

# Homework 13

## Section 6.3

Ex. 22 a)  $7! = 5040$

b)  $6! = 720$

c)  ~~$7! = 5040$~~  and  $5! = 120$

d)  $5! = 120$

e)  $4! = 24$

f)  $4! = 24$

Ex. 30.  $7890$

a)  $\frac{C_7^1 \cdot C_6^4}{4 \times 3 \times 2 \times 1} = \frac{7 \times 15}{24} = \frac{105}{24} = \frac{35}{8}$

$C_{16}^5 - C_9^5 = 4368 - 126 = 4242$

b)  $C_{16}^5 - C_9^5 - C_7^5 = 4242 - 21 = 4221$

## Section 6.4

### Ex. 8

$C_7^9 \cdot 3^8 \cdot 2^9$

### Ex. 12

$1 \ 11 \ 55 \ 165 \ 330 \ 462 \ 462 \ 330 \ 165 \ 55 \ 11 \ 1$

## Section 6.5

Ex. 12.  $C(5+20-1, 20) = C(24, 20) = C(24, 4) = 10626$

Ex. 14.  $C(4+17-1, 17) = C(20, 17) = C(20, 3) = 1140$

Ex. 30. "MISSISSIPPI"  $M \times 1 \ I \times 4 \ S \times 4 \ P \times 2$

$C_{11}^2 \cdot C_9^4 \cdot C_5^4 \cdot C_1^1 = \frac{11 \times 10}{2} \times \frac{9 \times 8 \times 7 \times 6}{4 \times 3 \times 2 \times 1} \times 5 \times 1 = 34650$