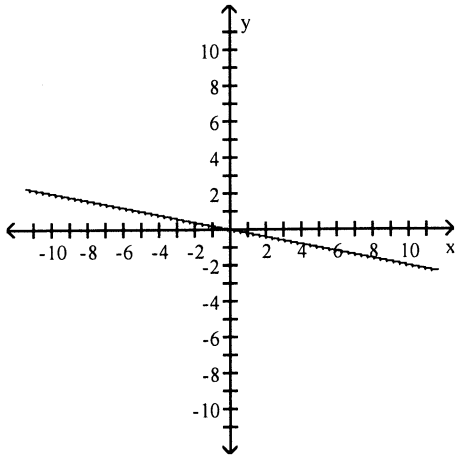


8)  $y + 5 = 0$

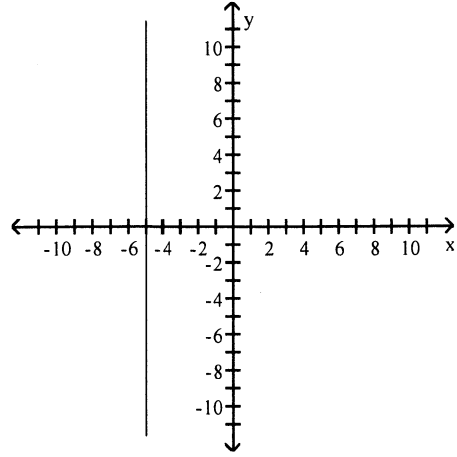


8) \_\_\_\_\_

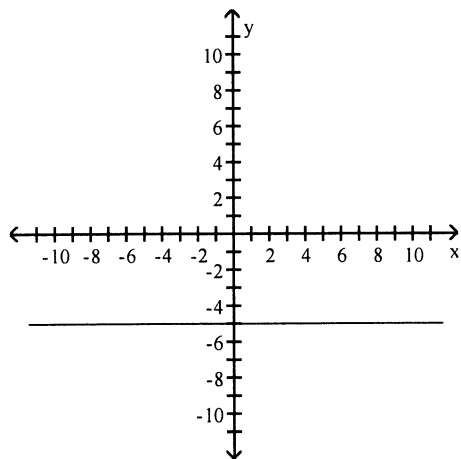
A)



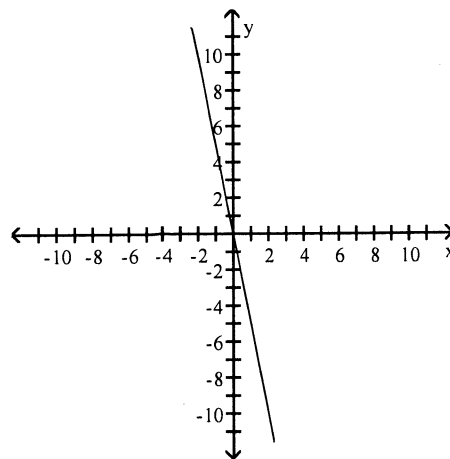
B)



C)



D)

**Solve the problem.**

- 9) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of \$2.90 as soon as you get in the taxi, to which a charge of \$2.40 per mile is added. Find a linear equation that can be used to determine the cost,  $C$ , of an  $x$ -mile taxi ride. 9) \_\_\_\_\_
- A)  $C = 2.90x + 2.40$       B)  $C = 3.80x$       C)  $C = 2.40x + 2.90$       D)  $C = 5.30x$
- 10) Let the demand and supply functions be represented by  $D(p)$  and  $S(p)$ , where  $p$  is the price in dollars. Find the equilibrium price and equilibrium quantity for the given functions. 10) \_\_\_\_\_
- $D(p) = 3840 - 50p$   
 $S(p) = 250p - 960$
- A) \$19; 2890      B) \$16; 3040      C) \$24; 2640      D) \$19; 3040
- 11) A toilet manufacturer has decided to come out with a new and improved toilet. The fixed cost for the production of this new toilet line is \$16,600 and the variable costs are \$64 per toilet. The company expects to sell the toilets for \$154. Formulate a function  $C(x)$  for the total cost of producing  $x$  new toilets and a function  $R(x)$  for the total revenue generated from the sales of  $x$  toilets. 11) \_\_\_\_\_
- A)  $C(x) = 16,664; R(x) = 154$       B)  $C(x) = 16600 + 154x; R(x) = 64x$   
 C)  $C(x) = 64x; R(x) = 154x$       D)  $C(x) = 16600 + 64x; R(x) = 154x$

**Use the elimination( addition and subtraction) or substitution method to solve the system of two equations in two unknowns.**

- 12)  $x - 3y = 25$       12) \_\_\_\_\_  
 $-2x - 4y = 20$   
 A)  $(-4, -6)$       B)  $(3, -6)$       C)  $(4, -7)$       D) No solution
- 13)  $4x - 2y = 9$       13) \_\_\_\_\_  
 $20x - 10y = 27$   
 A)  $\left(1, -\frac{5}{2}\right)$       B)  $(1, 0)$       C)  $\left(\frac{1}{2}y + \frac{9}{4}, y\right)$       D) No solution

Use the elimination (addition/subtraction) or substitution method to solve the system.

$$14) \frac{x}{4} + \frac{y}{4} = 1$$

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

$$\frac{x}{5} - \frac{y}{5} = \frac{12}{5}$$

A) (7, -3)

B) (8, -4)

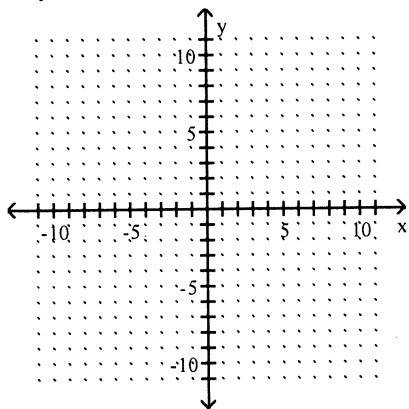
C) (-8, -3)

D) No solution

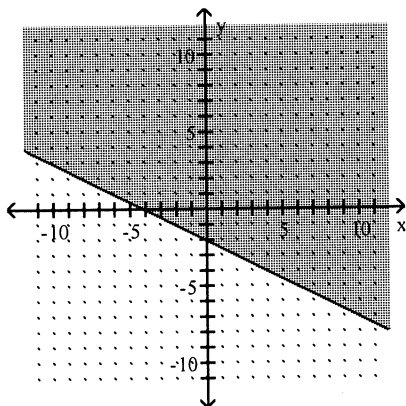
Graph the linear inequality.

