

- Factorial
- Tree Diagrams

Homeschool



Honor Roll

Learn ~ Persevere ~ Succeed

Integrated Pre-Algebra and Geometry

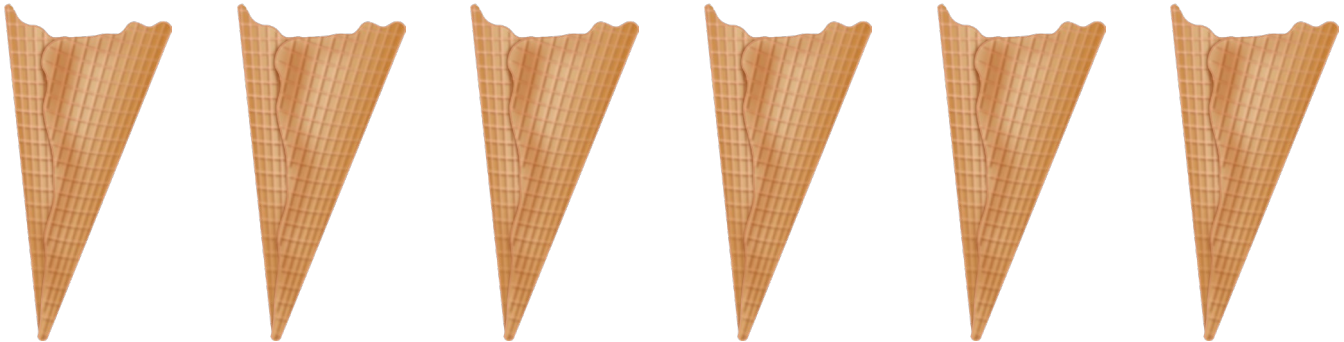
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Warmup:

1. $5 \times 4 \times 3 \times 2 \times 1$

2. A restaurant serves three flavors of ice-cream. If a customer asks for 1 scoop of each flavor, what different ice cream cones can be made?



I. Factorial

Factorial: Notation that means to multiply all whole numbers from 1 to the number

The symbol for factorial is ! (the exclamation point)

3! means $3 \times 2 \times 1 =$ _____

4! means $4 \times 3 \times 2 \times 1 =$ _____

$$5! =$$

$$2! =$$

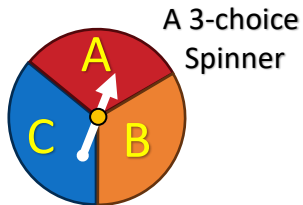
3. $3! =$

$$5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 \quad 4! = 4 \cdot \underline{\hspace{1cm}}!$$

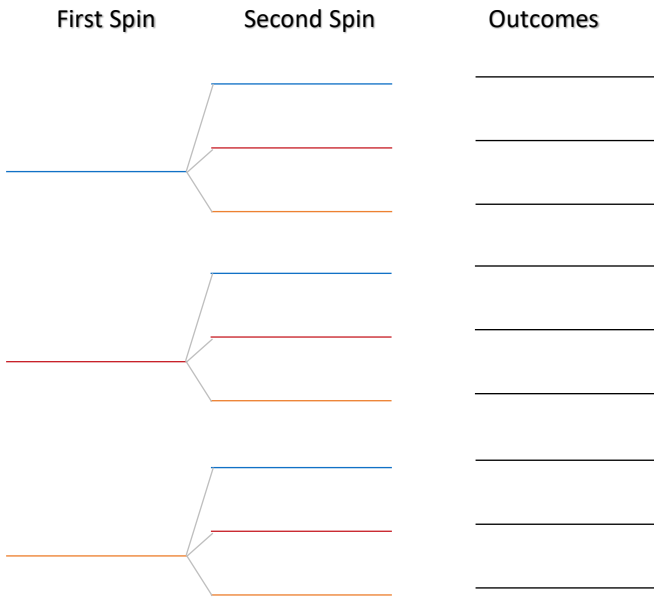
$$5! = 5 \cdot \underline{\hspace{1cm}}!$$

$$3! = 3 \cdot \underline{\hspace{1cm}}!$$

II. Tree Diagrams



What are the possible outcomes of spinning a three-choice spinner twice? The first spin determines the color, the second spin determines the letter.



How many possible outcomes are there from spinning the 3-choice spinner twice?

How can we obtain the number of possible outcomes without drawing a tree diagram?

4. How many possible outcomes are there when a 4-choice spinner is spun twice?

5. How many possible outcomes are there when a 4-choice spinner is spun then a standard 6-sided die is rolled?

6. Draw a tree diagram to represent the different orders three people can stand in line.

Connor, Logan, and
Nate are standing in line

A bag with
4 marbles



Draw a tree diagram to represent the possible results of selecting two marbles from a bag of 4 different colored marbles. The first marble will be put back in the bag before picking the second marble.



Will the results be different if the first marble is not
returned to the bag before selecting the
second marble? _____ Explain your answer

