

Solve the problem.

- 1) 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? 1) _____
 A) 10 rackets B) 36 rackets C) 24 rackets D) 27 rackets

$$3 * 3 * 4 = 36$$

- 2) In how many ways can 6 people line up for play tickets? 2) _____
 A) 1 B) 6 C) 46,656 D) 720

$$6! = 720$$

- 3) 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? 3) _____
 A) 67,600 B) 456,976 C) 10,000 D) 6760

$$26 * 26 * 10 * 10 = 6760000$$

- 4) Given a group of 8 women and 11 men, how many different ways are there of choosing one man and one woman for a committee? 4) _____
 A) 88 B) 361 C) 19 D) 342

$$8C1 * 11C1 = 88$$

- 5) How many ways can a president, vice-president, and secretary be chosen from a club with 12 members? 5) _____
 A) 36 B) 1320 C) 220 D) 6

$$12P3 = 1320$$

Evaluate the expression.

- 6) Determine the number of combinations of 7 things taken 4 at a time. 6) _____
 A) 35 B) 420 C) 210 D) 12

$$7C4 = 35$$

Solve the problem.

- 7) How many 5-card poker hands consisting of 2 aces and 3 kings are possible with an ordinary 52-card deck? 7) _____
 A) 12 B) 24 C) 6 D) 288

$$4C2 * 4C3 = 24$$

- 8) A pool of possible jurors consists of 15 men and 10 women. How many different juries consisting of 5 men and 7 women are possible? 8) _____
- A) 360,360 B) 3123 C) 5,200,300 D) 1,352,078

$15C5 * 10C7 = 360360$

- 9) License plates are made using 3 letters followed by 3 digits. How many plates can be made if repetition of letters and digits is allowed? 9) _____
- A) 1,000,000 B) 308,915,776 C) 17,576,000 D) 1,757,600

$26 * 26 * 26 * 10 * 10 * 10 = 17576000$

- 10) How many three-digit counting numbers are even? 10) _____
- A) 510 numbers B) 450 numbers C) 490 numbers D) 499 numbers

$9 * 10 * 5 = 450$

Find the probability.

- 11) A bag contains 7 red marbles, 2 blue marbles, and 3 green marbles. What is the probability that a randomly selected marble is blue? 11) _____
- A) $\frac{1}{4}$ B) $\frac{2}{9}$ C) $\frac{7}{12}$ D) $\frac{1}{6}$

12 marbles in total; $P(\text{blue}) = 2/12 = 1/6$

- 12) A bag contains 19 balls numbered 1 through 19. What is the probability that a randomly selected ball has an even number? 12) _____
- A) $\frac{2}{19}$ B) $\frac{9}{19}$ C) $\frac{19}{9}$ D) 9

There are 9 even numbers from 1 to 19. $P(\text{even}) = 9/19$

- 13) Two fair 6-sided dice are rolled. What is the probability that the sum of the two numbers on the dice is 10? 13) _____
- A) 3 B) $\frac{5}{18}$ C) $\frac{1}{18}$ D) $\frac{1}{12}$

There are 6 * 6 pairs. 4 in the first die and 6 2nd die = 10; or, 6 in the first die and 4 in the second die. Or, both dice 5. There are three pairs of numbers out of 36: $P(\text{sum}=10) = 3/36 = 1/12$

- 14) Three fair coins are tossed. Find the probability of getting heads on all three coins. 14) _____
- A) $\frac{1}{2}$ B) $\frac{1}{8}$ C) $\frac{3}{8}$ D) $\frac{1}{4}$

$P(\text{Head and Head and Head}) = 1/2 * 1/2 * 1/2 = 1/8$

- 15) A class consists of 24 women and 58 men. If a student is randomly selected, what is the probability that the student is a woman? 15) _____
- A) $\frac{29}{41}$ B) $\frac{12}{41}$ C) $\frac{1}{82}$ D) $\frac{12}{29}$

Total = 24 + 58 = 82 P(woman) = 24/82 = 12/41

Solve the problem.

