

- 11) In how many ways can 7 people line up for play tickets? 11) _____
 A) 5040 B) 823,543 C) 1 D) 7
- 12) 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? 12) _____
 A) 456,976 B) 35,152 C) 16,900 D) 33,800
- 13) How many different sequences of 4 digits are possible if the first digit must be 3, 4, or 5 and if the sequence may not end in 000? Repetition of digits is allowed. 13) _____
 A) 2,999 B) 2,000 C) 2,997 D) 1,512

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

- 14) In how many ways can the people be presented? 14) _____
 A) 49 B) 2,520 C) 5,040 D) 720
- 15) In how many ways can the awards be presented so that Maria and Olivia will be next to each other? 15) _____
 A) 1,680 B) 1,440 C) 720 D) 1,220
- 16) In how many ways can the men be presented first and then the women? 16) _____
 A) 5,040 B) 72 C) 144 D) 2
- 17) In how many ways can the first award be presented to Karen and the last to Lyle? 17) _____
 A) 120 B) 24 C) 360 D) 840

Suppose a traveler wanted to visit a museum, an art gallery, and the state capitol building. 45-minute tours are offered at each attraction hourly from 10 a.m. through 3 p.m. (6 different hours). Solve the problem, disregarding travel time

- 18) In how many ways can the traveler visit all three places in one day? 18) _____
 A) 120 B) 15 C) 60 D) 30
- 19) In how many ways could the traveler schedule two of the three tours in one day? 19) _____
 A) 120 B) 36 C) 30 D) 180
- 20) In how many ways could the traveler schedule all three tours in one day, with the museum tour being after noon? 20) _____
 A) 40 B) 20 C) 30 D) 60
- 21) In how many ways could the traveler schedule all three tours before 1 p.m.? 21) _____
 A) 1 B) 9 C) 6 D) 3
- 22) In how many ways could the traveler schedule all three tours in one day, with the art gallery being the last tour of the day? 22) _____
 A) 60 B) 40 C) 10 D) 30

Solve the problem.

- 23) How many different three-digit numbers can be written using digits from the set {2, 3, 4, 5, 6} without any repeating digits? 23) _____
 A) 60 three-digit numbers B) 10 three-digit numbers
 C) 20 three-digit numbers D) 120 three-digit numbers

- 24) How many different three-number "combinations" are possible on a combination lock having 24 numbers on its dial? Assume that no numbers repeat. (Combination locks are really permutation locks.) 24) _____
- A) 5.1004×10^5 three-number "combinations"
 B) 2.5502×10^5 three-number "combinations"
 C) 1.5301×10^6 three-number "combinations"
 D) 12,144 three-number "combinations"
- 25) There are 9 horses in a race. In how many ways can the first three positions of the order of the finish occur? (Assume there are no ties.) 25) _____
- A) 84 B) 504 C) 508 D) 82
- 26) A license plate is to consist of 2 letters followed by 5 digits. Determine the number of different license plates possible if repetition of letters and numbers is permitted. 26) _____
- A) 6,760,000 B) 67,600,000 C) 67,599,976 D) 19,656,000
- 27) A license plate is to consist of 2 letters followed by 3 digits. Determine the number of different license plates possible if repetition of letters and numbers is not permitted. 27) _____
- A) 467,980 B) 468,140 C) 468,000 D) 676,000
- 28) A license plate is to consist of 3 letters followed by 5 digits. Determine the number of different license plates possible if the first letter must be an N, M, or P and repetition of letters and numbers is not permitted. 28) _____
- A) 9,072,000 B) 54,522,000 C) 54,432,000 D) 272,160,000
- 29) How many ways can the letters in the word "WISCONSIN" be arranged? 29) _____
- A) 45,360 B) 362,880 C) 38,572 D) 69,620
- 30) In how many ways can the letters in the word PAYMENT be arranged if the letters are taken 4 at a time? 30) _____
- A) 28 B) 420 C) 840 D) 210
- 31) How many ways can a president, vice-president, secretary, and treasurer be chosen from a club with 10 members? Assume that no member can hold more than one office. 31) _____
- A) 210 B) 24 C) 40 D) 5040
- 32) A signal is made by placing 3 flags, one above the other, on a flag pole. If there are 6 different flags available, how many possible signals can be flown? 32) _____
- A) 120 B) 216 C) 18 D) 20