

Review 4

Probability

MGF 1106 Miami Dade College

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

Solve the problem by applying the Fundamental Counting Principle with two groups of items.

- 1) In how many ways can a girl choose a two-piece outfit from 5 blouses and 7 skirts? 1) _____
A) 35 B) 70 C) 12 D) 14
- 2) A restaurant offers 8 entrees and 9 desserts. In how many ways can a person order a two-course meal? 2) _____
A) 144 B) 19 C) 17 D) 72
- 3) A person can order a new car with a choice of 7 possible colors, with or without air conditioning, with or without heated seats, with or without anti-lock brakes, with or without power windows, and with or without a CD player. In how many different ways can a new car be ordered in terms of these options? 3) _____
A) 112 B) 448 C) 14 D) 224

Use the Fundamental Counting Principle to solve the problem.

- 4) There are 9 performers who are to present their acts at a variety show. How many different ways are there to schedule their appearances? 4) _____
A) 362,880 B) 72 C) 81 D) 9
- 5) There are 4 performers who are to present their acts at a variety show. One of them insists on being the first act of the evening. If this request is granted, how many different ways are there to schedule the appearances? 5) _____
A) 6 B) 24 C) 12 D) 16

Use the formula for ${}_nP_r$ to solve.

- 6) A church has 10 bells in its bell tower. Before each church service 4 bells are rung in sequence. No bell is rung more than once. How many sequences are there? 6) _____
A) 210 B) 151,200 C) 5040 D) 302,400
- 7) How many arrangements can be made using 2 letters of the word HYPERBOLAS if no letter is to be used more than once? 7) _____
A) 3,628,800 B) 45 C) 90 D) 1,814,400

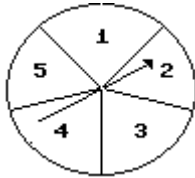
Solve the problem.

- 8) In how many distinct ways can the letters in MANAGEMENT be arranged? 8) _____
A) 453,600 B) 226,800 C) 22,680 D) 3,628,800

Use the theoretical probability formula to solve the problem. Express the probability as a fraction reduced to lowest terms.

- 9) A die is rolled. The set of equally likely outcomes is {1, 2, 3, 4, 5, 6}. Find the probability of getting a 9. 9) _____
A) 1 B) 9 C) 0 D) $\frac{9}{6}$

- 10) You are dealt one card from a standard 52-card deck. Find the probability of being dealt a picture card. 10) _____
 A) $\frac{3}{13}$ B) $\frac{3}{52}$ C) $\frac{3}{26}$ D) $\frac{1}{13}$
- 11) A fair coin is tossed two times in succession. The set of equally likely outcomes is {HH, HT, TH, TT}. Find the probability of getting the same outcome on each toss. 11) _____
 A) $\frac{1}{2}$ B) 1 C) $\frac{3}{4}$ D) $\frac{1}{4}$
- 12) Use the spinner below to answer the question. Assume that it is equally probable that the pointer will land on any one of the five numbered spaces. If the pointer lands on a borderline, spin again. Find the probability that the arrow will land on an odd number. 12) _____



- A) $\frac{2}{5}$ B) 0 C) $\frac{3}{5}$ D) 1

Solve the problem.

- 13) A group consists of 6 men and 5 women. Three people are selected to attend a conference. In how many ways can 3 people be selected from this group of 11? In how many ways can 3 men be selected from the 6 men? Find the probability that the selected group will consist of all men. 13) _____
 A) 165; 20; $\frac{1}{5940}$ B) 990; 120; $\frac{4}{33}$
 C) 165; 20; $\frac{1}{4838400}$ D) 165; 20; $\frac{4}{33}$
- 14) A box contains 28 widgets, 4 of which are defective. If 4 are sold at random, find the probability that (a) all are defective (b) none are defective. 14) _____
 A) $\frac{1}{491400}$; $\frac{1}{122850}$ B) $\frac{1}{7}$; $\frac{6}{7}$
 C) $\frac{1}{20475}$; $\frac{506}{975}$ D) $\frac{1}{28}$; $\frac{1}{7}$
- 15) If you are dealt 6 cards from a shuffled deck of 52 cards, find the probability of getting 3 jacks and 3 aces. 15) _____
 A) $\frac{3}{26}$ B) $\frac{2}{2544815}$ C) $\frac{1}{1017926}$ D) $\frac{2}{13}$

You are dealt one card from a 52-card deck. Find the probability that you are not dealt:

- 16) a diamond. 16) _____
 A) $\frac{3}{4}$ B) $\frac{1}{4}$ C) $\frac{2}{5}$ D) $\frac{4}{13}$

You randomly select one card from a 52-card deck. Find the probability of selecting:

17) an ace or a 9?

