PAP Geometry HW
Chapter 14 - 15

Name: Key
Date: _____ Period: _____

Probability Homework (Day 1)

1. The soccer team is silk-screening T-shirts. They have 4 different colors of T-shirts and 2 different colors of ink. How many different T-shirts can be made using one ink color on a T-shirt?

8

2. A travel agent is offering a vacation package. Participants choose the type of tour, a meal plan, and a hotel class from the table below. How many different vacation packages are offered?

Tour	Meal	Hotel
Walking	Restaurant	4-Star
Boat	Picnic	3-Star
Bicycle		2-Star
		1-Star

24

3. The door code to get into a top-secret laboratory is 6 digits. The first 3 digits of the code are all odd and the last 3 digits are all even. Digits can be used more than once. How many possible codes are there to gain access to this laboratory?

8,000

4. In how many ways can a 3 digit number be formed using the numbers 0-9, if each digit is used only one time?

720

5. A board of trustees is made up of 10 people. The board is choosing a chairperson, a secretary, and a publicist. How many ways can the board choose these positions?

720

6. A fruit bowl contains 4 green apples and 7 red apples. What is the probability that a randomly selected apple will be green?

$\frac{4}{11}$ or 36.4%

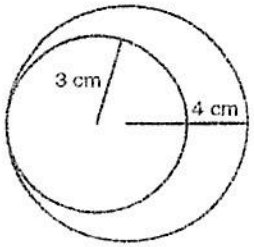
7. Tom has a dollar's worth of dimes and a dollar's worth of nickels in his pocket.
   a. What is the probability he will randomly select a nickel?

$\frac{2}{3}$ or 66.7%

   b. What is the probability he will randomly select a dime?

$\frac{1}{3}$ or 33.3%

8. Find the probability that a point chosen at random inside the larger circle will also fall inside the smaller circle?



$P(\text{small}) = \frac{\text{Small area}}{\text{total area}}$

$\frac{9\pi}{16\pi}$ or 56.3%

9. Frank is playing darts. The results of his throws are shown in the table. Assume that his results continue to follow this trend.

Color Hit	Number of Throws
Blue	12
Red	5
White	2

Find the experimental probability that:
   a. The next throw will hit white.

$\frac{2}{19}$

   b. The next throw will hit blue.

$\frac{12}{19}$

   c. The next throw will not hit red.

$\frac{14}{19}$

10. A bowl contains 36 blue, 75 green, and 19 yellow jelly beans. What is the probability of randomly selecting a green jelly bean?

$\frac{75}{130} = 57.7\%$

11. Four quilters are preparing patches for a quilt. When finished, the quilt will contain 200 patches. The quilters' contributions thus far are in the table.

Name	Number of Patches
Lia	65
Brian	17
Elle	88
Len	6

a. What is the probability that a randomly chosen patch was sewn by Elle?

$\frac{88}{176}$

b. What is the probability that a randomly chosen patch will not have been sewn by Lia?

$\frac{111}{176}$

12. A hacker is trying to break into his school's computer system to change his F's to A's. The computer system access password is 5 digits.

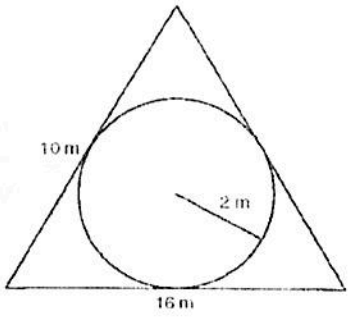
a. If digits in the password are allowed to repeat, what is the probability that the hacker will guess the password correctly on the first try?

$\frac{1}{100,000}$ .001 %

b. The hacker learns that the password does not contain any repeated digits. What is the new probability that he will randomly guess the password correctly?

$\frac{1}{30,240}$ .003 %

13. Given the diagram:



a. What is the probability that a random point is within the circle in the triangle?

$P(\text{circle}) = \frac{\text{circle area}}{\text{total area}}$

$\frac{\pi}{12}$ or 26.1 %

b. What is the probability that a random point is not within the circle in the triangle?

$P(\text{not circle}) = 1 - P(\text{circle})$

$1 - \frac{\pi}{12} = 73.8\%$

Compound Events Homework (Day 2)

14. A can of vegetables with no label has a 1/8 chance of being green beans and a 1/5 chance of being corn. What is the probability that an unlabeled can of vegetables is either green beans or corn?

