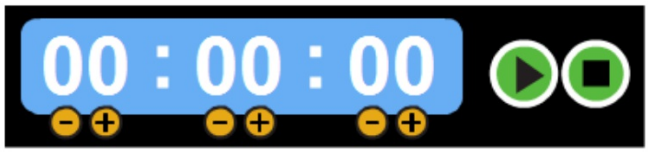
Timed Expectations



The probability of a student passing a test is .75. What is the probability of a student passing exactly 8 out of 15 tests over the course of a school year?

binompdf n: 15 total
p: .75 prob
x: 8 choose

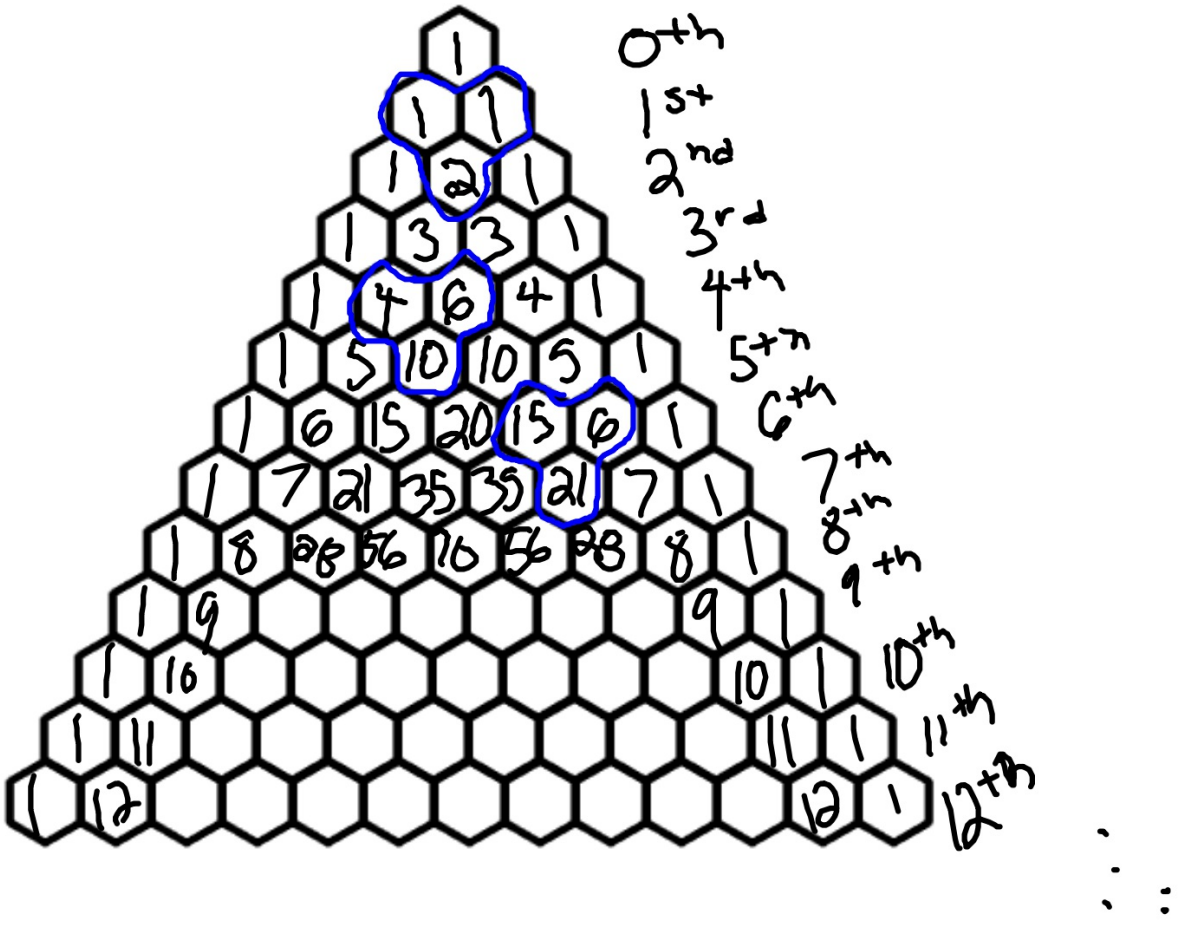
.039

Probability Assignment #7

1. What does it mean for two events to be mutually exclusive?
2. What is the formula for $P(A \cap B)$, if the two events are independent?
3. What is the formula for $P(A \cup B)$if the events are NOT mutually exclusive?
4. What is the formula for conditional probability? i.e $P(A \mid B)$.
5. Each day the probability of rain on a tropical island is seven out of eight days. What is the probability that it will rain exactly 6 out of eight days on the tropical island in question?
6. The probability of Aria's team winning any given game in a 5-game series is 0.3. What is the probability Aria's team will win exactly 2 games in the series?
7. A fair coin is tossed 100 times. What is the probability that of tossing exactly 30 heads?
8. A spinner that is divided into 5 equal pieces is spun. What is the probability that that it will land on an odd number exactly 6 times if it is spun 20 times?
9. At a university, the probability that an incoming freshman will graduate within four years is 0.553. What is the probability that at least 60 out of a group of 100 incoming freshman will graduate in four years?
10. At the same university, we want to determine what is the probability that no more than 80 out of a group of 150 incoming freshman will graduate in four years.

Pascal's Triangle

In mathematics, **Pascal's triangle** is a triangular array of the binomial coefficients.
In much of the Western world it is named after French mathematician Blaise Pascal, although other mathematicians studied it centuries before him in India, Iran, China, Germany, and Italy.


1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1
1 7 21 35 35 21 7 1
1 8 28 56 70 56 28 8 1
1 9 9 1
1 10 10 1
1 11 11 1
1 12 12 1
0th
1st
2nd
3rd
4th
5th
6th
7th
8th
9th
10th
11th
12th

The **binomial theorem** describes the algebraic expansion of powers of a binomial, hence it is referred to as **binomial expansion**. According to the theorem, it is possible to expand th power $(x + y)^n$ into a sum involving terms of the form ax^by^c, where the exponents b and c are nonnegative integers with $b + c = n$, and the coefficient a of each term is a specific positive integer depending on n and b. When an exponent is zero, the corresponding power is usually omitted from the term

ɔmial Expansion

$(x + y)^2 = (x+y)(x+y) = 1x^2 + 2xy + 1y^2$

$(x + y)^3 =$

$(x + y)^4 =$

$(x + y)^5 =$

$(x + y)^6 =$

$(x + y)^7 =$

. .

$(x + y)^6 =$

$(x + y)^7 =$

$(3a + 5b)^3 =$

$(3a - 5b)^3 =$

$2a^2$

Assignment

1. $(2a + 3b)^2 =$ $1(2a)^2(3b)^0 + 2(2a)^1(3b)^1 + 1(2a)^0(3b)^2$

2. ~~$(2a + 3b)^3 =$~~ $4a^2 + 12ab + 9b^2$

3. $(2a + 3b)^4 =$

4. $(2a + 3b)^5 =$

5. $(2a - 3b)^2 =$

6. $(2a - 3b)^3 =$