$$15) -2x - 4y \leq 8$$

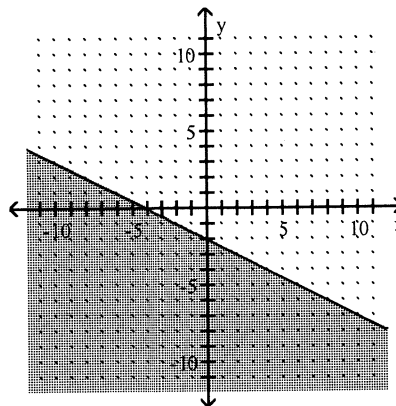
15) \_\_\_\_\_



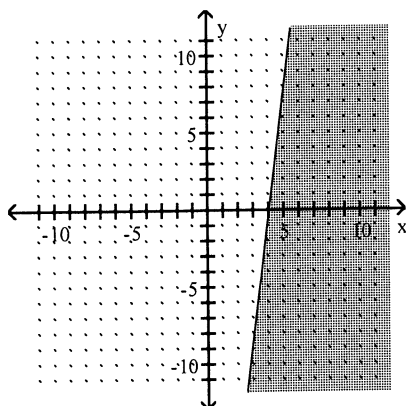
A)



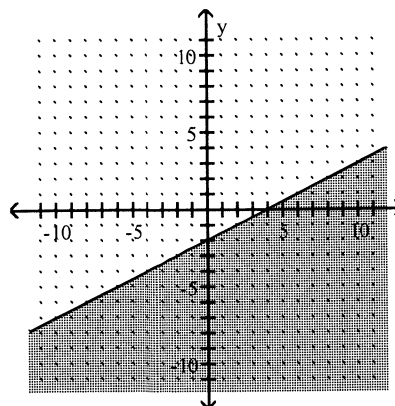
B)



C)



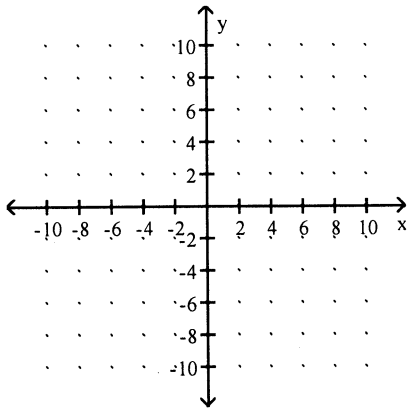
D)



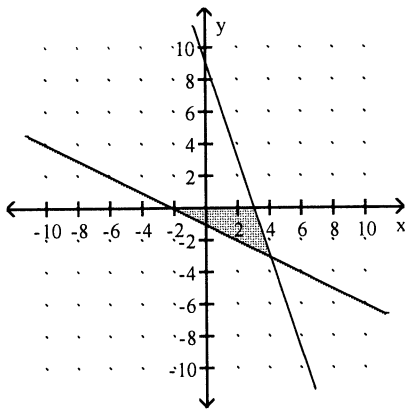
Graph the feasible region for the system of inequalities.

16)  $2y + x \geq -2$   
 $y + 3x \leq 9$   
 $y \leq 0$   
 $x \geq 0$

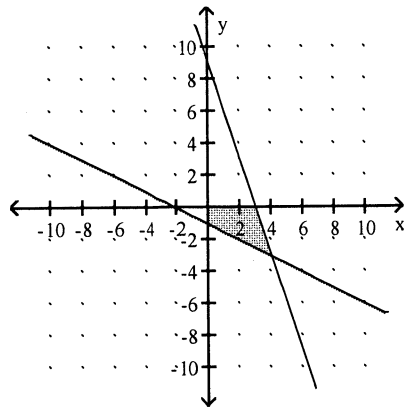
16) \_\_\_\_\_



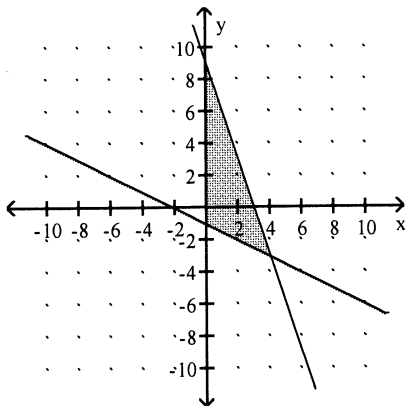
A)



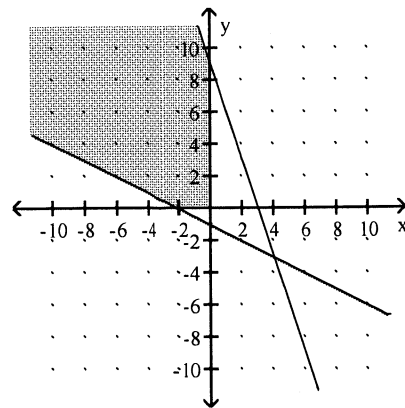
B)



C)

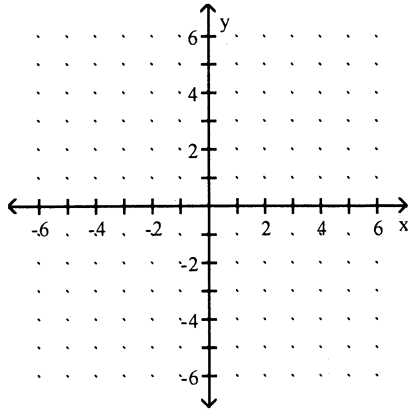


D)

