

# Probability: Permutations

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Solve the following probability word problems.

- (1) Five people walk into a fast-food restaurant at the same time. How many different ways can the first two be served?
- (2) In a six-person race, how many different ways can the first four runners arrive at the finish line?
- (3) Allison was asked to choose three paintings from a collection of six and hang them on the wall in a row. How many different ways could the wall be decorated?
- (4) Tyler has a collection of six toy train cars and creates a train using four of them. How many different ways could the train be created?
- (5) How many four-letter sequences can be made from the letters in the word STANK?
- (6) How many four-digit numbers can be created from the digits 2, 4, 6, 3, 9, 5 and 7 without repeating any?
- (7) How many three-digit numbers can be formed by rearranging the digits in the number 6,150,438?
- (8) A baby presses six of the ten numbers (zero to nine) on a phone dial pad once each. How many different numbers could she have dialed?

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## ANSWER KEY

Solve the following probability word problems.

- (1) Five people walk into a fast-food restaurant at the same time. How many different ways can the first two be served?

$$nPk = \frac{5!}{(5-2)!} = 20$$

- (2) In a six-person race, how many different ways can the first four runners arrive at the finish line?

$$nPk = \frac{6!}{(6-4)!} = 360$$

- (3) Allison was asked to choose three paintings from a collection of six and hang them on the wall in a row. How many different ways could the wall be decorated?

$$nPk = \frac{6!}{(6-3)!} = 120$$

- (4) Tyler has a collection of six toy train cars and creates a train using four of them. How many different ways could the train be created?

$$nPk = \frac{6!}{(6-4)!} = 360$$

- (5) How many four-letter sequences can be made from the letters in the word STANK?

$$nPk = \frac{5!}{(5-4)!} = 120$$

- (6) How many four-digit numbers can be created from the digits 2, 4, 6, 3, 9, 5 and 7 without repeating any?

$$nPk = \frac{7!}{(7-4)!} = 840$$

- (7) How many three-digit numbers can be formed by rearranging the digits in the number 6,150,438?

$$nPk = \frac{7!}{(7-3)!} = 210$$

- (8) A baby presses six of the ten numbers (zero to nine) on a phone dial pad once each. How many different numbers could she have dialed?

$$nPk = \frac{10!}{(10-6)!} = 151,200$$



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