Probability Worksheet #5
October 1, 2018
2 Points

Circle one name.

Name: _Solutions_   Name: _____ Name: _____

1. A deck of 15 cards has 3 suits (A–C) and 5 ranks (1–5).

Suit\Rank	1	2	3	4	5
A	A1	A2	A3	A4	A5
B	B1	B2	B3	B4	B5
C	C1	C2	C3	C4	C5

A single card is drawn at random.

(a) What is the probability of drawing the card B2? $\frac{1}{15}$

(b) What is the probability of drawing a card with suit B? $\frac{5}{15}$

(c) What is the probability of drawing a card with even rank? $\frac{6}{15}$ $\left(\text{Rank } 2 \to \frac{3}{15} + \text{Rank } 4 \to \frac{3}{15}\right)$

(d) What is the probability of drawing a card with suit B <u>and</u> even rank? $\frac{2}{15}$ $(B2 \text{ and } B4)$

(e) What is the probability of drawing a card with suit B <u>or</u> even rank? $\frac{9}{15}$ $\left(\begin{array}{l}\text{All B cards plus}\\ A2, C2, A4, C4\end{array}\right)$

2. A deck of cards has 3 suits (A–C) and 5 ranks (1–5), but cards A2 and B4 are missing!
   There are only 13 cards now. A single card is drawn at random.

(a) What is the probability of drawing the card B2? $\frac{1}{13}$

(b) What is the probability of drawing a card with suit B? $\frac{4}{13}$ $(B4 \text{ is missing})$

(c) What is the probability of drawing a card with even rank? $\frac{4}{13}$ $(A2 \text{ and } B4 \text{ are missing})$

(d) What is the probability of drawing a card with suit B and even rank? $\frac{1}{13}$ $(\text{only } B2, B4 \text{ missing})$

(e) What is the probability of drawing a card with suit B or even rank?

$\frac{7}{13}$ $(A2 \text{ and } B4 \text{ are missing})$

11 suits × 25 ranks = 275 cards total

3. A deck of cards has 11 suits (A–K) and 25 ranks (1–25), with no missing cards. A single card is drawn at random.

(a) What is the probability of drawing a card whose suit is a vowel (A, E, I, O, or U)?

$$\frac{75}{275}$$

A, E, and I all have 25 cards
(25 ranks × 3 included suits)

(b) What is the probability of drawing a card whose rank is a multiple of 6 (6, 12, ??,…)?

$$\frac{44}{275}$$

Ranks 6, 12, 18, and 24 all in each of the 11 suits
(11 suits × 4 included ranks)

(c) What is the probability of drawing a card whose suit is a vowel <u>and</u> whose rank is a multiple of 6?

$$\frac{12}{275}$$

Suits A, E, and I with ranks 6, 12, 18, 24
(3 included suits × 4 included ranks)

(d) What is the probability of drawing a card whose suit is a vowel <u>or</u> whose rank is a multiple of 6?

$$\frac{75}{275} + \frac{44}{275} - \frac{12}{275} = \frac{107}{275}$$

Must remove the
intersection once so that
it does not double-count.