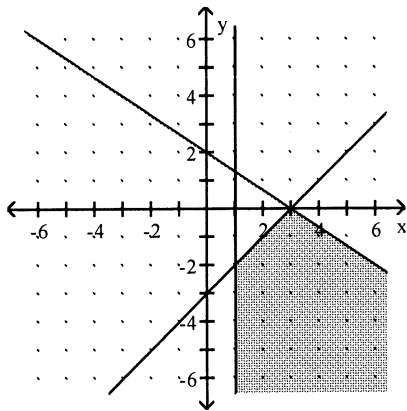


17)  $2x + 3y \leq 6$   
 $x - y \geq 3$   
 $x \geq 1$

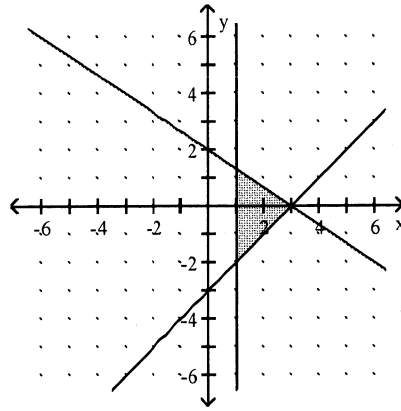
17) \_\_\_\_\_



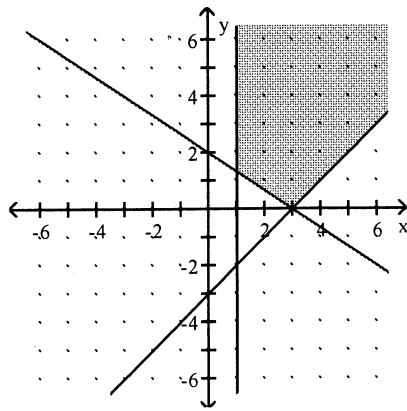
A)



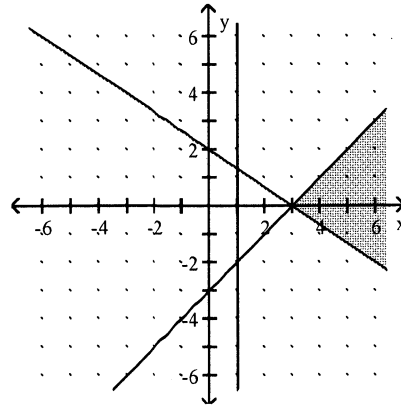
B)



C)



D)

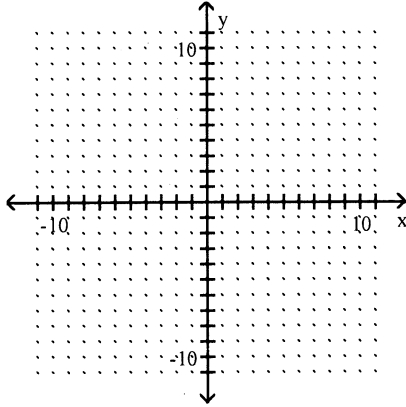




Use graphical methods to solve the linear programming problem.

18) Maximize  $z = 6x + 7y$   
 subject to:  
 $2x + 3y \leq 12$   
 $2x + y \leq 8$   
 $x \geq 0$   
 $y \geq 0$

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

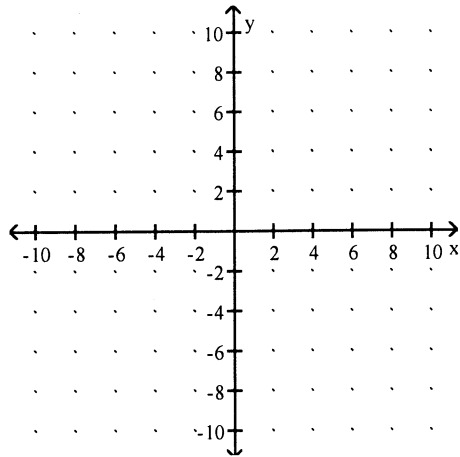


- A) Maximum of 24 when  $x = 4$  and  $y = 0$   
 C) Maximum of 52 when  $x = 4$  and  $y = 4$

- B) Maximum of 32 when  $x = 3$  and  $y = 2$   
 D) Maximum of 32 when  $x = 2$  and  $y = 3$

19) Minimize  $z = 2x - y$   
 subject to:  
 $x - y \geq 8$   
 $x + y \leq 20$   
 $-3x + y \leq 12$   
 $x \geq 0$   
 $y \geq 0$

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



- A) Minimum of 16 when  $x = 8$  and  $y = 0$   
 C) Minimum of -12 when  $x = 0$  and  $y = 12$

- B) Minimum of 0 when  $x = 0$  and  $y = 0$   
 D) Minimum of -20 when  $x = 0$  and  $y = 20$

Express the given situation as a linear inequality.

20) Product A requires 4 hr on machine M, while product B needs 3 hr on the same machine. The machine is available for at most 48 hr per week. Let  $x$  be the number of product A made and  $y$  be the number of product B.

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

- A)  $48(x + y) \leq 7$       B)  $x + y \leq 48$       C)  $4x + 3y \leq 48$       D)  $7(x + y) \leq 48$

**Solve the problem.**

- 21) 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 \$30? 21) \_\_\_\_\_
- A) 10 VIP and 14 SST  
B) 14 VIP and 14 SST  
C) 14 VIP and 10 SST  
D) 12 VIP and 12 SST

**Decide whether the following is a statement or is not a statement.**

- 22)  $4 + 9 = 14$  22) \_\_\_\_\_
- A) Not a statement  
B) Statement

**Decide whether the statement is compound.**

- 23) The longest book I ever read was "War and Peace." 23) \_\_\_\_\_
- A) Compound  
B) Not compound

**Translate the symbolic compound statement into words.**

- 24) Let  $p$  represent the statement "Students are males" and let  $q$  represent the statement "Teachers are males." 24) \_\_\_\_\_
- $\sim(p \vee \sim q)$
- A) It is not the case that students are males and teachers are not males.  
B) Students are not males and teachers are not males.  
C) Students are not males or teachers are not males.  
D) It is not the case that students are males or teachers are not males.

- 25) Let  $p$  represent the statement "Jello is tasty" and let  $q$  represent the statement "Thursday is rectangular." 25) \_\_\_\_\_
- $\sim p \wedge \sim q$
- A) It is not true that jello is tasty and Thursday is rectangular.  
B) Jello is not tasty or Thursday is not rectangular.  
C) Jello is not tasty and Thursday is not rectangular.  
D) Jello is not tasty and Thursday is rectangular.

**Let  $p$  represent the statement "Jim plays football" and let  $q$  represent the statement "Michael plays basketball." Convert the compound statement into symbols.**

- 26) Jim does not play football and Michael does not play basketball. 26) \_\_\_\_\_
- A)  $\sim p \wedge q$       B)  $p \vee q$       C)  $p \vee \sim q$       D)  $\sim p \wedge \sim q$
- 27) It is not the case that Jim does not play football and Michael does not play basketball. 27) \_\_\_\_\_
- A)  $\sim(p \vee q)$       B)  $\sim(\sim p \wedge \sim q)$       C)  $\sim p \wedge \sim q$       D)  $\sim(\sim p \vee \sim q)$

Construct a truth table for the compound statement.

