Lesson 10.4 Worksheet

Name: KEY

Events *A* and *B* are disjoint. Find $P(A \text{ or } B)$.

1.) $P(A) = 0.3,\ P(B) = 0.1$

$P(A \text{ or } B) = 0.3 + 0.1 = \boxed{0.4}$

2.) $P(A) = 0.41,\ P(B) = 0.24$

$P(A \text{ or } B) = 0.41 + 0.24 = \boxed{0.65}$

3.) $P(A) = \frac{1}{3},\ P(B) = \frac{1}{4}$

$P(A \text{ or } B) = \frac{1}{3} + \frac{1}{4} = \boxed{\frac{7}{12}}$

4.) $P(A) = \frac{2}{3},\ P(B) = \frac{1}{5}$

$P(A \text{ or } B) = \frac{2}{3} + \frac{1}{5} = \boxed{\frac{13}{15}}$

Find the indicated probability.

5.) $P(A) = 0.5,\ P(B) = 0.35$

$P(A \text{ and } B) = 0.2$

$P(A \text{ or } B) = ?$

$P(A \text{ or } B) = 0.5 + 0.35 - 0.2$

$P(A \text{ or } B) = \boxed{0.65}$

6.) $P(A) = 0.6,\ P(B) = 0.2$

$P(A \text{ and } B) = ?$

$P(A \text{ or } B) = 0.7$

$0.7 = 0.6 + 0.2 - P(A \text{ and } B)$

$P(A \text{ and } B) = \boxed{0.1}$

7.) $P(A) = \frac{2}{7},\ P(B) = \frac{4}{7}$

$P(A \text{ and } B) = \frac{1}{7}$

$P(A \text{ or } B) = ?$

$P(A \text{ or } B) = \frac{2}{7} + \frac{4}{7} - \frac{1}{7}$

$P(A \text{ or } B) = \boxed{\frac{5}{7}}$

8.) $P(A) = \frac{6}{11},\ P(B) = \frac{3}{11}$

$P(A \text{ and } B) = ?$

$P(A \text{ or } B) = \frac{7}{11}$

$\frac{7}{11} = \frac{6}{11} + \frac{3}{11} - P(A \text{ and } B)$

$P(A \text{ and } B) = \boxed{\frac{2}{11}}$

Find $P(\bar{A})$.

9.) $P(A) = 0.5$

$P(\bar{A}) = 1 - 0.5$

$P(\bar{A}) = \boxed{0.5}$

10.) $P(A) = 0$

$P(\bar{A}) = 1 - 0$

$P(\bar{A}) = \boxed{1}$

11.) $P(A) = \frac{5}{8}$

$P(\bar{A}) = 1 - \frac{5}{8}$

$P(\bar{A}) = \boxed{\frac{3}{8}}$

A card is randomly drawn from a standard deck of 52 cards. Find the probability of drawing the given card. Express your probabilities as simplified fractions.

12.) A king *and* a diamond

$\boxed{\frac{1}{52}}$

13.) A king *or* a diamond

$P(\text{K or } \diamondsuit) = \underset{P(K)}{\frac{4}{52}} + \underset{P(\diamondsuit)}{\frac{13}{52}} - \underset{P(\text{Both})}{\frac{1}{52}} = \boxed{\frac{4}{13}}$

14.) A spade *or* a club

$P(\spadesuit \text{ or } \clubsuit) = \underset{P(\spadesuit) + P(\clubsuit)}{\frac{13}{52} + \frac{13}{52}} = \boxed{\frac{1}{2}}$

15.) A 4 *or* a 5

$P(4 \text{ or } 5) = \underset{P(4)}{\frac{4}{52}} + \underset{P(5)}{\frac{4}{52}} = \boxed{\frac{2}{13}}$

16.) A 6 *and* a face card

$\boxed{0}$

17.) *Not* a heart

$P(\bar{\heartsuit}) = 1 - P(\heartsuit)$

$P(\bar{\heartsuit}) = 1 - \frac{13}{52} = \boxed{\frac{3}{4}}$

Find the indicated probability. State whether *A* and *B* are disjoint or overlapping events.

18.) $P(A) = 0.25$
$P(B) = 0.4$
$P(A \text{ or } B) = 0.5$
$P(A \text{ and } B) = ?$

$0.5 = 0.25 + 0.4 - P(A \cap B)$

$P(A \cap B) = \boxed{0.15}$

$\boxed{\text{overlapping}}$

19.) $P(A) = ?$
$P(B) = 0.38$
$P(A \text{ or } B) = 0.65$
$P(A \text{ and } B) = 0$ $\boxed{\text{disjoint}}$

$0.65 = P(A) + 0.38$

$P(A) = \boxed{0.27}$

20.) $P(A) = \frac{8}{15}$
$P(B) = ?$
$P(A \text{ or } B) = \frac{3}{5}$
$P(A \text{ and } B) = \frac{2}{15}$

$\frac{3}{5} = \frac{8}{15} + P(B) - \frac{2}{15}$

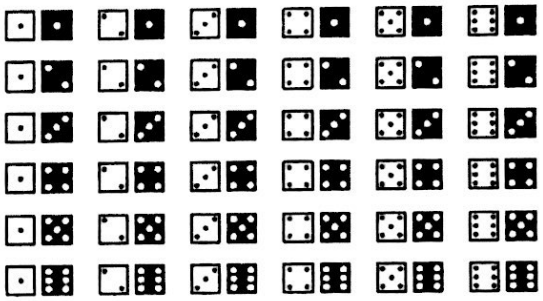
$P(B) = \boxed{\frac{1}{5}}$ $\boxed{\text{overlapping}}$

21.) $P(A) = 16\%$
$P(B) = ?$
$P(A \text{ or } B) = 32\%$
$P(A \text{ and } B) = 8\%$

$32\% = 16\% + P(B) - 8\%$

$P(B) = \boxed{24\%}$ $\boxed{\text{overlapping}}$

Two six-sided dice are rolled. Find the probability of the given event.



22.) The sum is 3 or 4.

$\frac{2}{36} + \frac{3}{36} = \boxed{\frac{5}{36}}$
$P(S3)$ $P(S4)$

23.) The sum is not 7.

$P(\overline{S7}) = 1 - P(S7)$
$= 1 - \frac{6}{36} = \boxed{\frac{5}{6}}$

24.) The sum is greater than or equal to 5.

$P(S \geq 5) = 1 - P(S < 5)$
$= 1 - \frac{10}{36} = \boxed{\frac{5}{6}}$

25.) The sum is less than 8 or greater than 11.

$P(S<8 \text{ or } S>11) = \frac{21}{36} + \frac{1}{36} = \boxed{\frac{11}{18}}$
$P(S<8) + P(S>11)$ $\nearrow \frac{48}{120}$

26.) Of the 120 students honored at an academic banquet, 40% won awards for mathematics and 55% won for English. Fourteen of these students won awards for both mathematics and English. One of the 120 students is chosen at random to be interviewed for a newspaper article. What is the probability that the student won an award in mathematics or English?

$\frac{66}{120}$ ← 55% won for English.

$P(M \text{ OR } E) = \frac{48}{120} + \frac{66}{120} - \frac{14}{120} = \boxed{\frac{5}{6}}$
$P(M) + P(E) - P(M \cap E)$

27.) The organizer of a cast party for a drama club asks each of 6 cast members to bring one item from a list of 10 items. What is the probability that at least 2 of the 6 members bring the same item?

$P(\text{at least 2}) = 1 - P(\text{all different})$

$= 1 - \frac{10P_6}{10^6} \approx \boxed{0.8488}$