

5.2 Independent & Dependent Events cw/hw

Date _____ Period _____

Determine if events A and B are independent.

1) $P(A) = \frac{2}{5}$ $P(B) = \frac{3}{4}$ $P(A \text{ and } B) = \frac{3}{10}$

2) $P(A) = \frac{1}{4}$ $P(B) = \frac{1}{2}$ $P(A \text{ and } B) = \frac{9}{80}$

3) $P(A) = \frac{3}{10}$ $P(B) = \frac{3}{10}$ $P(A \text{ and } B) = \frac{21}{200}$

4) $P(A) = \frac{7}{10}$ $P(B) = \frac{7}{20}$ $P(A \cap B) = \frac{21}{100}$

5) $P(A) = \frac{7}{20}$ $P(B) = \frac{1}{4}$ $P(A \cap B) = \frac{21}{200}$

6) $P(A) = 0.75$ $P(B) = 0.4$ $P(A \cap B) = 0.3$

7) $P(A) = 0.2$ $P(B) = 0.5$ $P(A \cap B) = 0.08$

8) $P(A) = 0.5$ $P(B) = 0.35$ $P(A \cap B) = 0.175$

9) $P(A) = 0.25$ $P(B) = 0.5$ $P(A \text{ and } B) = 0.125$

10) $P(A) = 0.7$ $P(B) = 0.5$ $P(A \text{ and } B) = 0.385$

Determine whether the scenario involves independent or dependent events. Then find the probability.

11) A basket contains four apples and five peaches. Three times, you randomly select a piece of fruit, return it to the basket, and then mix the fruit. All three times, the fruit is an apple.

12) You flip a coin four times. The coin lands heads-up every time.

- 13) A bag contains three red marbles, five blue marbles, and five yellow marbles. You randomly pick three marbles without replacement. The first marble is red, the second marble is blue, and the third marble is yellow.
- 14) A cooler contains thirteen bottles of sports drink: six lemon-lime flavored and seven orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. You and your friend both get lemon-lime.
- 15) A bag contains five red marbles, four blue marbles, and five yellow marbles. You randomly pick three marbles without replacement. The first marble is red, the second marble is blue, and the third marble is red.
- 16) A cooler contains fifteen bottles of sports drink: eight lemon-lime flavored and seven orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. You and your friend both get lemon-lime.
- 17) A bag contains three red marbles, four blue marbles, and four yellow marbles. Three times, you randomly pick a marble, return it to the bag, and then mix the marbles. The first marble is red, the second marble is blue, and the third marble is yellow.
- 18) A cooler contains twelve bottles of sports drink: four lemon-lime flavored, three orange flavored, and five fruit-punch flavored. You randomly grab a bottle. Then you return the bottle to the cooler, mix up the bottles, and randomly select another bottle. The first time, you get a lemon-lime drink. The second time, you get a fruit-punch.
- 19) A basket contains seven apples and seven peaches. You randomly select a piece of fruit and then return it to the basket. Then you randomly select another piece of fruit. Both pieces of fruit are apples.
- 20) A box of chocolates contains four milk chocolates, three dark chocolates, and three white chocolates. You randomly select and eat three chocolates. The first piece is milk chocolate, the second is white chocolate, and the third is milk chocolate.

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1) $P(A) = \frac{2}{5}$ $P(B) = \frac{3}{4}$ $P(A \text{ and } B) = \frac{3}{10}$

Independent

2) $P(A) = \frac{1}{4}$ $P(B) = \frac{1}{2}$ $P(A \text{ and } B) = \frac{9}{80}$

Dependent

3) $P(A) = \frac{3}{10}$ $P(B) = \frac{3}{10}$ $P(A \text{ and } B) = \frac{21}{200}$

Dependent

4) $P(A) = \frac{7}{10}$ $P(B) = \frac{7}{20}$ $P(A \cap B) = \frac{21}{100}$

Dependent

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Independent

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Independent

10) $P(A) = 0.7$ $P(B) = 0.5$ $P(A \text{ and } B) = 0.385$

Dependent

Determine whether the scenario involves independent or dependent events. Then find the probability.

- 11) A basket contains four apples and five peaches. Three times, you randomly select a piece of fruit, return it to the basket, and then mix the fruit. All three times, the fruit is an apple.

Independent; $\frac{64}{729} \approx 0.088$

- 12) You flip a coin four times. The coin lands heads-up every time.

Independent; $\frac{1}{16} \approx 0.063$

13) A bag contains three red marbles, five blue marbles, and five yellow marbles. You randomly pick three marbles without replacement. The first marble is red, the second marble is blue, and the third marble is yellow.

Dependent; $\frac{25}{572} \approx 0.044$

14) A cooler contains thirteen bottles of sports drink: six lemon-lime flavored and seven orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. You and your friend both get lemon-lime.

Dependent; $\frac{5}{26} \approx 0.192$

15) A bag contains five red marbles, four blue marbles, and five yellow marbles. You randomly pick three marbles without replacement. The first marble is red, the second marble is blue, and the third marble is red.

Dependent; $\frac{10}{273} \approx 0.037$

16) A cooler contains fifteen bottles of sports drink: eight lemon-lime flavored and seven orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. You and your friend both get lemon-lime.

Dependent; $\frac{4}{15} \approx 0.267$

17) A bag contains three red marbles, four blue marbles, and four yellow marbles. Three times, you randomly pick a marble, return it to the bag, and then mix the marbles. The first marble is red, the second marble is blue, and the third marble is yellow.

Independent; $\frac{48}{1331} \approx 0.036$

18) A cooler contains twelve bottles of sports drink: four lemon-lime flavored, three orange flavored, and five fruit-punch flavored. You randomly grab a bottle. Then you return the bottle to the cooler, mix up the bottles, and randomly select another bottle. The first time, you get a lemon-lime drink. The second time, you get a fruit-punch.

Independent; $\frac{5}{36} \approx 0.139$

19) A basket contains seven apples and seven peaches. You randomly select a piece of fruit and then return it to the basket. Then you randomly select another piece of fruit. Both pieces of fruit are apples.

Independent; $\frac{1}{4} = 0.25$

20) A box of chocolates contains four milk chocolates, three dark chocolates, and three white chocolates. You randomly select and eat three chocolates. The first piece is milk chocolate, the second is white chocolate, and the third is milk chocolate.

Dependent; $\frac{1}{20} = 0.05$