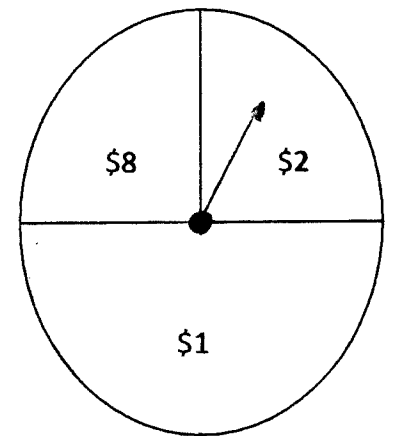


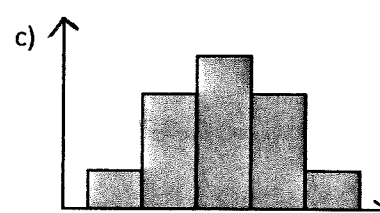
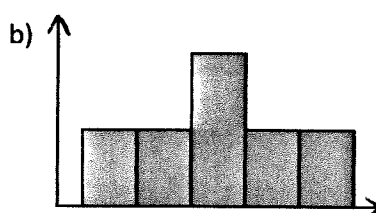
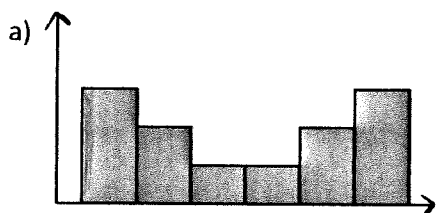
- 1) A fast food restaurant's combo meal includes a sandwich, a side dish, and a beverage. If they offer five types of sandwiches, four types of side dishes, and six types of beverages, how many different combo meals are possible?
- 2) A coin is tossed six times. How many different outcomes (arrangements of heads/tails) are possible?
- 3) A computer password consists of three capital letters (A to Z) followed by two digits (0 to 9).
How many different passwords are possible if ...
a) all passwords can use repetition? b) no password can use repetition? c) all passwords must start with J,K, or L?
- 4) Six people (3 men and 3 women) are to be seated in a row of six chairs.
How many different seating arrangements are possible if ...
a) they can be seated in any order? b) the first two seats must be occupied by women?
- 5) A baseball team has 11 players. How many different ways can we choose a batting order of 9 players?
- 6) A woman has 10 different dresses. If she is traveling and has storage space for only 3 dresses, how many different choices does she have as to what dresses to bring?
- 7) From 9 people, how many different ways can we choose a president and vice-president?
- 8) A steak comes with the choice of 3 vegetables. If you have 7 vegetables to choose from, how many ways can you choose 3 different vegetables to accompany your steak?
- 9) A class contains 7 boys and 8 girls. What is the probability that a randomly selected child from this class is a boy?
- 10) A fair die is rolled. What is the probability that ...
a) a 2 is rolled? b) a 5 is not rolled? c) a number less than 5 is rolled?
- 11) A fair coin is tossed twice.
a) Find the sample space. b) What is the probability that we see different outcomes on each toss?
- 12) An unbalanced coin is tossed 300 times and heads appears 180 times.
a) What is the empirical (observational) probability of heads?
b) Briefly explain why we cannot be certain that the probability above is the true probability, but also why we can be confident that it is not too far from the true probability.
- 13) Answer true or false: If E is an event, then $0 \leq P(E) \leq 1$
- 14) Answer true or false: If $S = \{ A, B, C, D \}$, then $P(A) + P(B) + P(C) + P(D) = 1$
- 15) A player spins the spinner at the right and wins the amount of money shown.
What is the player's expected winnings?
- 16) A company charges \$15 for next day delivery of a package. It costs the company \$12 for such a delivery. If delivery is late, customers get a full refund. If only 4% of such deliveries are late, find the company's expected net gain on a package.
- 17) A service that repairs air conditioners sells maintenance agreements for \$80 a year. The average cost to repair an air conditioner is \$350, and 1 of every 100 people who purchase a maintenance agreement have air conditioners that require repair. Find the service's expected profit per maintenance agreement.
- 18) A test consists of multiple choice questions [choices a, b, c, d]. A correct guess wins you 7 points, but an incorrect guess loses you 3 points. If you can eliminate one of the wrong choices on each question, use expected value to show that guessing would be a wise strategy.
- 19) ● ■ □ ■ ▲ ○ ●
One of the objects above is randomly selected. What is the probability that the object is ...
a) black or circular? b) white or triangular c) triangular or circular?
- 20) A player spins the spinner (in problem 15) once and wins the amount of money shown. What is the probability that they win \$1 or \$2?



