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CSE150
HW04

Problem 1

I have twelve books.

- In how many ways can I line them up on a single shelf?

  12! = **479,001,600**

- In how many ways can I choose seven of them and line them up on a single shelf?

  $\frac{12!}{5!}$ = **3,991,680**

- In how many ways can I choose seven to take to school?

  $\binom{12}{7}$ = $\frac{12!}{7!5!}$ = **792**

Problem 2

An ogre has n captives to eat, one captive per day.

1. How many ways are there to make a menu for n days?

   n!

2. How many ways are there to pick k captives to freeze them for winter season?

   $\binom{n}{k}$ = $\frac{n!}{k!(n-k)!}$

3. How many ways are there to buy n bottles of sauce for the captives, out of k kinds?

   $\binom{k}{n}$ = $\frac{k!}{n!(k-n)!}$

Problem 3

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