

$$1. 3 \times 2 = 6 \quad W < \begin{matrix} N \\ B \end{matrix}$$

$$G < \begin{matrix} N \\ B \end{matrix}$$

$$LB < \begin{matrix} N \\ B \end{matrix}$$

$$2. 3 \cdot 4 \cdot 2 = 24 \text{ possible breakfasts}$$

$$3. 1 \cdot 24 \cdot 24 \cdot 1 \cdot 1 \cdot 1 \cdot 1 = 576$$

$$4. \begin{array}{cccccccc} 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ \underline{8} & \underline{8} & \underline{7} & \underline{6} & \underline{5} & \underline{5} & & & & \end{array} = 67200$$

First digit cannot be 0

$$5. \frac{6!}{3!2!} = \frac{720}{12} = 60$$

$$6. 7 \cdot 6 \cdot 5 = 210$$

$$7. a) 7! = 5040$$

$$b) \underline{6} \cdot \underline{5} \cdot \underline{4} \cdot \underline{1} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1} = 720$$

$$c) 2! \cdot 6! = 1440$$

$$d) \underline{2} \cdot \underline{5} \cdot \underline{4} \cdot \underline{3} \cdot \underline{2} \cdot \underline{1} \cdot \underline{1} = 240$$

$$8. 2^1 \cdot 5^2 \cdot 9^3 =$$

$$9. a) 9C_2 + 9C_3 =$$

$$b) 4C_2 \cdot 5C_2 =$$

$$10. \frac{(n+2)!}{n!} = 6 \quad \frac{(n+2)(n+1)n!}{n!} = 6$$

$$\begin{aligned} (n+2)(n+1) &= 6 \\ n^2 + 3n + 2 &= 6 \\ n^2 + 3n - 4 &= 0 \\ (n+4)(n-1) &= 0 \\ n+4=0 & \quad n-1=0 \\ n=-4 & \quad n=1 \end{aligned}$$

$n=1$

$$11. cPr = 30$$

$$\frac{c!}{(c-r)!} = 30$$

$$12. nC_2 = 15$$

$$\frac{n!}{2!(n-2)!} = 15$$

$$\frac{n(n-1)(n-2)!}{2(n-2)!} = 15$$

$$\frac{n(n-1)}{2} = 15$$

$$\begin{aligned} n^2 - n &= 30 \\ n^2 - n - 30 &= 0 \\ (n-6)(n+5) &= 0 \\ n-6=0 & \quad n+5=0 \\ n=6 & \quad n=-5 \end{aligned}$$

HR 3201 Midterm Exam Review Chapter 3

1. 7:10

2. 6:19

3. No. probability is 17:35. Odds in favour: 17:18

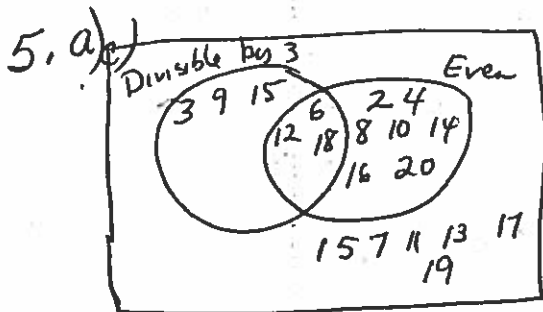
4. a) 1:4

b) Flip'em: $\frac{1}{4} = 25\%$

Central Eye: $\frac{2}{7} = 28.6\%$

Minefield: $\frac{1}{5} = 20\%$

Central Eye: highest probability

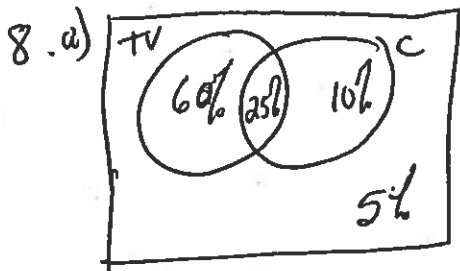


b) $\frac{13}{20}$

c) $P(\text{Divisible by 3} \cap \text{Even Number})$ is the set of numbers that are not divisible by 3 and even. i.e. numbers that are not 6, 12, 18.

6. $\frac{30}{60} + \frac{5}{60} = \frac{35}{60} = 58.3\%$

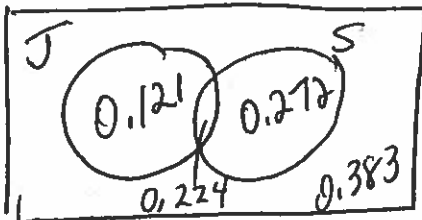
7. B, C



b) 95%

c) Not mutually exclusive because some people do both.

9.

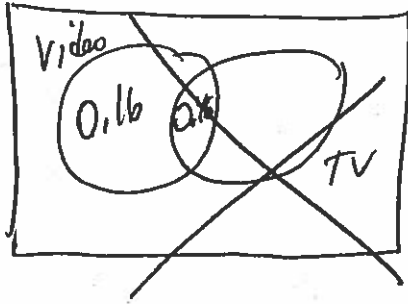


$0.224 + 0.272 = 0.496 = 49.6\%$

10. $\frac{6}{10} \cdot \frac{4}{9} = \frac{24}{90} = \frac{12}{45}$

11. $\frac{4}{5} \cdot \frac{4}{5} = \frac{16}{25}$

2.



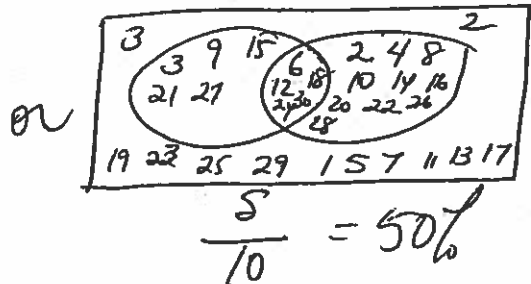
$$13. \frac{1}{6} \cdot \frac{1}{5} = \frac{1}{30}$$

$$14a) \frac{{}^5C_2 \cdot {}^4C_2}{{}^9C_4} = \frac{10 \cdot 6}{126} = \frac{60}{126} = 47.6\%$$

$$b) \frac{{}^3C_2 \cdot {}^3C_0 \cdot {}^3C_0}{{}^9C_2} = \frac{3 \cdot 1 \cdot 1}{36} = 1083 = 8.3\%$$

$$15c) 3, 6, 9, 12, 15, 18, 21, 24, 27, 30$$

$$\frac{5}{10} = 50\%$$



16. A = 6 months
B = 1 year

$$P(A \cap B) = 0.3 \quad P(A) = 0.8$$

$$P(B|A) = \frac{0.3}{0.8} = 0.375$$

17. 40% win windy
70% win calm

30% chance wind 70% calm

$$P(\text{win}) = (0.40)(0.30) + (0.70)(0.70)$$

$$= 0.12 + 0.49$$

$$= 0.61$$