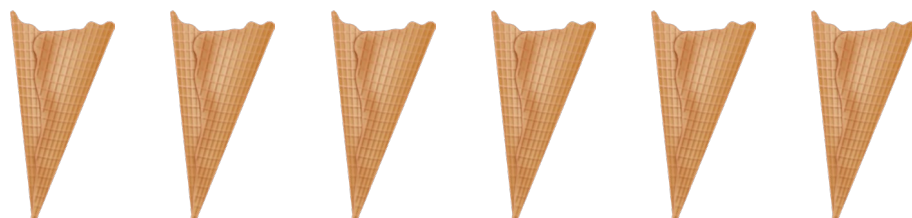


Warmup:

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. $3! =$

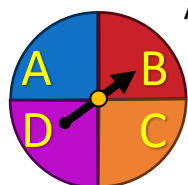
$$5! = 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$$

$$4! = 4 \cdot \underline{\hspace{1cm}}!$$

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

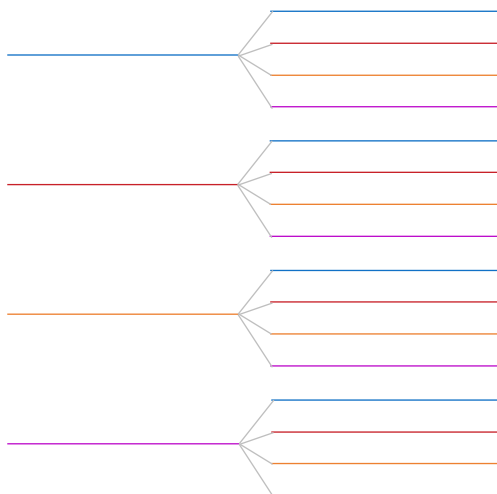
$$3! = 3 \cdot \underline{\hspace{1cm}}!$$

II. Tree Diagrams



A 4-choice
Spinner

What are the possible outcomes of spinning a four-choice spinner twice?



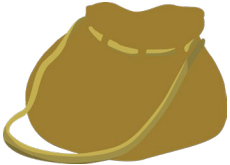
How many possible outcomes are there from spinning the 4-choice spinner twice?

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

Three people are standing on line

Draw a tree diagram to represents the different ways three people can be standing on line.