28)  $p \vee \sim(s \wedge c)$

28) \_\_\_\_\_

A)

p	s	c	$p \vee \sim(s \wedge c)$
T	T	T	T
T	T	F	T
T	F	T	T
T	F	F	F
F	T	T	F
F	T	F	T
F	F	T	T
F	F	F	F

B)

p	s	c	$p \vee \sim(s \wedge c)$
T	T	T	T
T	T	F	T
T	F	T	T
T	F	F	T
F	T	T	F
F	T	F	T
F	F	T	T
F	F	F	T

C)

p	s	c	$p \vee \sim(s \wedge c)$
T	T	T	T
T	T	F	F
T	F	T	T
T	F	F	T
F	T	T	F
F	T	F	T
F	F	T	T
F	F	F	F

D)

p	s	c	$p \vee \sim(s \wedge c)$
T	T	T	T
T	T	F	T
T	F	T	T
T	F	F	T
F	T	T	F
F	T	F	T
F	F	T	T
F	F	F	F

29)  $\sim[(w \wedge s) \vee q]$

29) \_\_\_\_\_

A)

w	s	q	$\sim[(w \wedge s) \vee q]$
T	T	T	F
T	T	F	F
T	F	T	F
T	F	F	T
F	T	T	F
F	T	F	T
F	F	T	F
F	F	F	T

B)

w	s	q	$\sim[(w \wedge s) \vee q]$
T	T	T	T
T	T	F	T
T	F	T	T
T	F	F	F
F	T	T	T
F	T	F	F
F	F	T	T
F	F	F	F

C)

w	s	q	$\sim[(w \wedge s) \vee q]$
T	T	T	F
T	T	F	F
T	F	T	T
T	F	F	F
F	T	T	T
F	T	F	F
F	F	T	T
F	F	F	F

D)

w	s	q	$\sim[(w \wedge s) \vee q]$
T	T	T	T
T	T	F	F
T	F	T	T
T	F	F	F
F	T	T	T
F	T	F	F
F	F	T	T
F	F	F	F

Use one of De Morgan's laws to write the negation of the statement.

30) I was a day late and a dollar short.

30) \_\_\_\_\_

- A) I was not a day late or not a dollar short.
- B) I was a day late or not a dollar short.
- C) I was not a day late and a dollar short.
- D) I was not a day late and not a dollar short.

Let  $p$  represent "the puppy behaves well," let  $q$  represent "the puppy's owners are happy," and let  $r$  represent "the puppy is trained." Express the compound statement in words.

- 31)  $\sim(p \rightarrow q)$  31) \_\_\_\_\_  
 A) The puppy behaves well and his owners are happy.  
 B) If the puppy does not behave well, then his owners are not happy.  
 C) It is not the case that if the puppy behaves well, then his owners are happy.  
 D) The puppy behaves well or his owners are happy.

- 32)  $(r \wedge p) \rightarrow q$  32) \_\_\_\_\_  
 A) The puppy is trained and the puppy behaves well if his owners are happy.  
 B) If the puppy is trained, then the puppy behaves well and his owners are happy.  
 C) If the puppy is trained or the puppy behaves well, then his owners are happy.  
 D) If the puppy is trained and the puppy behaves well, then his owners are happy.

Let  $p$  represent "I eat too much," let  $q$  represent "I exercise," and let  $r$  represent "the food is good." Write the compound statement in symbols.

- 33) If the food is good or I eat too much, then I exercise. 33) \_\_\_\_\_  
 A)  $(r \vee p) \rightarrow q$       B)  $r \rightarrow (p \vee q)$       C)  $r \rightarrow p \rightarrow q$       D)  $(r \wedge p) \rightarrow q$

Construct a truth table for the statement.

- 34)  $(p \rightarrow \sim s) \rightarrow (p \wedge \sim s)$  34) \_\_\_\_\_

A)

$p$	$s$	$(p \rightarrow \sim s) \rightarrow (p \wedge \sim s)$
T	T	F
T	F	F
F	T	F
F	F	T

B)

$p$	$s$	$(p \rightarrow \sim s) \rightarrow (p \wedge \sim s)$
T	T	T
T	F	T
F	T	F
F	F	F

C)

$p$	$s$	$(p \rightarrow \sim s) \rightarrow (p \wedge \sim s)$
T	T	F
T	F	T
F	T	T
F	F	T

D)

$p$	$s$	$(p \rightarrow \sim s) \rightarrow (p \wedge \sim s)$
T	T	T
T	F	T
F	T	F
F	F	T

Use a truth table to decide if the statements are equivalent.

- 35)  $\sim q \wedge p; \sim q \rightarrow p$  35) \_\_\_\_\_  
 A) Not equivalent      B) Equivalent

- 36)  $q \wedge \sim p; \sim p \rightarrow \sim q$  36) \_\_\_\_\_  
 A) Equivalent      B) Not equivalent

For the given direct statement, write the indicated related statement (converse, inverse, or contrapositive).

- 37) If I pass, then I'll party. (contrapositive) 37) \_\_\_\_\_  
 A) If I party, then I passed.      B) I'll party if I pass.  
 C) If I don't pass, then I won't party.      D) If I don't party, then I didn't pass.

- 38) All cats catch birds. (inverse) 38) \_\_\_\_\_  
 A) If it catches birds, then it's a cat.      B) If it doesn't catch birds, then it's not a cat.  
 C) Not all cats catch birds.      D) If it's not a cat, then it doesn't catch birds.

- 39) If you like me, then I like you. (converse)  
 A) If I like you, then you like me.  
 C) If you don't like me, then I don't like you.

- B) If I don't like you, then you don't like me.  
 D) I like you if you don't like me.

39) \_\_\_\_\_

Construct a truth table for the statement.

40)  $(p \wedge \sim q) \leftrightarrow (p \rightarrow q)$

A)

p	q	$(p \wedge \sim q) \leftrightarrow (p \rightarrow q)$			
T	T	F	F	F	F
T	F	T	T	F	T
F	T	F	F	T	F
F	F	F	T	F	F
		(2)	(1)	(4)	(3)

C)

p	q	$(p \wedge \sim q) \leftrightarrow (\sim p \rightarrow q)$			
T	T	T	F	T	T
T	F	T	T	F	F
F	T	F	F	F	T
F	F	T	T	T	T
		(2)	(1)	(4)	(3)

B)

p	q	$(p \wedge \sim q) \leftrightarrow (p \rightarrow q)$			
T	T	F	F	F	T
T	F	T	T	F	F
F	T	F	F	F	T
F	F	F	T	F	T
		(2)	(1)	(4)	(3)

D)

p	q	$(p \wedge \sim q) \leftrightarrow (\sim p \rightarrow q)$			
T	T	F	F	F	T
T	F	F	T	T	F
F	T	F	F	F	T
F	F	F	T	F	F
		(2)	(1)	(4)	(3)

40) \_\_\_\_\_

Use a truth table to determine whether the argument is valid or invalid.