A) $\frac{13}{2}$

B) $\frac{5}{13}$

C) 10

D) $\frac{2}{13}$

17) _____

You are dealt one card from a 52-card deck. Find the probability that you are dealt:

18) a numbered card or a spade

A) $\frac{53}{52}$

B) $\frac{10}{13}$

C) $\frac{23}{52}$

D) $\frac{33}{52}$

18) _____

Solve the problem that involves probabilities with events that are not mutually exclusive.

19) In a class of 50 students, 27 are Democrats, 9 are business majors, and 7 of the business majors are Democrats. If one student is randomly selected from the class, find the probability of choosing a Democrat or a business major.

A) $\frac{18}{25}$

B) $\frac{29}{50}$

C) $\frac{43}{50}$

D) $\frac{1}{25}$

19) _____

A single die is rolled. Find the odds:

20) in favor of getting a number less than 3.

A) 2:1

B) 1:3

C) 1:2

D) 1:1

20) _____

One card is randomly selected from a deck of cards. Find the odds:

21) in favor of getting a spade.

A) 1 to 4

B) 4 to 1

C) 1 to 3

D) 3 to 1

21) _____

Solve the problem.

22) If you are given odds 9 to 3 in favor of winning a bet, what is the probability of winning the bet?

A) $\frac{3}{4}$

B) 3

C) $\frac{1}{4}$

D) $\frac{1}{12}$

22) _____

Solve the problem involving probabilities with independent events.

23) A spinner is used for which it is equally probable that the pointer will land on any one of six regions. Three of the regions are colored red, two are colored green, and one is colored yellow. If the pointer is spun once, find the probability it will land on green and then yellow.

A) $\frac{1}{3}$

B) $\frac{1}{6}$

C) $\frac{1}{18}$

D) $\frac{1}{9}$

23) _____

24) A single die is rolled twice. Find the probability of getting a 4 the first time and a 5 the second time.

A) $\frac{1}{6}$

B) $\frac{1}{3}$

C) $\frac{1}{12}$

D) $\frac{1}{36}$

24) _____

25) The probability that a region prone to hurricanes will be hit by a hurricane in any single year is $\frac{1}{5}$.

What is the probability of a hurricane at least once in the next 5 years?

A) 0.67232

B) 0.00032

C) 0.99968

D) 1

25) _____

- 26) A card is drawn from a 52-card deck and a fair coin is flipped. What is the probability of getting jack and heads? 26) _____
- A) $\frac{3}{52}$ B) $\frac{1}{26}$ C) $\frac{1}{13}$ D) $\frac{1}{4}$

Solve the problem that involves probabilities with events that are not mutually exclusive.

- 27) There are 38 chocolates in a box, all identically shaped. There are 15 filled with nuts, 10 with caramel, and 13 are solid chocolate. You randomly select one piece, eat it, and then select a second piece. Find the probability of selecting 2 solid chocolates in a row. 27) _____
- A) $\frac{78}{703}$ B) $\frac{39}{361}$ C) $\frac{169}{1444}$ D) $\frac{13}{1406}$

- 28) Consider a political discussion group consisting of 8 Democrats, 3 Republicans, and 7 Independents. Suppose that two group members are randomly selected, in succession, to attend a political convention. Find the probability of selecting an Independent and then a Democrat. 28) _____
- A) $\frac{4}{153}$ B) $\frac{7}{306}$ C) $\frac{14}{81}$ D) $\frac{28}{153}$

Solve the problem.

- 29) Numbered disks are placed in a box and one disk is selected at random. If there are 7 red disks numbered 1 through 7, and 4 yellow disks numbered 8 through 11, find the probability of selecting a disk numbered 3, given that a red disk is selected. 29) _____
- A) $\frac{4}{11}$ B) $\frac{1}{7}$ C) $\frac{1}{11}$ D) $\frac{7}{11}$

- 30) Numbered disks are placed in a box and one disk is selected at random. If there are 6 red disks numbered 1 through 6, and 2 yellow disks numbered 7 through 8, find the probability of selecting a red disk, given that an odd-numbered disk is selected. 30) _____
- A) $\frac{3}{4}$ B) $\frac{3}{8}$ C) $\frac{1}{4}$ D) $\frac{1}{8}$

- 31) Numbered disks are placed in a box and one disk is selected at random. If there are 6 red disks numbered 1 through 6, and 4 yellow disks numbered 7 through 10, find the probability of selecting a yellow disk, given that the number selected is less than or equal to 3 or greater than or equal to 8. 31) _____
- A) $\frac{3}{4}$ B) $\frac{3}{10}$ C) $\frac{3}{5}$ D) $\frac{1}{2}$

- 32) The table shows the number of employed and unemployed workers in the U.S., in thousands. 32) _____

	Employed	Unemployed
Male	67,761	2433
Female	58,655	2285

Assume that one person will be randomly selected from the group described in the table. Find the probability of selecting a person who is employed, given that the person is male.

- A) $\frac{2433}{67,761}$ B) $\frac{2285}{70,194}$ C) $\frac{67,761}{70,194}$ D) $\frac{2433}{70,194}$