

# CSc 177 Final Question 13

a) entropy of getting 10 +

$$H = - \sum_{i=1}^n P_i \log_2 P_i$$

$$n = 11 \quad (2-12)$$

2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	5	4	3	2	1

$$- \left( \frac{3}{36} \log_2 \frac{3}{36} + \frac{2}{36} \log_2 \frac{2}{36} + \frac{1}{36} \log_2 \frac{1}{36} \right)$$

$$= 0.674 \text{ bits}$$

b) entropy of exactly 6

$$\frac{5}{36} \log_2 \left( \frac{5}{36} \right) = 0.396 \text{ bits}$$

c) Gain from a) to b) : 0.278 bits