41)  $\sim p \rightarrow q$

$\sim q \rightarrow p$

$p \vee q$

A) Valid

B) Invalid

41) \_\_\_\_\_

Tell whether the statement is true or false.

42)  $\{x \mid x \text{ is an even counting number ; } 8 \leq x \leq 14\} = \{8, 14\}$

A) True

B) False

42) \_\_\_\_\_

Let  $A = \{1, 3, 5, 7\}$ ;  $B = \{5, 6, 7, 8\}$ ;  $C = \{5, 8\}$ ;  $D = \{2, 5, 8\}$ ; and  $U = \{1, 2, 3, 4, 5, 6, 7, 8\}$ . Determine whether the given statement is true or false.

43)  $C \subseteq D$

A) True

B) False

43) \_\_\_\_\_

44)  $U \subseteq A$

A) True

B) False

44) \_\_\_\_\_

Find the number of subsets of the set.

45)  $\{11, 12, 13\}$

A) 6

B) 7

C) 3

D) 8

45) \_\_\_\_\_

Decide whether the statement is true or false.

46)  $\{7, 14, 21, 28\} \cap \{7, 21\} = \{7, 14, 21, 28\}$

A) True

B) False

46) \_\_\_\_\_

47)  $\{2, 4, 6, 8\} \cup \{2, 6\} = \{2, 4, 6, 8\}$

A) True

B) False

47) \_\_\_\_\_

Let  $U = \{q, r, s, t, u, v, w, x, y, z\}$ ;  $A = \{q, s, u, w, y\}$ ;  $B = \{q, s, y, z\}$ ; and  $C = \{v, w, x, y, z\}$ . List the members of the indicated set, using set braces.

48)  $A \cap B'$

- A)  $\{t, v, x\}$   
 C)  $\{u, w\}$

- B)  $\{r, s, t, u, v, w, x, z\}$   
 D)  $\{q, s, t, u, v, w, x, y\}$

48) \_\_\_\_\_

49)  $B' \cap (A \cup C')$

- A)  $\{q, r, s, t, u, w\}$   
 C)  $\{q, r, s, t, u, v, w, x, y\}$

- B)  $\{r, t, u\}$   
 D)  $\{r, t, u, w\}$

49) \_\_\_\_\_

The lists below show five agricultural crops in Alabama, Arkansas, and Louisiana.

<u>Alabama</u>	<u>Arkansas</u>	<u>Louisiana</u>
soybeans (s)	soybeans (s)	soybeans (s)
peanuts (p)	rice (r)	sugarcane (n)
corn (c)	cotton (t)	rice (r)
hay (h)	hay (h)	corn (c)
wheat (w)	wheat (w)	cotton (t)

Let  $U$  be the smallest possible set that includes all of the crops listed; and let  $A$ ,  $K$ , and  $L$  be the sets of five crops in Alabama, Arkansas, and Louisiana, respectively. Find the indicated set.

50)  $(K \cup L)'$

- A)  $\{p, c, n, h, w\}$   
 C)  $\{c, h, n, r, s, t, w\}$

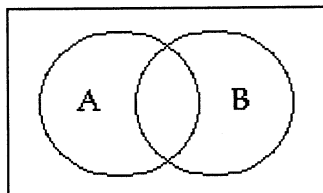
- B)  $\{n, r, t\}$   
 D)  $\{p\}$

50) \_\_\_\_\_

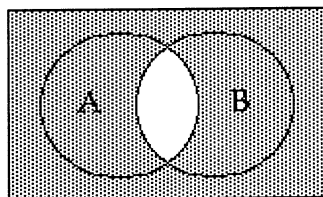
Shade the Venn diagram to represent the set.

51)  $A' \cap B'$

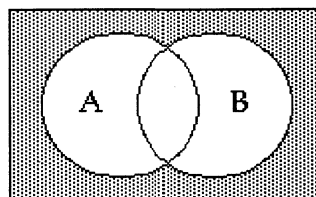
51) \_\_\_\_\_



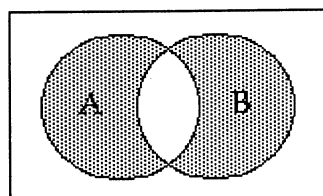
A)



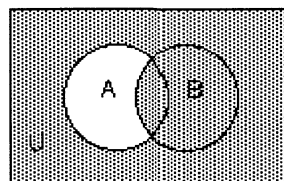
B)



C)

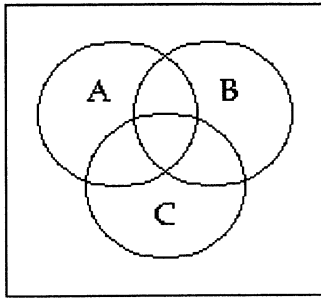


D)

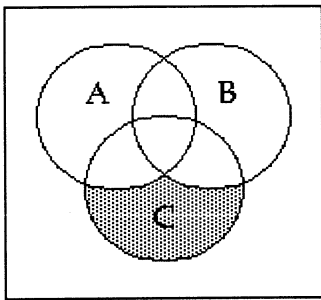


52)  $(A' \cup B) \cap C$

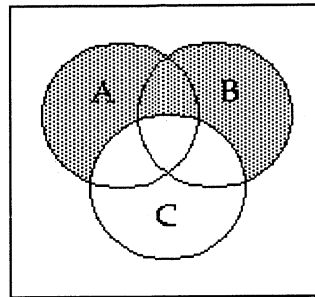
52) \_\_\_\_\_



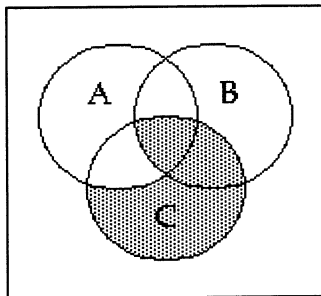
A)



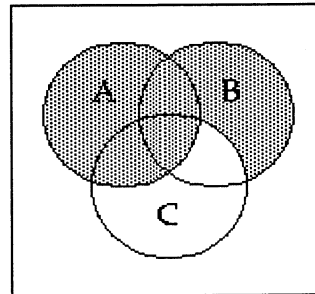
B)



C)



D)



Use the union rule to answer the question.

