

Permutations

Name _____

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Date _____

Evaluate each expression.

1) ${}_8P_3$

2) ${}_6P_4$

3) ${}_5P_5$

4) ${}_7P_3$

5) ${}_7P_6$

6) ${}_6P_5$

7) ${}_6P_3$

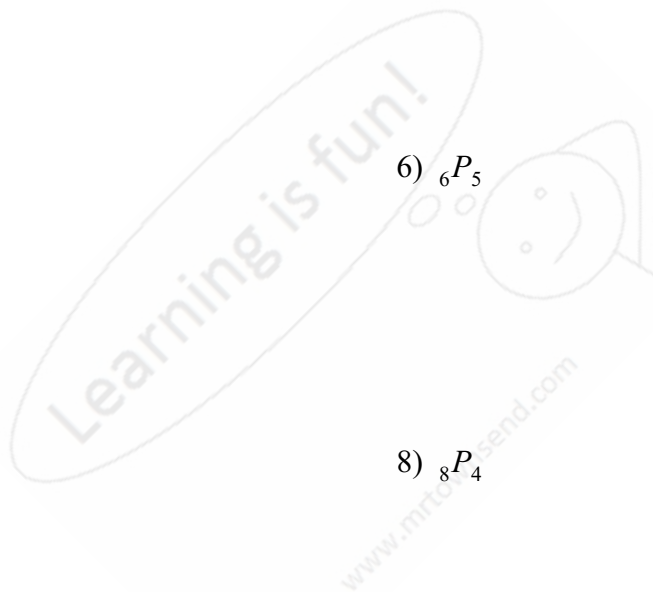
8) ${}_8P_4$

9) ${}_7P_4$

10) ${}_5P_4$

11) ${}_7P_5$

12) ${}_7P_7$



Find the probability of each event.

- 13) A mechanic working under a car requires four different size wrenches from his toolbox, which contains thirteen different wrenches. Reaching for his toolbox, he grabs four of them at random. What is the probability that the mechanic has all of the wrenches he needs?
- 14) A nature preserve has a population of fourteen black bears. They have been tagged #1 through #14, so they can be observed over time. Two of them are randomly selected and captured for evaluation. One is tested for worms and one is tested for ticks. What is the probability that bear #3 is tested for worms and bear #5 is tested for ticks?
- 15) A chemistry lab requires students to identify chemical compounds by using various tests. Each student is given samples of three different compounds, labeled A, B, and C. Each student is also given a list of six possible compounds. If a student does not perform the tests and randomly chooses three from the list, what is the probability that she guesses all three correctly?
- 16) A nature preserve has a population of eleven black bears. They have been tagged #1 through #11, so they can be observed over time. Two of them are randomly selected and captured for evaluation. One is tested for worms and one is tested for ticks. What is the probability that bear #3 is tested for worms and bear #5 is tested for ticks?
- 17) A mechanic working under a car requires five different size wrenches from her toolbox, which contains nine different wrenches. Reaching for her toolbox, she grabs five of them at random. What is the probability that the mechanic has all of the wrenches she needs?
- 18) Rob and Totsakan each purchase one raffle ticket. If a total of six raffle tickets are sold, what is the probability that Rob wins the grand prize and Totsakan wins the second prize?

Answers to Permutations

1) 336

5) 5,040

9) 840

13) $\frac{1}{715} \approx 0.14\%$

17) $\frac{1}{126} \approx 0.794\%$

2) 360

6) 720

10) 120

14) $\frac{1}{182} \approx 0.549\%$

18) $\frac{1}{30} \approx 3.333\%$

3) 120

7) 120

11) 2,520

15) $\frac{1}{120} \approx 0.833\%$

4) 210

8) 1,680

12) 5,040

16) $\frac{1}{110} \approx 0.909\%$

