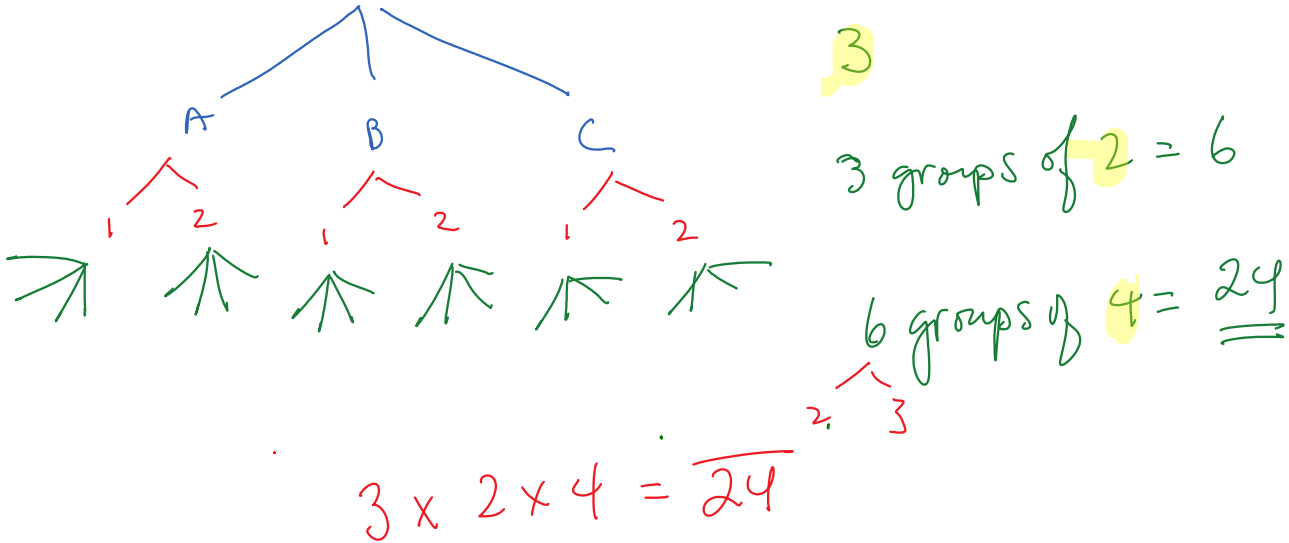


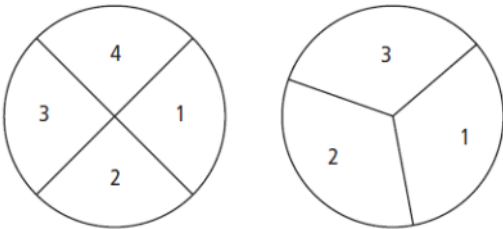
11.2 Outcomes of Events (Fundamental Counting Theorem)

How many outfits can we create with 3 shirts, 2 pants and 4 hats.

Draw a tree diagram, and then come up with a short-cut for calculating the total number of possible outfits.



A new game uses the following two spinners.



$$\underline{4} \times \underline{3} = 12$$

- Use multiplication to determine the total number of possible outcomes.
- Check your answer using another method.



In general, the total number of possible outcomes can be determined by multiplying the number of possible outcomes for each event.



Determine the number of possible outcomes when rolling a 4 sided die three times in a row.

$$\underline{4} \times \underline{4} \times \underline{4} = 4^3 = 64$$

How many triple scoop ice-cream cones can be made at baskin-robbins? (31 flavours)

*

$$31 \times 31 \times 31 = 29\,791$$

b) How many are possible if all the flavours have to be different?

$$\underline{31} \times \underline{30} \times \underline{29} = 26\,970$$

How many 4 digit combination numbers are possible? (using digits 0 - 9)

$$\underline{10} \times \underline{10} \times \underline{10} \times \underline{10} = 10^4 = 10\,000$$

b) How many 4 digit numbers are there?

$$\underline{9} \quad \underline{10} \quad \underline{10} \quad \underline{10} = 9\,000$$

c) How many 4 digit numbers are divisible by 5?

$$\underline{9} \quad \underline{10} \quad \underline{10} \quad \underline{2} = 18\,000$$

d) How many ways are there for 8 people to finish 1st, 2nd, 3rd

$$\frac{8}{1^{\text{st}}} \quad \frac{7}{2^{\text{nd}}} \quad \frac{6}{3^{\text{rd}}} = 336$$

e) How many ways are there to arrange the letters ABCDE

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

$$\underline{5} \times \underline{4} \times \underline{3} \times \underline{2} \times \underline{1} = 5! = 120$$

f) How many ways are there to arrange ABCDE if AB must be beside each other.

$$(4 \times 3 \times 2 \times 1) = 24 \text{ ways} \times \frac{2}{\substack{\uparrow \\ \text{AB or BA}}} = 48$$

f) How many ways are there to organize ABCDE if ABC must be beside each other

ABC, D, E

$$\text{order ABC? } = 3 \times 2 \times 1 = 6$$

$$3 \times 2 \times 1 = 6 \text{ ways}$$

$$6 \times 6 = \underline{\underline{36}}$$

Assign: Counting worksheet

