1	0.231	14	~~0.040~~ 0.059
2	0.115	15	0.479
3	0	16	0.424
4	0.885	17	0.525
5	0.654	18	women ~~0.151~~
6	3 : 10	19	0.151
7	7 : 19	20	0.181
8	0.011	21	0.125
9	0.781	22	men
10	0.382	23	0.135
11	0.618	24	0.605 ~~0.605~~ ~~0.887~~
12	0.00075	25	Solutions
13	~~0.960~~ 0.941		

26

East Los Angeles College
Department of Mathematics
Math 227
Test 2

Show all work for credit and approximate all probabilities to the nearest **thousandths.**

The following table represents the distribution of marbles.

Color	Number
Yellow	20
Green	12
Blue	14
Purple	6
Total	52

If you select a marble at random, what's the probability the marble is:

1) Green?
2) Purple?
3) Red?
4) Non-Purple?
5) Yellow or Blue?

What's the odds for selecting:

6) Green?
7) Blue?

If you select two different marbles, what's the probability the marbles are:

8) Both Purple?
9) Both non-Purple?

If you select three different marbles at random, what's the probability:

10) None are Blue?
11) At least one is Blue?

A bin of 200 iPhones contains phones that are defective and non-defective. Past experience indicates that 3% of all bins of iphone's are defective. If you select two different iphones at random, what's he probability:

12) Both are defective?
13) Both are non-defective?
14) At least one is defective?

The following table represents degree data from a random sample at a local university.

Degree	Bachelor	Masters	PhD	Total
Men	28	26	12	66
Women	42	28	10	80
Total	70	54	22	146

If you select a graduate at random, what's the probability the graduate earned:

15) Bachelor's degree?
16) Bachelor's degree given that the graduate was a man?
17) Bachelor's degree given that the graduate was a woman?
18) What gender was more likely to earn a bachelor's degree?
19) PhD?
20) PhD given that the graduate was a man?
21) PhD given that the graduate was a woman?
22) What gender was more likely to earn a PhD?

If you select two different graduates at random, what's the probability:

23) They both earned a Master's Degree?
24) At least one earned a Master's Degree?
25) What is your name?

math 227 Test 2

(1) $P(G) = \frac{n(G)}{n(S)}$

$= \frac{12}{52} \approx \boxed{0.231}$

(2) $P(P) = \frac{n(P)}{n(S)}$

$= \frac{6}{52} \approx \boxed{0.115}$

(3) $P(R) = \frac{n(R)}{n(S)}$

$= \frac{0}{52} = \boxed{0}$

(4) $P(\text{non } P) = \frac{n(\text{non } P)}{n(S)}$ or $1 - P(P)$

$= \frac{46}{52}$ $= 1 - 0.115$

$\approx \boxed{0.885}$

(5) $P(y \text{ or } b) = P(y) + P(b) - P(y \text{ and } b)$

$= \frac{20}{52} + \frac{14}{52} - \frac{0}{52}$

$= \frac{34}{52} \approx \boxed{0.654}$

(6) odds for G

$n(G) : n(\text{non } G)$

$12 : 40 \;;\; 6 : 20 \;:: \boxed{3 : 10}$

(7) $n(B) : n(\text{non } B)$

$14 : 38 \;:: \boxed{7 : 19}$

(8) $P(\text{Both purple})$

$= P(\overset{1st}{P} \text{ and } \overset{2nd}{P})$

$= P(\overset{1st}{P}) \cdot P(\overset{2nd}{P})$

$= \frac{6}{52} \cdot \frac{5}{51} \;;\; \frac{30}{2652} \approx \boxed{0.011}$

(9) $P(\text{both non-purple})$

$= P(\overset{1st}{\text{non } P} \text{ and } \overset{2nd}{\text{non } P})$

$= P(\overset{1st}{\text{non } P}) \cdot P(\overset{2nd}{\text{non } P})$

$= \frac{46}{52} \cdot \frac{45}{51} = \frac{2070}{2652} \approx \boxed{0.781}$

(10) p(non are blue)

$= p(\text{1st non b} \text{ and } \text{2nd non b} \text{ and } \text{3rd non b})$

$= p(\text{1st non b}) \cdot p(\text{2nd non b}) \cdot p(\text{3rd non b})$

$= \frac{38}{52} \cdot \frac{37}{51} \cdot \frac{36}{50} = \boxed{0.382}$

(11) p(at least one is blue)

$= 1 - p(\text{non are blue})$

$= 1 - 0.382 \; ; \approx \boxed{0.618}$

(12) Defective $= 3\% \cdot 200$

$= (6)$

note: non-Defective $= 200 - 6$

$= (\cancel{196})\ (194)$

p(Both Def) $= p(\text{1st D} \text{ and } \text{2nd D})$

$= p(\text{1st D}) \cdot p(\text{2nd D})$

$= \frac{6}{200} \cdot \frac{5}{199} \approx \boxed{0.00075}$

(13) p (both are non-dot)

$= p(\text{1st non D} \text{ and } \text{2nd non D})$

$= p(\text{1st non D}) \cdot p(\text{2nd non D})$

$= \frac{194}{200} \cdot \frac{193}{194} \approx \boxed{0.960} \quad \boxed{0.941}$

(14) p(at least one is dot)

$= 1 - p(\text{non are dot})$

$= 1 - p(\text{1st non D}) \cdot p(\text{2nd non D})$

$= 1 - 0.960 \approx \boxed{0.040} \quad \boxed{0.059}$

(15) $p(B) = \frac{n(B)}{n(S)}$

$= \frac{70}{146} \approx \boxed{0.479}$

(16) $p(B|m) = \frac{n(B \text{ and } m)}{n(m)}$

$= \frac{28}{66} \approx \boxed{0.424}$

(17) $p(B|w) = \frac{n(B \text{ and } w)}{n(w)}$

$= \frac{42}{80} \approx \boxed{0.525}$

(18) women

(19) $p(phd) = \frac{n(phd)}{n(s)}$

$= \frac{22}{146} \approx \boxed{0.151}$

(20) $p(phd|m) = \frac{n(phd \text{ and } m)}{n(m)}$

$= \frac{12}{66}$

$\approx \boxed{0.181}$

(21) $p(phd|w) = \frac{n(phd \text{ and } w)}{n(w)}$

$= \frac{10}{80}$

$\approx \boxed{0.125}$

(22) men

(23) $P(\text{Both masters}) = P(\text{1st master and 2nd master}) = P(\text{1st master}) \cdot P(\text{2nd master}) = \frac{54}{146} \cdot \frac{53}{145} \approx \boxed{0.135}$

(24) $P(\text{at least one}) = 1 - P(\text{none}) = 1 - P(\text{1st non-master}) \cdot P(\text{2nd non-master}) = 1 - \frac{92}{146} \cdot \frac{91}{145} \approx \boxed{0.605}$

~~94~~ ~~93~~

~~$1 - \frac{92}{146} \cdot \frac{91}{145} \approx 0.605$~~

~~$\boxed{0.657}$~~

(25) Solutions

$1 - \frac{92}{146} \cdot \frac{91}{145}$ (OK)

$\approx \boxed{0.605}$