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?

Probability: Permutations

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?

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