- 21) The table at the right shows the breakdown of votes on an issue by political party. What is the probability that a randomly selected voter ...

		Vote	
		Yes	No
Party	Democrat	14	12
	Republican	18	6

- a) voted yes? b) voted yes or is a Republican? c) voted no and is a Democrat?
- 22) A player spins the spinner (in problem 15) twice, and each time they win the dollar amount shown. What is the probability that they win ...
a) \$2 on the first spin and \$1 on the second spin? b) \$8 on both spins? c) \$8 on neither spin?
- 23) A fair coin is tossed 4 times. What is the probability that ...
a) heads appears all 4 times? b) heads appears at least once?
- 24) A pair of fair dice are rolled. What is the probability that a 5 appears on each die?
- 25) From the objects in problem 19, two are randomly selected (without replacement). What is the probability that ...
a) both objects are black? b) neither object is black? c) we get one object of each color?
- 26) From a shipment of 9 parts (6 good and 3 defective), two parts are randomly selected for inspection. What is the probability that ...
a) both parts are good? b) the first part is good and the second part is defective? c) both parts are defective?
- 27) For problem 26, suppose that three parts are selected. What is the probability that ...
a) all three parts are good? b) at least one part is good?
- 28) For the sample of data: 5, 15, 4, 8, 8, 2, find the following measures:
a) mean b) median c) mode d) midrange e) range f) standard deviation
- 29) For the sample of data: 14, 19, 1, 8, 3, find the following measures:
a) mean b) median c) mode d) midrange e) range f) standard deviation
- 30) Construct a sample of data (containing 5 observations, not all the same) for which mean=median=mode=midrange.
- 31) A company has 50 employees. All of them earn the same salary except for one employee whose salary is twice as much as each of the other 49 employees. Which statement regarding their salaries is true?
a) mode=median>mean b) mean<median=mode c) mode=median<mean d) mean=median=mode
- 32) If the graphs of the data sets below use the same scaling on the axes, which has the greatest standard deviation?



Answers:

- 1)120 2)64 3)a)1757600 b)1404000 c)202800 4)a)720 b)144 5)19958400 6)120 7)72 8)35 9)7/15
 10)a)1/6 b)5/6 c)2/3 11)a)S={HH,HT,TH,TT} b)1/2 12)a)180/300=3/5=.6 b)Another 300 tosses would probably give a different result, but since 300 is a large number of tosses the results will probably not vary greatly.
 13>true 14>true 15)\$3 16)\$2.40 17)\$76.50 18) $E=1/3 > 0$, so guess 19)a)5/7 b)3/7 c)4/7 20)3/4
 21)a)16/25 b)19/25 c)6/25 22)a)1/8 b)1/16 c)9/16 23)a)1/16 b)15/16 24)1/36 25)a)2/7 b)1/7 c)4/7
 26)a)5/12 b)1/4 c)1/12 27)a)5/21 b)83/84 28)a)7 b)6.5 c)8 d)8.5 e)13 f)4.561
 29)a)9 b)8 c)does not exist d)10 e)18 f)7.517 30) Answers may vary. One possible answer: 1,2,2,2,3 31)c 32)a