$\frac{13}{40}$ or 32.5 %

15. Of the 400 doctors who attended a conference, 240 practiced family medicine and 130 were from countries outside the US. One-third of the family medicine practitioners were not from the US.

    a. What is the probability that a doctor practices family medicine or is from the US?

$P(\text{Fm or US}) = P(\text{Fm}) + P(\text{US}) - P(\text{Fm and US})$

$\frac{7}{8}$ or 87.5 %

    b. What is the probability that a doctor practices family medicine or is not from the US?

$P(\text{Fm or not US}) = P(\text{Fm}) + P(\text{not US}) - P(\text{Fm and not US})$

$\frac{29}{40}$ or 72.5 %

    c. What is the probability that a doctor does not practice family medicine or is from the US?

$P(\text{not Fm or US}) = P(\text{not Fm}) + P(\text{US}) - P(\text{not Fm and US})$

$\frac{4}{5}$ or 80 %

16. Of the 220 people who came into the Italian deli on Friday, 104 bought pizza and 82 used a credit card. Half of the people who bought pizza used a credit card. What is the probability that a customer bought pizza or used a credit card?

$\frac{134}{220}$ or 67 %

17. Cards numbered 1-25 are placed in a bag and one is drawn at random. Find each probability:

    a. Drawing an odd number or a multiple of 7.

$\frac{14}{25}$ or 56 %

    b. Drawing an even number or a perfect square.

$\frac{3}{5}$ or 60 %

18. A drug company is testing the side effects of different doses of a new drug on three different groups of volunteers.

Group	Volunteers	Daily Amount (mg)
A	353	150
B	467	200
C	310	250

a. If a volunteer is chosen at random, what is the probability that this person receives the highest amount per day?

$\frac{310}{1130}$

b. If a volunteer is chosen at random, what is the probability that this person receives more than 150 mg per day?

$\frac{777}{1130}$

c. If a volunteer is chosen at random, what is the probability that this person does not receive 200 mg per day?

$\frac{663}{1130}$

19. Mr. Rodney's English class is made up of 28 students. He has 6 ESL students, 10 remedial students, and 5 advanced learners. ESL students make up 1/5 of the remedial students and 3/5 of the advanced learners.

a. What is the probability that a student is ESL and Remedial?

$\frac{1}{14}$

b. What is the probability that a student is ESL and an advanced learner?

$\frac{3}{28}$

c. What is the probability that a student is remedial and not ESL?

$\frac{8}{28}$

20. A bag contains 5 red, 3 green, 4 blue, and 8 yellow marbles. Find the probability of randomly selecting a green marble, and then a yellow marble if the first marble is replaced.

$\frac{3}{50}$

21. A sock drawer contains 5 rolled up pairs of each color of socks, white, green, and blue. What is the probability of randomly selecting a pair of blue socks, replacing it, and then randomly selecting a pair of white socks?

$\frac{1}{9}$

22. A bag contains 12 blue cubes, 12 red cubes, and 20 green cubes. Find each probability:

    a. A green cube and then a blue cube are chosen at random with replacement.

$\frac{15}{121}$

    b. Two blue cubes are chosen at random without replacement.

$\frac{3}{43}$

23. The table shows numbers of registered voters by age in the US in 2004 based on the census. Find each probability in decimal form.

Age	Registered Voters (in thousands)	Not Registered to Vote (in thousands)
18–24	14,334	13,474
25–44	49,371	32,763
45–64	51,659	19,355
65 and over	26,706	8,033

    a. A randomly selected person is registered to vote, given that the person is between the ages of 18 and 24.

51.6 %

    b. A randomly selected person is between the ages of 45 and 64 and is not registered to vote.

9%

    c. A randomly selected person is registered to vote and is at least 65 years old.

12.4 %

24. The table shows the population distribution in Ireland in 1996 by age and gender. Find each probability:

Ireland's Population in 1996					
Age Group	0–20	21–40	41–60	61–80	Over 80
Males (in thousands)	620.4	526.8	405.3	212.0	33.0
Females (in thousands)	588.3	527.6	400.8	246.3	60.3

    a. A randomly selected person is no more than 20 years old, given that the person is male.

34.5 %

    b. A randomly selected person is female, given that the person is over 80 years old.

64.6 %