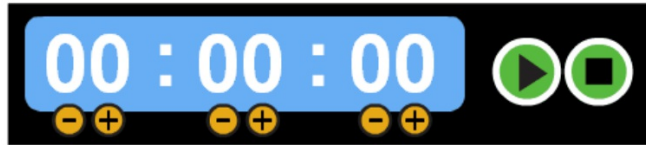


Timed Expectations



Have Assignment out to go over

In your journal, create a Frayer Model for Combinations

Permutation
 nPr
 $\frac{n!}{(n-r)!}$

Definition: order of objects when arrangement does not matter	Illustration: $nCr = \frac{n!}{(n-r)!r!}$
Examples: 2, 3, 4 same as 3, 2, 4	Non-Examples: A hand-drawn illustration of a padlock, representing a combination lock where order matters.

1. There are twenty-eight students in a class. Sixteen are girls, and twelve are boys. Find the probability that a student selected at random will be a girl.

2. If two dice are thrown, what is the probability of getting a sum of eight?

3. If six cards are drawn at random from a deck of 52 cards, what is the probability that they are all spades?

$52C$

.

-

4. How many different seven digit numbers can be made using all the seven digits 3, 3, 3, 4, 4, 5, 5?

5. In how many ways can five nickels, three dimes, four pennies and a quarter be distributed among thirteen people so that each person may receive one coin?

6. How many signals can be made by raising four red flags, two green flags, and one white flag on a pole at the same time?

7. Find the number of combinations of five objects taken from a group of nine objects.

$${}^9C_5 = \frac{9!}{(9-5)!5!} = \frac{9!}{4!5!} = \frac{9 \cdot 8 \cdot 7 \cdot 6 \cdot 5!}{4!5!}$$

8. How many combinations of four items are there in a given set of six items?

$${}^6C_4 = \frac{6!}{(6-4)!4!} = 15$$

9. In how many ways can seven questions out of ten be chosen on an examination?

$${}^{10}C_7 = \frac{10!}{(10-7)!7!} = \frac{10 \cdot 9 \cdot 8 \cdot 7!}{3!7!} = \frac{720}{6} = 120$$

10. In how many ways can three books be chosen from five books?

$${}^5C_3 = \frac{5!}{(5-3)!3!} = 10$$

Quiz #1 Study Guide/ Practice Problems

1. Each letter in the word "PARTS" is written on a card and the cards are shuffled. List a sample space for the outcome of drawing one card.

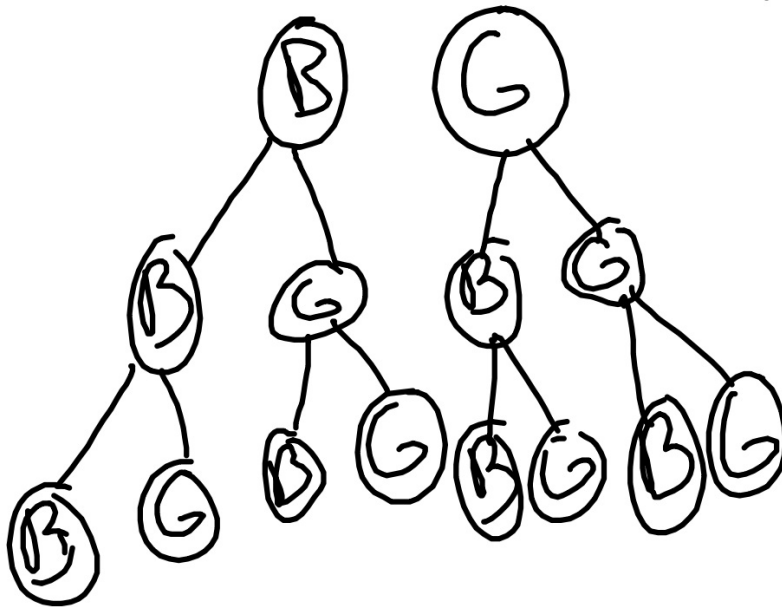
$\{P, A, R, T, S\}$

2. Two balls are to be drawn successively from a bag known to contain only blue balls and green balls. List a sample space for the experiment.

$\{BB, BG, GB, GG\}$ \textcircled{B} \textcircled{G}

3. Create a tree diagram to show all possible gender outcomes when a family has three children.

MF BG



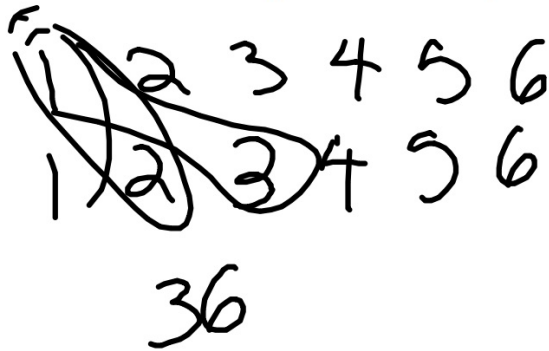
∴

4. There are sixteen are girls, and ten are boys. Find the probability that a student selected at random will be a girl.

$$\frac{16}{26} = \frac{8}{13}$$

$$\frac{10}{26} = \frac{5}{13}$$

5. If two dice are thrown, what is the probability of getting a sum of five?



$$\frac{4}{36} = \frac{1}{9}$$

numbered 1-10

6. How many ways can ten AFM textbooks be arranged on a shelf?

$${}_{10}P_{10} = 10!$$

$$10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$$

$$3,628,800$$

7. In how many ways can the offices of president, secretary and treasurer be filled from a group of twelve people?

$${}_{12}P_3 = \frac{12!}{(12-3)!} = \frac{12 \cdot 11 \cdot 10 \cdot 9!}{9!}$$

$$1320$$

8. In how many ways can six girls be arranged in a straight line?

$${}_6P_6 = 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1 = 720$$

9. A theater has eight entrances. In how many ways can you enter and leave by a different entrance?

$${}_8P_2 = \frac{8!}{6!}$$

10. In how many ways can nine boys be arranged in a straight line if one particular boy is to be at the beginning of the line, one particular boy is to be in the middle of the line, and one particular boy is to be at the end of the line?

$${}_6P_3$$

11-15. If a number is selected at random from the set of numbers 1, 3, 17, 25, 71, what is the probability that the number is

- (11) an odd digit? $\frac{5}{5}$
- (12) an even digit? $\frac{0}{5}$
- (13) divisible by 3? $\frac{1}{5}$
- (14) a prime number? $\frac{4}{5}$
- (15) a composite number? $\frac{1}{5}$

16. You are going through the drive through at Cook Out & you are buying a tray. How many different combos could you purchase? (You are NOT doubling up on sides!)

$$6P_1 \cdot 7P_2 \cdot 3P_1$$



COOK OUT TRAY
THE BEST COMBO IN CARY
\$3.99 CHOICES \$3.99

REG. HAMBURGER	REG. CHICKEN
REG. BBQ FOOTLONG	CAJUN CHICKEN
BIG DOUBLE™ BURGER	SPICY CHICKEN

CHOOSE 2 SIDES OR DOUBLE UP
HUSHPUPPIES • FRIES • ONION RINGS
CHILI • SLAW • CHICKEN NUGGETS • CORN DOG

CHOOSE A BEVERAGE
LG. DRINK, HUGE TEA
or FANCY SHAKE ADD 99¢

VISA MasterCard

**Assignment
Probability Assignment #4
(Handout)**

