Probability Models

- contingency tables → displays frequencies of multiple categories

- conditional probability → probability of an event occurring provided another event came before it

  ↳ $P(B|A)$ ⇒ probability of B given that A has occurred

EX →

	Support Issue	Don't Support Issue	Totals
Dem	24	36	60
Rep	27	33	60
Totals	51	69	120

$$P(\text{Dem}) = \frac{60}{120} = \frac{1}{2}$$

$$P(\text{Supports Issue}) = \frac{51}{120} = \frac{17}{40}$$

$$P(\text{Rep} \mid \text{Don't Support}) = \frac{33}{69} = \frac{11}{23}$$

$$P(\text{Supports} \mid \text{Dem}) = \frac{24}{60} = \frac{2}{5}$$

- Expected Values → Amount Expected · P(A) + Amt. Expected · P(B)
  + Amt. Expected · P(C) + ...

EX → 10 pts. for rolling 1 or 2, 5 pts. for rolling 3 or 4, -6 pts. for rolling 5 or 6

$$E.V. = 10 \cdot \frac{1}{3} + 5 \cdot \frac{1}{3} + -6 \cdot \frac{1}{3} = \frac{10}{3} + \frac{5}{3} - \frac{6}{3} = \frac{9}{3} = 3$$

EX → 25% chance $10 off coupon, 5% $20 off coupon, 70% $0 off coupon

$$E.V. = 0.25 \cdot 10 + 0.05 \cdot 20 + 0.70 \cdot 0 = 2.50 + 1 = \$3.50$$

HW: p. 853 → 6-18, 20, 22

p. 866 → 10, 11, 13, 14, 16