

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

Solve by the elimination method.

1) $x + 6y = 17$ 1) _____
 $3x + 5y = 25$

2) $x + 4y = 11$ 2) _____
 $6x + 24y = 66$

3) $9x - 6y = 6$ 3) _____
 $-2x + 3y = -3$

4) $5x - 6y = -5$ 4) _____
 $-15x + 18y = -15$

Solve by the substitution method.

5) $x - 4y = 12$ 5) _____
 $2x - 5y = 21$

6) $y = 4x - 3$ 6) _____
 $3x + y = 11$

Solve the problem.

7) Ron and Kathy are ticket-sellers at their class play, Ron handling student tickets that sell for \$2.00 each and Kathy selling adult tickets for \$4.50 each. If their total income for 20 tickets was \$60.00, how many did Ron sell? 7) _____

8) There were 28,000 people at a ball game in Los Angeles. The day's receipts were \$210,000. How many people paid \$12.00 for reserved seats and how many paid \$6.00 for general admission? 8) _____

Given a group of students: $G = \{\text{Allen, Brenda, Chad, Dorothy, Eric}\}$ or $G = \{\text{A, B, C, D, E}\}$, list and count the different ways of choosing the following officers or representatives for student congress. Assume that no one can hold more than one office.

9) Three representatives, if two must be male and one must be female 9) _____

10) A president, a secretary, and a treasurer, if the president must be a woman and the other two must be men 10) _____

Using the 36 possibilities found in the product table for rolling two dice, list and count the outcomes for which the sum (for both dice) is the following.

11) Multiple of 5 11) _____

12) Between 7 and 10 12) _____

13) Less than 4 13) _____

Solve the problem.

14) Six strangers arrive at a business seminar and each person shakes hands with every other person. How many handshakes are there? 14) _____

15) A sports shop sold tennis rackets in 3 different weights, 3 types of string, and 4 grip sizes. How many different rackets could be sold? 15) _____

Evaluate the factorial expression.

16) $\frac{7!}{5! 2!}$ 16) _____

17) $\frac{10!}{5! 5!}$ 17) _____

Solve the problem.

18) A musician plans to perform 5 selections for a concert. If he can choose from 9 different selections, how many ways can he arrange his program? 18) _____

19) How many 5-digit numbers can be formed using the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, if repetitions of digits are allowed? 19) _____

20) License plates are made using 2 letters followed by 2 digits. How many plates can be made if repetition of letters and digits is allowed? 20) _____

21) How many different 4-letter radio-station call letters can be made if the first letter must be K or W, repeats are allowed, but the call letters cannot end in an O? 21) _____

22) How many ways can a president, vice-president, and secretary be chosen from a club with 12 members? 22) _____

23) Given a committee of 8 women and 11 men, count the number of different ways of choosing a president, a secretary, and a treasurer, if the president must be a woman and the secretary and treasurer must be men. Assume no one can hold more than one office. 23) _____

24) Four accounting majors, two economics majors, and three marketing majors have interviewed for five different positions with a large company. Find the number of different ways that five of these people could be hired if the first two positions are to be filled by accounting majors, the third position is to be filled by an economics major, and the last two positions are to be filled by marketing majors. 24) _____

25) Four married couples have reserved eight seats in a row at the theater, starting at an aisle seat. In how many ways can they arrange themselves if the four men occupy the four seats closest to the aisle? 25) _____

Evaluate the permutation.

26) $14P_2$ 26) _____

Evaluate the expression.

27) $32C_6$

27) _____

Solve the problem.

28) There are 5 women running in a race. How many different ways could first, second, and third place finishers occur?

28) _____

29) How many different three-digit numbers can be written using digits from the set {3, 4, 5, 6, 7} without any repeating digits?

29) _____

30) There are 13 members on a board of directors. If they must form a subcommittee of 4 members, how many different subcommittees are possible?

30) _____

31) A pool of possible jurors consists of 11 men and 15 women. How many different juries consisting of 5 men and 7 women are possible?

31) _____

32) If a single card is drawn from a standard 52-card deck, in how many ways could it be an ace or a spade?

32) _____

33) If a single card is drawn from a standard 52-card deck, in how many ways could it be a diamond or a face card?

33) _____

34) A group of five entertainers will be selected from a group of twenty entertainers that includes Small and Trout. In how many ways could the group of five include at least one of the entertainers Small and Trout?

34) _____

35) The chorus has six sopranos and eight baritones. In how many ways can the director choose a quartet that contains at least one soprano?

35) _____

Answer Key

Testname: EXAM 3 SAMPLE PROBLEMS

- 1) $\{(5, 2)\}$
- 2) $\left\{ \left\{ x, -\frac{1}{4}x + \frac{11}{4} \right\} \right\}$
- 3) $\{(0, -1)\}$
- 4) No solution
- 5) $\{(8, -1)\}$
- 6) $\{(2, 5)\}$
- 7) 12 tickets
- 8) 7000 paid \$12 and 21,000 paid \$6
- 9) ACB, ACD, AEB, AED, CEB, CED; 6
- 10) BAC, BAE, BCE, DAC, DAE, DCE, BCA, BEA, BEC, DCA, DEA, DEC; 12
- 11) (1,4), (4,1), (2,3), (3,2), (4,6), (6,4), (5,5); 7
- 12) (2,6), (6,2), (6,3), (3,6), (5,3), (3,5), (4,4), (4,5), (5,4); 9
- 13) (1,1), (1,2), (2,1); 3
- 14) 15
- 15) 36 rackets
- 16) 21
- 17) 252
- 18) 15,120
- 19) 100,000
- 20) 67,600
- 21) 33,800
- 22) 1320
- 23) 880
- 24) 144
- 25) 576
- 26) 182
- 27) 906,192
- 28) 60
- 29) 60
- 30) 715
- 31) 2,972,970
- 32) 16 ways
- 33) 22 ways
- 34) 6936 ways
- 35) 931 ways