- 16) A number cube labeled with numbers 1, 2, 3, 4, 5, and 6 is tossed. What are the odds in favor of the cube showing an odd number? 16) _____
- A) 1:2 B) 2:1 C) 3:2 D) 1:1

3 to 3 or 3:3 which simplifies to 1:1

- 17) If it has been determined that the probability of an earthquake occurring on a certain day in a certain area is 0.05, what are the odds against an earthquake? 17) _____
- A) 20 to 1 B) 18 to 1 C) 19 to 1 D) 1 to 20

In favor of earthquake 0.05; against, 1-0.05 = 0.95 Implies 0.95 against to 0.05 in favor, divide by the smaller number 0.05 it reduces to 19 to 1 or 19:1

- 18) The results of a school election for student president are shown in the following table. 18) _____

Candidate	A	B	C	D	E
Votes for	12	24	21	29	14

What is the probability that a randomly polled voter voted for Candidate C?

- A) 0.12 B) 0.29 C) 0.21 D) 0.50

Total = 12 + 24 + 21 + 29 + 14 = 100 P(C) = 21/100 = 0.21

Find the probability.

- 19) A fair die is rolled. What is the probability of rolling a 3 or a 6? 19) _____
- A) $\frac{1}{36}$ B) $\frac{1}{6}$ C) $\frac{1}{3}$ D) 2

P(A or B) = P(A) + P(B) - P(A and B) P(3 or 6) = 1/6 + 1/6 = 2/6 = 1/3
Notice that P(3 and 6) = 0, since on a single die we cannot obtain two different results at the same time.

- 20) A fair die is rolled. What is the probability of rolling an odd number or a number less than 3? 20) _____
- A) $\frac{5}{6}$ B) $\frac{2}{3}$ C) 1 D) $\frac{1}{2}$

P(odd or < 3) = P(Odd) + P(<3) - P(odd and <3) P(odd or < 3) = 3/6 + 2/6 - 1/6 = 4/6 = 2/3

Find the indicated probability.

- 21) A card is drawn at random from a standard 52-card deck. Find the probability that the card is an ace or a club. 21) _____

- A) $\frac{9}{13}$ B) $\frac{43}{52}$ C) $\frac{4}{13}$ D) $\frac{35}{52}$

P(Ace or Club) = P(Ace) + P(Club) - P(Ace and Club)

P(Ace or Club) = 4/52 + 13/52 - 1/52 = 16/52 = 4/13

22) The table below shows the soft drinks preferences of people in three age groups.

22) _____

	cola	root beer	lemon-lime
under 21 years of age	40	25	20
between 21 and 40	35	20	30
over 40 years of age	20	30	35

If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

A) $\frac{6}{17}$

B) $\frac{2}{5}$

C) $\frac{5}{17}$

D) None of the above is correct.

$P(\text{Over 40} \mid \text{drink root beer}) = 30/75 = 2/5$

Notice that consider (given that) only people who drink root beer; among those (75 in total) there are 30 who are over 40.

Find the probability.

23) If you are dealt two cards successively (with replacement of the first) from a standard 52-card deck, find the probability of getting a heart on the first card and a diamond on the second. 23) _____

A) $\frac{1}{16}$

B) $\frac{1}{169}$

C) $\frac{13}{204}$

D) $\frac{1}{204}$

$P(\text{heart and diamond}) = 13/52 * 13/52 = 1/4 * 1/4 = 1/16$

24) If a fair coin is tossed three times, find the probability of getting heads on the first toss and tails on the second and third tosses. 24) _____

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

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

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

D) $\frac{3}{8}$

$P(\text{head and tail and tail}) = 1/2 * 1/2 * 1/2 = 1/8$

Use the general multiplication rule to find the indicated probability.

25) You are dealt two cards successively (without replacement) from a shuffled deck of 52 playing cards. Find the probability that both cards are black. 25) _____

A) $\frac{13}{51}$

B) $\frac{1}{2652}$

C) $\frac{25}{51}$

D) $\frac{25}{102}$

$P(\text{black and black}) = 26/52 * 25/51 = 1/2 * 25/51 = 25/102$

Find the conditional probability.

26) If a single fair die is rolled, find the probability that the number rolled is 5 given that it is odd. 26) _____

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

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

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

D) $\frac{1}{2}$

$P(5 \mid \text{odd}) = 1/3$ Notice: it is "given that" the output is odd; therefore there are only three possible outcomes: 1, 3, 5.

Answer Key

Testname: PRACTICE04B

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