

NAME

Key

Period

## Worksheet 12-8

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## Compound Probability

You spin a spinner that has 12 equal-sized sections numbered 1 to 12. Find each probability.

- 1.
- $P(3 \text{ or } 4)$

$$\frac{1}{12} + \frac{1}{12} = \frac{2}{12} = \boxed{\frac{1}{6}}$$

- 3.
- $P(\text{even or odd})$

$$\boxed{1}$$

- 5.
- $P(\text{multiple of 2 or multiple of 3})$

$$\frac{6}{12} + \frac{4}{12} - \frac{2}{12} = \boxed{\frac{2}{3}}$$

- 2.
- $P(\text{even or } 7)$

$$\frac{6}{12} + \frac{1}{12} = \boxed{\frac{7}{12}}$$

- 4.
- $P(\text{multiple of 3 or odd})$

$$\frac{4}{12} + \frac{6}{12} - \frac{2}{12} = \frac{8}{12} = \boxed{\frac{2}{3}}$$

- 6.
- $P(\text{less than 5 or greater than 9})$

You roll a red number cube and a blue number cube. Find each probability.

- 7.
- $P(\text{red } 2 \text{ and blue } 2)$

$$\frac{1}{6} \cdot \frac{1}{6} = \boxed{\frac{1}{36}}$$

- 8.
- $P(\text{red odd and blue even})$

$$\frac{3}{6} \cdot \frac{3}{6} = \frac{9}{36} = \boxed{\frac{1}{4}}$$

- 9.
- $P(\text{red greater than 2 and red } 4)$

$$\frac{4}{6} \cdot \frac{1}{6} = \frac{4}{36} = \boxed{\frac{1}{9}}$$

- 10.
- $P(\text{red odd and blue less than 4})$

$$\frac{3}{6} \cdot \frac{3}{6} = \frac{9}{36} = \boxed{\frac{1}{4}}$$

11. The probability that Bob will make a free throw is  $\frac{2}{5}$ . What is the probability that Bob will make his next two free throws?

$P(\text{make AND make})$

$$\frac{2}{5} \cdot \frac{2}{5} = \boxed{\frac{4}{25}}$$

You choose a marble at random from a bag containing 3 blue marbles, 5 red marbles, and 2 green marbles. You replace the marble and then choose again. Find each probability. 10 total

- 12.
- $P(\text{both blue})$

$$\frac{3}{10} \cdot \frac{3}{10} = \frac{9}{100} = 9\%$$

- 13.
- $P(\text{both red})$

$$\frac{5}{10} \cdot \frac{5}{10} = \frac{25}{100} = \boxed{\frac{1}{4}}$$

- 14.
- $P(\text{blue then green})$

$$\frac{3}{10} \cdot \frac{2}{10} = \frac{6}{100} = \boxed{\frac{3}{50}}$$

- 15.
- $P(\text{red then blue})$

$$\frac{5}{10} \cdot \frac{3}{10} = \frac{15}{100} = \boxed{\frac{3}{20}}$$

- 16.
- $P(\text{green then red})$

$$\frac{2}{10} \cdot \frac{5}{10} = \frac{10}{100} = \frac{1}{10}$$

- 17.
- $P(\text{both green})$

$$\frac{2}{10} \cdot \frac{2}{10} = \frac{4}{100} = \boxed{\frac{1}{25}}$$

You choose a tile at random from a bag containing 2 tiles with X, 6 tiles with Y, and 4 tiles with Z. You pick a second tile without replacing the first. Find each probability. 12

- 18.
- $P(X \text{ then } Y)$

$$\frac{2}{12} \cdot \frac{6}{11} = \boxed{\frac{1}{11}}$$

- 19.
- $P(\text{both } Y)$

$$\frac{6}{12} \cdot \frac{5}{11} = \boxed{\frac{5}{22}}$$

8. Given two events X and Y: Event X has probability  $\frac{5}{6}$ . If event X happens, then the probability of event Y is  $\frac{2}{5}$ . If event X does not happen, then the probability of event Y is  $\frac{1}{4}$ .

a) Label each branch of this tree diagram with a probability. (Any probabilities that are not already stated can be figured out from the given information.)

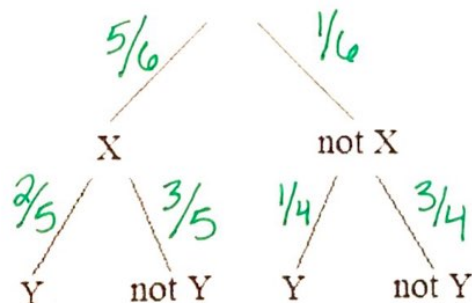
Find these probabilities.

b)  $P(\text{not } X) = \frac{1}{6}$

c)  $P(Y | (\text{not } X)) = \frac{1}{4}$

d)  $P((\text{not } Y) | X) = \frac{3}{5}$

e)  $P(X \text{ and } Y) = \frac{5}{6} \cdot \frac{2}{5} = \frac{10}{30} = \frac{1}{3}$



f)  $P((\text{not } X) \text{ and } (\text{not } Y)) = \frac{1}{6} \cdot \frac{3}{4} = \frac{3}{24} = \frac{1}{8}$

9. High school students in one school chose their favorite leisure activity. Find each probability. Round to the nearest tenth of a percent.

	Sports	Hiking	Reading	Texting	Shopping	Other
Female	39	48	85	62	71	29
Male	67	58	76	54	68	39

334  
362

a)  $P(\text{sports} | \text{female})$

$\frac{39}{334}$

b)  $P(\text{female} | \text{sports})$

$\frac{39}{106}$

c)  $P(\text{reading} | \text{male})$

$\frac{76}{362} = \frac{38}{181}$

d)  $P(\text{male} | \text{reading})$

$\frac{76}{161}$

e)  $P(\text{hiking} | \text{female})$

$\frac{48}{334} = \frac{24}{167}$

f)  $P(\text{hiking} | \text{male})$

$\frac{58}{362} = \frac{29}{181}$

g)  $P(\text{male} | \text{shopping})$

$\frac{68}{139}$

h)  $P(\text{female} | \text{shopping})$

$\frac{71}{139}$

10. The senior class is 55% female, and 32% are females who play a competitive sport. Find the probability that a student plays a competitive sport, given that the student is female.

