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7.1: Hypothesis Testing

1) a) The number of threes Alice rolls

b) $H_0: p = 0.25$

c) $H_1: p > 0.25$

2) a) One-tailed

b) One-tailed

c) Two-tailed

3) a) The number of people in the sample who say they support the MP

b) $65\% \rightarrow 0.65$ $H_0: p = 0.65$, $H_1: p < 0.65$

c) H_0 is rejected when $P(X \leq 24) = 0.01004 < 0.05$
$X \sim B(50, 0.65)$

4) a) The number of packets of cereal in the sample that contain a prize.

b) $5\% \rightarrow 0.05$ $H_0: p = 0.05$, $H_1: p > 0.05$

c) H_0 is accepted when $P(x \geq 15) > 0.1$ $X \sim B(120, 0.05)$

5) a) The number of cars in the sample that take less than 2 hours to complete the service

b) $H_0: p = 0.6$ $H_1: p \neq 0.6$

c) H_0 is rejected when: $X \sim B(50, 0.6)$

$P(X \geq 45) = 1 - P(x \leq 44)$

$= 2.67 \times 10^{-6} < 0.025$