I was unable to print worksheet out

HW 3 Jeremiah Webb

1.

$P_{n,k} = \frac{n!}{(n-k)!}$ 6 people

$P_{6,6} = \frac{6!}{(6-6)!} = \frac{6!}{0!} = 720$ ways

$\frac{4!}{(4-4)!} = \frac{4!}{0!} = 24$ ways

So $\boxed{\frac{24}{720} = \frac{1}{30}}$ ways

2. 12 people 6 parents
6 selected 4 teachers

$C_{12,6}$ $\frac{12!}{6!(6)!} = 924$

$C_{8,6}$ $\frac{8!}{6! \times 2!} = 28$

$\frac{28}{924}$

$.03$

$\boxed{3\%}$

3. 4 Jacks, 52 cards

$\frac{48}{52}$ $\quad .92$ $\quad 92\%$

4. $7+12+15+11$

35 People

19 Professors $\quad$ 26 T.A.s

T.A $\frac{26}{45}$ $\quad \frac{23}{45}$ female

T.A + female $\quad \frac{11}{45}$ $\quad \frac{26+23-11}{45}$

$\frac{38}{45}$

5. $\frac{6}{36} = \frac{1}{6}$ $\quad$ 3 and 4
4 and 3
1 and 6
3 and 2
6 and 1
2 and 5

$\frac{1}{6}$

6.

hearts = 13 — 50% $\frac{1}{2}$ get heads

$\frac{13}{52}$ $\frac{1}{2}$

$\frac{13}{104}$ .125 12.5%

7. $\frac{14}{45} \times \frac{13}{44} = \frac{182}{1980} = \frac{91}{990}$

Eat 1, eat one more

$\frac{91}{990} = .091$ 9.1%

8.

8 disks — 2, 4, 6, 8 even

6 red

$\frac{6}{8}$ $\frac{4}{8}$

$\frac{P(A \cap B)}{P(B)}$

$\frac{\frac{6}{8}}{\frac{1}{2}}$

$\frac{3}{48} \cdot \frac{1}{1}$ $\frac{3}{4}$

9.

Cost 8,000

Profits 90,000

Probs .15 , .85

$.15(-8000) + .85(90000)$

$-1200 + 76500$

$75,300

10. $P(B|A) = \frac{P(A|B) \cdot P(B)}{P(A)}$

P(A) Probability of clouds: 30%

P(B) Probability of rain in June: 10%

P(A|B) Probability clouds and rain 60%

$\frac{.6 \cdot .1}{.3} = .2$

20%

.2 = 20%

11.

A) $P(T) = \frac{60}{150} = .4$

B) $P(F) = \frac{71}{150} = .47$

C) $P(\bar{B}) = \frac{150 - 39}{150} = .74$

D) $P(F \cap T) = \frac{45}{150} = .3$

E) $P(F \cup T) \quad \frac{10 + 16 + 60}{150} = .57$