53) If  $n(B) = 24$ ,  $n(A \cap B) = 5$ , and  $n(A \cup B) = 42$ ; what is  $n(A)$ ?

A) 21

B) 23

C) 25

D) 18

53) \_\_\_\_\_

Use a Venn Diagram and the given information to determine the number of elements in the indicated region.

54)  $n(U) = 60$ ,  $n(A) = 31$ ,  $n(B) = 25$ , and  $n(A \cap B) = 4$ . Find  $n(A \cup B)'$ .

A) 4

B) 8

C) 52

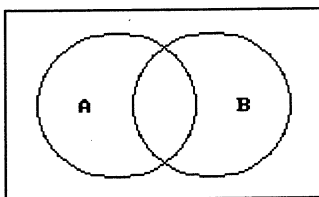
D) 56

54) \_\_\_\_\_

Use a Venn diagram to decide if the statement is true or false.

55)  $A \cap B' = (A' \cup B)'$

55) \_\_\_\_\_



A) True

B) False

**Use a Venn diagram to answer the question.**

- 56) At East Zone University (Ezu) there are 600 students taking College Algebra or Calculus. 154 are taking College Algebra, 488 are taking Calculus, and 42 are taking both College Algebra and Calculus. How many are taking Calculus but not Algebra? 56) \_\_\_\_\_
- A) 112                      B) 558                      C) 70                      D) 446

**Write the sample space for the given experiment.**

- 57) A box contains 13 white cards numbered 1 through 13. One card with a number greater than 6 is chosen, and its number is recorded. 57) \_\_\_\_\_
- A) {6, 7, 8, 9, 10, 11, 12, 13}                      B) {11}
- C) {7, 8, 9, 10, 11, 12, 13}                      D) {1, 2, 3, ..., 13}

- 58) A coin is tossed, and then a die is rolled. 58) \_\_\_\_\_
- A) {(h, t, 1, 2, 3, 4, 5, 6)}
- B) {(h, 1), (h, 2), (h, 3), (h, 4), (h, 5), (h, 6), (t, 1), (t, 2), (t, 3), (t, 4), (t, 5), (t, 6)}
- C) {(1, h), (2, h), (3, h), (4, h), (5, h), (6, h), (1, t), (2, t), (3, t), (4, t), (5, t), (6, t)}
- D) {(2, 6)}

**A die is rolled twice. Write the indicated event in set notation.**

- 59) The first roll is a 4. 59) \_\_\_\_\_
- A) {(4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6)}                      B) {(4, 1), (4, 2), (4, 4), (4, 5), (4, 6)}
- C) {(4, 3)}                      D) {(4, 1), (4, 3), (4, 5)}

**Find the probability of the given event.**

- 60) A single fair die is rolled. The number on the die is not 6. 60) \_\_\_\_\_
- A)  $\frac{35}{36}$                       B)  $\frac{5}{6}$                       C)  $\frac{2}{3}$                       D)  $\frac{1}{6}$

- 61) Two fair dice are rolled. The sum of the numbers on the dice is 6 or 9. 61) \_\_\_\_\_
- A)  $\frac{1}{4}$                       B)  $\frac{3}{2}$                       C)  $\frac{1}{54}$                       D)  $\frac{5}{12}$

**Find the probability.**

- 62) A card is drawn from a well-shuffled deck of 52 cards. What is the probability of drawing a face card or a 3? 62) \_\_\_\_\_
- A)  $\frac{2}{13}$                       B)  $\frac{4}{13}$                       C) 16                      D)  $\frac{48}{52}$

- 63) A bag contains 6 red marbles, 3 blue marbles, and 1 green marble. What is the probability that a randomly selected marble is not blue? 63) \_\_\_\_\_
- A)  $\frac{7}{10}$                       B) 7                      C)  $\frac{10}{7}$                       D)  $\frac{3}{10}$



**Find the indicated probability.**

64) The distribution of B.A. degrees conferred by a local college is listed below, by major.

64) \_\_\_\_\_

<u>Major</u>	<u>Frequency</u>
English	2073
Mathematics	2164
Chemistry	318
Physics	856
Liberal Arts	1358
Business	1676
Engineering	<u>868</u>
	9313

What is the probability that a randomly selected degree is in Chemistry or Physics?

- A) 0.126                      B) 0.0919                      C) 0.0031                      D) 1174

**Determine whether the given events are mutually exclusive.**

65) Knowing Spanish and knowing Chinese

65) \_\_\_\_\_

- A) Yes    B) No

66) Obtaining a face card and obtaining a two when a single card is selected from a deck of cards

66) \_\_\_\_\_

- A) No    B) Yes

**Find the indicated probability.**

67) A card is drawn from a well-shuffled deck of 52 cards. What is the probability of drawing a face card or a 5?

67) \_\_\_\_\_

- A)  $\frac{4}{13}$     B)  $\frac{2}{13}$     C) 16    D)  $\frac{48}{52}$

68) When two balanced dice are rolled, there are 36 possible outcomes. Find the probability that either doubles are rolled or the sum of the dice is 4.

68) \_\_\_\_\_

- A)  $\frac{1}{4}$     B)  $\frac{7}{36}$     C)  $\frac{1}{36}$     D)  $\frac{2}{9}$

**Use a Venn diagram to find the indicated probability.**

69) Suppose  $P(B) = 0.72$ ,  $P(C) = 0.47$ , and  $P(B \cap C) = 0.32$ .

69) \_\_\_\_\_

Find  $P(B' \cup C')$ .

- A) 0.58    B) 0.68    C) 0.26    D) 0.55

**Find the odds.**

70) Find the odds in favor of drawing a red marble when a marble is selected at random from a bag containing 2 yellow, 5 red, and 6 green marbles.

70) \_\_\_\_\_

- A) 1 to 5    B) 8 to 13    C) 5 to 8    D) 5 to 13

71) Find the odds *against* correctly guessing the answer to a multiple choice question with 7 possible answers.

