

**Homework 3b; Wednesday, October 7****NAME:**

8) The following frequency distribution reports the highest education level achieved by *Standard and Poor's* top 500 CEOs.

Level	Frequency
No college	14
B.S. / B.A.	164
M.B.A.	191
Doctorate	50

Find the probability that a randomly selected CEO from Standard and Poor's top 500 achieved the educational level of:

- a. B.S. / B.A.
- b. either M.B.A. or Doctorate
- c. at least some college

9) The following data comes from a Center for Health Statistics. The table shows the number of female hospitalizations for cardiovascular disease, by age group, during one year in Florida.

<i>Age group (yr)</i>	<i>Number</i>
0–19	810
20–39	5,029
40–49	10,977
50–59	20,983
60–69	36,884
70–79	65,017
80 and over	69,167

One of these case records is selected at random. Find the probability that the woman was:

- a. in her 50s.
- b. less than 50 years old.
- c. between 40 and 69 years old, inclusive.
- d. 70 years old or older.

**10)** An ordinary deck of playing cards has 52 cards. There are four suits—spades, hearts, diamonds, and clubs—with 13 cards in each suit. Spades and clubs are black; hearts and diamonds are red. If one of these cards is selected at random, what is the probability that it is:

- [illegible]

11) Consider the following values: 64% of the students at a college are women; 12% of the female students are majoring in computer science. If a student chosen at random is a woman, what is the probability that she will be majoring in computer science?

**12)** A hospital administration did a survey of patients regarding satisfaction with care and type of surgery. The results follow:

	Heart	Hip	Knee	<i>Total</i>
Not satisfied	7	12	2	21
Neutral	15	38	10	63
Satisfied	32	16	25	73
Very satisfied	4	22	23	49
<i>Total</i>	58	88	60	206

a) Find the probability that a patient is satisfied:

- i)  $\frac{32}{206}$       ii) 73      iii)  $\frac{122}{206}$       iv) 122      v)  $\frac{73}{206}$       \_\_\_\_\_

b) Find the probability that a patient is very satisfied and had knee surgery:

- i)  $\frac{109}{206}$       ii)  $\frac{11}{206}$       iii)  $\frac{23}{206}$       iv)  $\frac{23}{60}$       v)  $\frac{23}{60} + \frac{23}{49}$       \_\_\_\_\_

c) Find the probability that a patient is neutral and had hip surgery:

- i)  $\frac{38}{88}$       ii)  $\frac{88}{206}$       iii)  $\frac{38}{206}$       iv)  $\frac{38}{63}$       v)  $\frac{63}{88}$       \_\_\_\_\_

d) Find the probability that a patient had knee surgery:

- i) 60                      ii) 206                      iii)  $\frac{146}{206}$                       iv)  $\frac{60}{206}$                       v)  $\frac{2}{206}$                       \_\_\_\_\_

e) Find the probability that a patient is satisfied and had heart surgery:

**Homework 3b; Wednesday, October 7**

i)  $\frac{73}{206}$       ii)  $\frac{58}{73}$       iii)  $\frac{32}{58}$       iv)  $\frac{32}{206}$       v)  $\frac{32}{73}$       \_\_\_\_\_

f) Find the probability that a patient is not satisfied and had heart surgery:

i)  $\frac{7}{58}$       ii)  $\frac{7}{206}$       iii)  $\frac{7}{21}$       iv)  $\frac{21}{206}$       v)  $\frac{58}{206}$       \_\_\_\_\_

**13)** Explain what is wrong with the following argument: “When two balanced dice are rolled, the sum of the dice can be 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, or 12, giving 11 possibilities. Therefore the probability is 1/11 that the sum is 12.”

**14)** What is wrong with the following argument? “If two coins are tossed, then there are 3 possible outcomes: (1) 2 heads, (2) 1 head and 1 tail, (3) 2 tails. Hence the probability of two heads is 1/3”

**15)** Use the following data to compute the following 14 probabilities (listed below the table)

	Democrat	Republican	Independent	<i>Total</i>
females	250	300	50	<i>600</i>
males	250	100	50	<i>400</i>
<i>Total</i>	<i>500</i>	<i>400</i>	<i>100</i>	<i>1000</i>

- |                            |                            |
|----------------------------|----------------------------|
| 1. P(Democrat)             | 8. P(Republican   male)    |
| 2. P(Republican)           | 9. P(Republican   female)  |
| 3. P(Independent)          | 10. P(male   Democrat)     |
| 4. P(Republican and male)  | 11. P(female   Democrat)   |
| 5. P(Independent and male) | 12. P(female   Republican) |

**Homework 3b; Wednesday, October 7**

6.  $P(\text{Independent and female})$

13.  $P(\text{Democrat} \mid \text{not Independent})$

7.  $P(\text{female and Republican})$

14.  $P(\text{Republican} \mid \text{not Independent})$