1. The number of outcomes for rolling ~~two~~ a dice two times is 36 outcomes $= 6^2$

2) 3 appetizers.
4 entrees.
2 desserts

$3C_1 \times 4C_1 \times 2C_1$
$3 \times 4 \times 2 = 24$ ways.

3. MICROWAVE
The name has 9 letters
$\therefore 9! = 362,880$ permutations.

4 $t_{7,5} + t_{7,6}$

$= t_{7,7}$

5. M I C R O W A V E
1 2 3 4 5 4 3 2 1

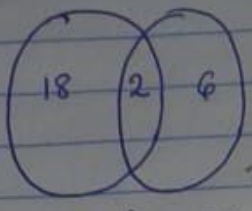
The name microwave follows 140 paths.

6. Shirts ≤ 4.
Total number of shirts $= 7$

$\therefore {}_7C_0 + {}_7C_1 + {}_7C_2 + {}_7C_3$

7. $n = 18$ French students.
6 of the 18 take Spanish.
5 students are chosen. 2 of the 5 students be in both French & Spanish class.

$= {}_6C_2$



∴ The number of ways that 2 of the five students could be in both is ${}_5C_2$

8. $P(\text{snow}) = 15\% = 0.15$.
$P(\text{No snow}) = 1 - 0.15 = 0.85$

9. A per Mutually exclusive describes the events that cannot happen simultaneously.
Therefore, a person was born in Canada, a person was born in Europe is not mutually exclusive.

10. The sum of any probabilities is equal to one.

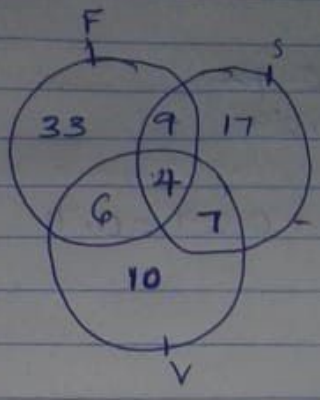
11. $p = 0.2$
$n = 5$
The expectation of a binomial distribution, $E(X) = np$

∴ $E(X) = 0.2 \times 5 = 1$

12. The number of ways in which the books can be arranged is $11! = 39,916,800$ ways

P2

13



Number of students who play on exactly one team is
$33 + 17 + 10 = 60$
$= 60$ students.

14 Total number of members is $7 + 6 = 13$.
7 from grade 12
6 from grade 11.

$P(\text{grade 11}) = \frac{6}{13} \times 100 = 46.2\%$

$= 46.2\%$

15 a) These two goals are not non-mutually exclusive. They are mutually exclusive in that Jesse can be elected to the students council and also be chosen to represent her school in a public-speaking contest.

b) $P(SC) = 0.58$ $P(\text{IP.S.C}) = 0.71$
$P(SC \text{ or } PSC) = 0.58 + 0.71 = 1.29$

15. c) $P(SC') = 1 - 0.58 = 0.42$

$P(PSC') = 1 - 0.71 = 0.29$

$P(SC' \text{ or } PSC') = 0.42 + 0.29 = 0.71$

$0.71 \times 100 = 71\%$

$= 71\%$

16 $n = 6$

$P = 0.75$

$x = 5$

$\binom{n}{x} P^x (1-P)^{n-x}$

$= \binom{6}{5} 0.75^5 (0.25)^1 = 0.36 \approx 0.4$

$= 0.4$

17. Number of possible outcomes in rolling one dice is 6

a)

Points, X	Probability, P(X)
1	1/6
2	2/6 = 1/3
3	3/6 = 1/2
4	4/6 = 2/3
5	5/6
6	1

b)

18 Total number, n, that will be used for selection is $13 + 13 = 26$.

a) $P(5,5) = \dfrac{\binom{13}{5}\binom{13}{5}}{\binom{26}{10}} = \dfrac{1,656,369}{5,311,735}$

$= 0.312$

Expressing 0.3 as a percentage $= 0.312 \times 100 = 31.2\%$

$= 31.2\%$

b. $P(\geq 4 \text{ Women}) = 1 - P(0) - P(1) - P(2) - P(3)$

$$1 - \frac{\binom{13}{10}\binom{13}{0}}{\binom{26}{10}} - \frac{\binom{13}{9}\binom{13}{1}}{\binom{26}{10}} - \frac{\binom{13}{8}\binom{13}{2}}{\binom{26}{10}} - \frac{\binom{13}{7}\binom{13}{3}}{\binom{26}{10}}$$

$= 1 - 0.0000538 - 0.00175 - 0.01891 - 0.0924$

$\therefore P(\geq 4 \text{ Women}) = 0.887$.

Expressed as a percentage $= 0.887 \times 100 = 88.7\%$

$= 88.7\%$

c) $E(X) = 10\left(\frac{13}{26}\right) = 5.$