71) \_\_\_\_\_

- A) 6 : 7    B) 7 : 1    C) 6 : 1    D) 7 : 6

**Solve the problem.**

- 72) A poll is conducted in a U.S. city to determine voting preferences prior to a presidential election. 72) \_\_\_\_\_  
The following probabilities were obtained from the relative frequencies:  
 $P(D) = 0.51$ ,  $P(M \cap D) = 0.22$ ,  $P(M \cup D) = 0.77$   
where M represents male and D represents a person who plans to vote Democrat.  
Find  $P(M' \cup D)$ .  
A) 0.52                      B) 0.74                      C) 0.49                      D) 0.29

- 73) The table below shows the probabilities of a person accumulating specific amounts of credit card charges over a 12-month period. Find the probability that a person's total charges during the period are less than \$500. 73) \_\_\_\_\_

Charges	Probability
Under \$100	0.49
\$100-\$499	0.31
\$500-\$999	0.15
\$1000 or more	0.05

- A) 0.31                      B) 0.49                      C) 0.95                      D) 0.8

- 74) The odds in favor of a horse winning a race are posted as 9 : 7. Find the probability that the horse will win the race. 74) \_\_\_\_\_  
A)  $\frac{7}{9}$                       B)  $\frac{9}{17}$                       C)  $\frac{9}{16}$                       D)  $\frac{7}{16}$

- 75) If a single fair die is rolled, find the probability of a 4 given that the number rolled is odd. 75) \_\_\_\_\_  
A) 0                      B)  $\frac{1}{2}$                       C)  $\frac{1}{6}$                       D) 1

- 76) If two cards are drawn without replacement from an ordinary deck, find the probability that the second card is a spade, given that the first card was a spade. 76) \_\_\_\_\_  
A)  $\frac{3}{13}$                       B)  $\frac{11}{12}$                       C)  $\frac{4}{17}$                       D)  $\frac{11}{51}$

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Provide an appropriate response.**

- 77) Let A be the event that it will be sunny this afternoon. 77) \_\_\_\_\_  
Let B be the event that Francia will go shopping this afternoon. Given that  $P(A) = 0.8$ ,  $P(B) = 0.9$ , and  $P(A \cap B) = 0.2$ , are events A and B independent? How can you tell?

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Find the indicated probability.**

- 78) Assume that two marbles are drawn without replacement from a box with 1 blue, 3 white, 2 green, and 2 red marbles. Find the probability that both marbles are green. 78) \_\_\_\_\_  
A)  $\frac{1}{16}$                       B)  $\frac{1}{14}$                       C)  $\frac{1}{28}$                       D)  $\frac{1}{4}$

**Find the probability.**

- 79) If 80% of scheduled flights actually take place and cancellations are independent events, what is the probability that 3 separate flights will all take place? 79) \_\_\_\_\_  
A) 0.01                      B) 0.64                      C) 0.80                      D) 0.51

**Solve the problem.**

- 80) 38% of a store's computers come from factory A and the remainder come from factory B. 1% of computers from factory A are defective while 4% of computers from factory B are defective. If one of the store's computers is selected at random, what is the probability that it is defective and from factory B? 80) \_\_\_\_\_  
A) 0.015                      B) 0.025                      C) 0.04                      D) 0.66

**Use the given table to find the indicated probability.**

- 81) The following table contains data from a study of two airlines which fly to Smalltown, USA. 81) \_\_\_\_\_

	Number of flights arrived on time	Number of flights arrived late	Totals
Podunk Airlines	33	6	39
Upstate Airlines	43	5	48

If a flight is selected at random, what is the probability that it was on time given that it was on Upstate Airlines?

- A)  $\frac{43}{48}$                       B)  $\frac{43}{87}$                       C)  $\frac{43}{76}$                       D)  $\frac{11}{76}$

**Find the indicated probability.**

- 82) The table below describes the smoking habits of a group of asthma sufferers. 82) \_\_\_\_\_

	Nonsmoker	Light smoker	Heavy smoker	Total
Men	361	86	85	532
Women	361	65	61	487
Total	722	151	146	1019

If one of the 1019 subjects is randomly selected, find the probability that the person chosen is a woman given that the person is a light smoker.

- A) 0.064                      B) 0.248                      C) 0.430                      D) 0.133

**Find the probability.**

- 83) Assuming that boy and girl babies are equally likely, find the probability that a family with three children has all boys given that the first two are boys. 83) \_\_\_\_\_  
A)  $\frac{1}{4}$                       B)  $\frac{1}{2}$                       C)  $\frac{1}{8}$                       D) 1

**Solve the problem.**

- 84) License plates are made using 3 letters followed by 2 digits. How many plates can be made if repetition of letters and digits is allowed? 84) \_\_\_\_\_  
A) 11,881,376 plates                      B) 175,760 plates  
C) 1,757,600 plates                      D) 100,000 plates

- 85) A restaurant offers 9 possible appetizers, 15 possible main courses, and 4 possible desserts. How many different meals are possible at this restaurant? (Two meals are considered different unless all three courses are the same). 85) \_\_\_\_\_
- A) 729 meals                      B) 28 meals                      C) 540 meals                      D) 530 meals

**An order of award presentations has been devised for seven people: Jeff, Karen, Lyle, Maria, Norm, Olivia, and Paul.**

- 86) In how many ways can the people be presented? 86) \_\_\_\_\_
- A) 720                      B) 2520                      C) 49                      D) 5040

**Of the 2,598,960 different five-card hands possible from a deck of 52 playing cards, how many would contain the following cards?**

- 87) All four tens 87) \_\_\_\_\_
- A) 1152 hands                      B) 144 hands                      C) 48 hands                      D) 192 hands

**Solve the problem.**

- 88) In how many ways can a student select 8 out of 10 questions to work on an exam? 88) \_\_\_\_\_
- A) 90 ways                      B) 100,000,000 ways  
C) 16 ways                      D) 45 ways

**Decide whether the situation involves permutations or combinations.**

- 89) A batting order for 9 players for a baseball game. 89) \_\_\_\_\_
- A) Permutation                      B) Combination

- 90) A committee of 6 delegates chosen from a class of 38 students to bring a petition to the administration. 90) \_\_\_\_\_
- A) Permutation                      B) Combination

**Solve the problem.**

- 91) A bag contains 5 apples and 3 oranges. If you select 4 pieces of fruit without looking, how many ways can you get 4 apples? 91) \_\_\_\_\_
- A) 15 ways                      B) 10 ways                      C) 8 ways                      D) 5 ways

**A bag contains 6 cherry, 3 orange, and 2 lemon candies. You reach in and take 3 pieces of candy at random. Find the probability.**

- 92) 2 cherry, 1 lemon 92) \_\_\_\_\_
- A) 0.1818                      B) 0.7272                      C) 0.1212                      D) 0.3636

- 93) One of each flavor 93) \_\_\_\_\_
- A) 0.2182                      B) 0.1818                      C) 0.0667                      D) 0.3636

**Solve.**

- 94) In a state lotto you have to pick 4 numbers from 1 to 42. If your numbers match those that the state draws, you win. If you buy 3 tickets, what is your probability of winning? 94) \_\_\_\_\_
- A)  $\frac{1}{47970}$                       B)  $\frac{1}{111930}$                       C)  $\frac{1}{37310}$                       D)  $\frac{4}{167895}$

Prepare a probability distribution for the experiment. Let  $x$  represent the random variable, and let  $P$  represent the probability.