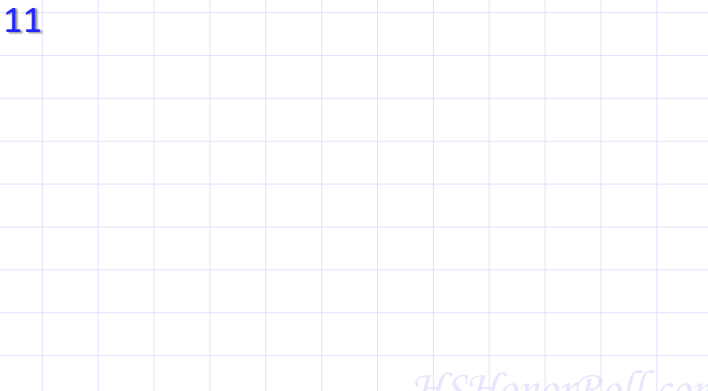
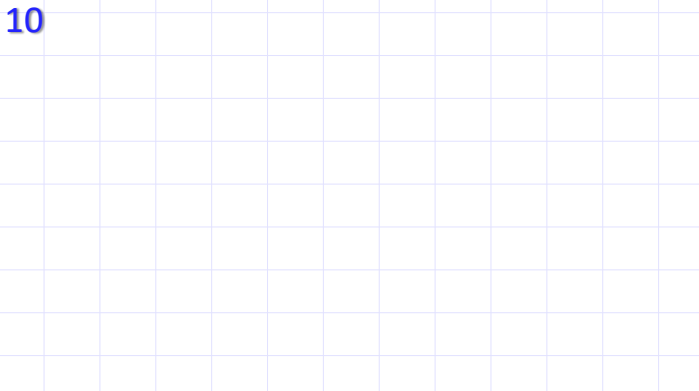
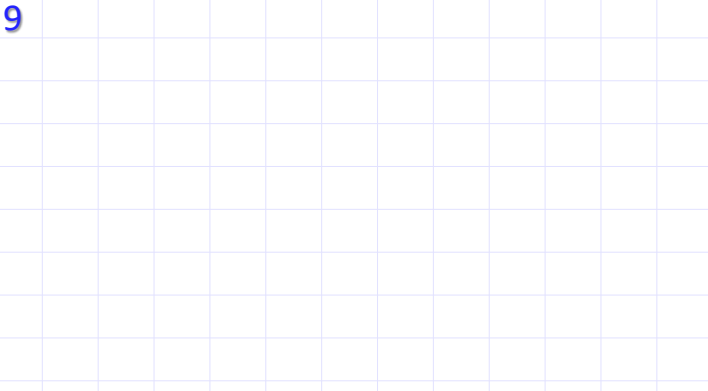
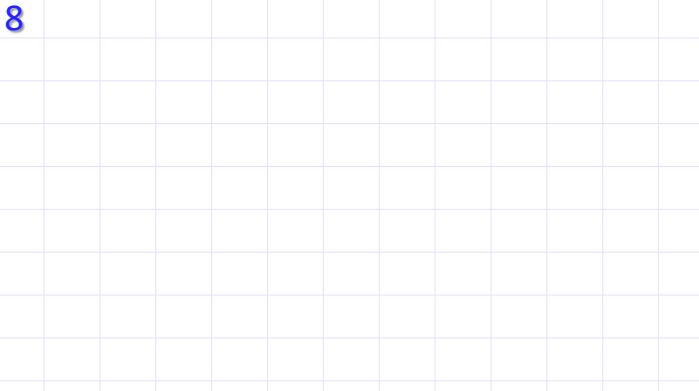
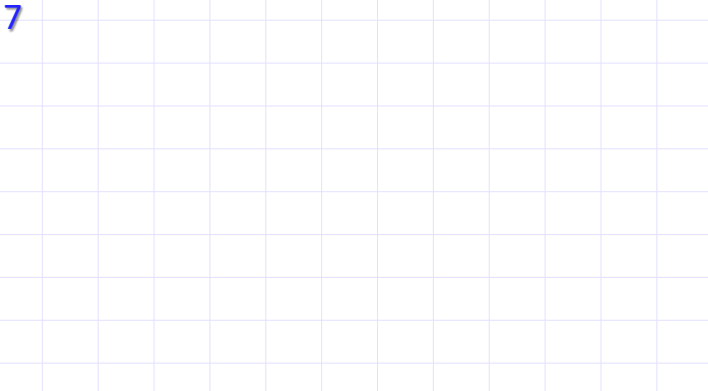
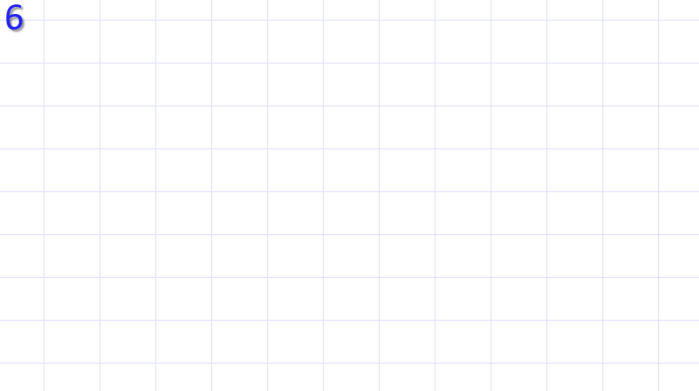
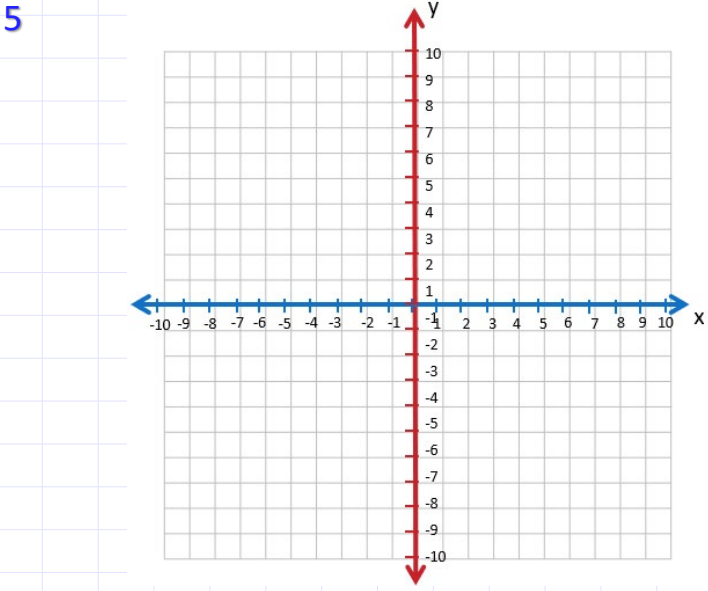
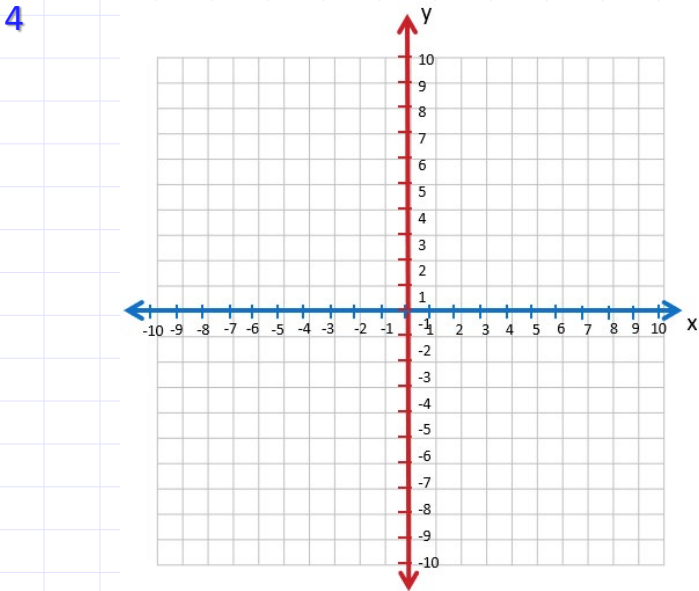
A bag with 9 marbles



Draw a tree diagram to represents the outcome of selecting two marbles from a bag of 9 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

III. Practice



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