

# Unit 4 (Ch 8) Probability + Expected value

1)  $\begin{matrix} 1 & 11 \\ 2 & 10 \\ 3 & 9 \\ 4 & 8 \\ 5 & 7 \end{matrix}$   $\boxed{5 \text{ ways}}$       2)  $\underline{2} \underline{1} \underline{6} \underline{5} \underline{4} \underline{3} \underline{2} \underline{1}$   
 $= \boxed{1440 \text{ ways}}$

3)  $4 \cdot 6 \cdot 2 = \boxed{48}$       4)  $\underline{10} \underline{10} \underline{10} \underline{10} = \boxed{10,000}$

5)  $\frac{8!}{2!2!2!} = \boxed{6720}$       6)  $10! = \boxed{3,628,800}$

7)  ${}^7C_2 \cdot {}^{11}C_2 = 21 \cdot 55 = \boxed{1155}$

8)  ${}^{20}C_{15} = \boxed{15504}$       9)  $\boxed{\frac{1}{9}}$       10)  $\frac{1}{5} \cdot \frac{1}{4} \cdot \frac{1}{3} \cdot \frac{1}{2} \cdot 1 =$

1)  $E(W) = \frac{1}{26} \cdot \frac{1}{10} (500)$   
 $E(L) = \frac{259}{260} (-2)$  }  $\boxed{-0.07}$

2)  $E(R) = .8(1000) + .2(6000) = \$2000$

3)  $E(W) = \frac{4}{6} (-1)$   
 $E(L) = \frac{2}{6} (2)$  }  $\boxed{0}$

4)  $\frac{2}{3}(0) + \frac{1}{6}(1) + \frac{1}{12}(2) + \frac{1}{12}(3) = \boxed{.58 \text{ hr}}$

## Ch 8 (Unit 4) Sequence + Series

1)  $0, -\frac{2}{3}, \frac{4}{9}, -\frac{8}{27}, \frac{16}{81}$       2)  $12, 16, 20, 24, 28$

3)  $\frac{11! \cdot 4!}{4! \cdot 7!} = 11 \cdot 10 \cdot 9 \cdot 8 = 7920$

4) a)  $a_n = 5000 + (n-1)(-100) = -100n + 5100$

b)  $a_n = 4\left(\frac{1}{2}\right)^{n-1}$

5)  $\sum_{n=1}^{12} \frac{2}{3n+1}$

b)  $\frac{7}{2} (3 + 51) = 189$

b)  $24 \left( \frac{1 - \left(\frac{1}{6}\right)^3}{1 - \frac{1}{6}} \right)$   
 $= 28.8$

c)  $\frac{5}{1 - \frac{1}{10}} = 5 \cdot \frac{10}{9} = \frac{50}{9}$  or  $5.\bar{6}$

7)  $(2a - 5b)^4 =$

$$(2a)^4 + 4(2a)^3(-5b) + 6(2a)^2(-5b)^2 + 4(2a)(-5b)^3 + (-5b)^4$$
$$= 16a^4 - 160a^3b + 600a^2b^2 - 1000ab^3 + 625b^4$$

8)  $(2x - 1)^8 =$

$$(2x)^8 + 8(2x)^7(-1) + 28(2x)^6(-1)^2 + 56(2x)^5(-1)^3 + 70(2x)^4(-1)^4 +$$
$$56(2x)^3(-1)^5 + 28(2x)^2(-1)^6 + 8(2x)(-1)^7 + (-1)^8$$

$$= 256x^8 - 1024x^7 + 1792x^6 - 1792x^5 + 1120x^4 - 448x^3 + 112x^2$$

9)  $(3x + 2y)^8$

$$x^3 y^5 = 56(3x)^3 (2y)^5 = \boxed{48384}$$