95) Three coins are tossed, and the number of tails is noted.

95) \_\_\_\_\_

A)

$x$	$P(x)$
0	1/8
1	3/8
2	3/8
3	1/8

B)

$x$	$P(x)$
0	1/3
1	1/6
2	1/6
3	1/3

C)

$x$	$P(x)$
0	3/16
1	5/16
2	5/16
3	3/16

D)

$x$	$P(x)$
0	1/6
1	1/3
2	1/3
3	1/6

Find the expected value for the random variable.

96) 

$z$	24	26	28	30	32
$P(z)$	0.38	0.12	0.46	0.02	0.08

96) \_\_\_\_\_

A) 30.44

B) 28.28

C) 28

D) 20.82

Solve the problem.

97) Suppose you buy 1 ticket for \$1 out of a lottery of 1000 tickets where the prize for the one winning ticket is to be \$500. What is your expected payback?

97) \_\_\_\_\_

A) -\$1.00

B) -\$0.50

C) -\$0.40

D) \$0

Find the mean for the list of numbers.

98) 5, 6, 10, 6, 12, 10 (Round to the nearest tenth, if necessary.)

98) \_\_\_\_\_

A) 8.2

B) 6.7

C) 9.8

D) 8.7

Find the mean. Round to the nearest tenth.

99) 

Value	Frequency
15	2
21	16
23	20
29	17
36	7

99) \_\_\_\_\_

A) 25.3

B) 26.2

C) 28.3

D) 2.0

Find the median for the list of numbers.

100) 9, 4, 27, 16, 21, 49, 36, 31

100) \_\_\_\_\_

A) 27

B) 24

C) 21

D) 24.5

Find the mode or modes.

101) 87, 72, 32, 72, 29, 87

101) \_\_\_\_\_

A) 87

B) 63.2

C) 87, 72

D) No mode

Find the range for the set of numbers.

102) 115, 560, 165, 668, 362, 234

102) \_\_\_\_\_

A) 553

B) 115

C) 69

D) 560

Find the standard deviation for the set of numbers.

103) 4, 3, 7, 6, 6, 20, 18, 12, 20

103) \_\_\_\_\_

A) 1.3

B) 7.5

C) 6.6

D) 7.0

**Find the percent of the total area under the standard normal curve between the given z-scores.**

104)  $z = 0.0$  and  $z = 3.01$

A) 0.9987

B) 0.1217

C) 0.5013

D) 0.4987

104) \_\_\_\_\_

105)  $z = -1.10$  and  $z = -0.36$

A) 0.2239

B) 0.4951

C) -0.2237

D) 0.2237

105) \_\_\_\_\_

**Find a z-score satisfying the given condition.**

106) 4% of the total area is to the left of z.

A) 1.70

B) -1.74

C) -1.76

D) -1.75

106) \_\_\_\_\_

**A company installs 5000 light bulbs, each with an average life of 500 hours, standard deviation of 100 hours, and distribution approximated by a normal curve. Find the approximate number of bulbs that can be expected to last the specified period of time.**

107) Less than 500 hours

A) 3000

B) 1000

C) 2400

D) 2500

107) \_\_\_\_\_

108) Between 290 hours and 540 hours

A) 1641

B) 3190

C) 1639

D) 3188

108) \_\_\_\_\_

**Assume the distribution is normal. Use the area of the normal curve to answer the question. Round to the nearest whole percent.**

109) The average size of the fish in a lake is 11.4 inches, with a standard deviation of 3.2 inches. Find the probability of catching a fish longer than 17 inches.

A) 5%

B) 8%

C) 4%

D) 96%

109) \_\_\_\_\_

**At one high school, girls can run the 100-yard dash in an average of 15.2 seconds with a standard deviation of 0.9 second. The times are very closely approximated by a normal curve. Find the percent of times that are:**

110) Between 14.3 and 16.1 seconds

A) 34%

B) 50%

C) 47.5%

D) 68%

110) \_\_\_\_\_

## Answer Key

Testname: FINAL EXAM REVIEW MC PROBLEMS, MGF 1106

- 1) D
- 2) B
- 3) A
- 4) D
- 5) B
- 6) D
- 7) B
- 8) C
- 9) C
- 10) B
- 11) D
- 12) C
- 13) D
- 14) B
- 15) A
- 16) B
- 17) A
- 18) B
- 19) A
- 20) C
- 21) D
- 22) B
- 23) B
- 24) D
- 25) C
- 26) D
- 27) B
- 28) B
- 29) A
- 30) A
- 31) C
- 32) D
- 33) A
- 34) B
- 35) A
- 36) B
- 37) D
- 38) D
- 39) A
- 40) B
- 41) A
- 42) B
- 43) A
- 44) B
- 45) D
- 46) B
- 47) A
- 48) C
- 49) D
- 50) D

## Answer Key

Testname: FINAL EXAM REVIEW MC PROBLEMS, MGF 1106

- 51) B
- 52) C
- 53) B
- 54) B
- 55) A
- 56) D
- 57) C
- 58) B
- 59) A
- 60) B
- 61) A
- 62) B
- 63) A
- 64) A
- 65) B
- 66) B
- 67) A
- 68) D
- 69) B
- 70) C
- 71) C
- 72) B
- 73) D
- 74) C
- 75) A
- 76) C
- 77) No, because  $P(A \cap B) \neq P(A) \cdot P(B)$
- 78) C
- 79) D
- 80) B
- 81) A
- 82) C
- 83) B
- 84) C
- 85) C
- 86) D
- 87) C
- 88) D
- 89) A
- 90) B
- 91) D
- 92) A
- 93) A
- 94) C
- 95) A
- 96) B
- 97) B
- 98) A
- 99) A
- 100) B



Answer Key

Testname: FINAL EXAM REVIEW MC PROBLEMS, MGF 1106

- 101) C
- 102) A
- 103) D
- 104) D
- 105) D
- 106) D
- 107) D
- 108) D
- 109) C
- 110) D