

key

Algebra 2 Review - Probability

A fair, 6 sided die is rolled. What is the probability of rolling a 3?

$$\frac{1}{6} \approx .17$$

2. A fair, 6 sided die is rolled. What is the probability of rolling an even number?

$$\frac{3}{6} = \frac{1}{2} = .5$$

3. Are the following events independent or dependent?

a. Dani is playing a game where she has to flip a coin and roll a dice.

Independent

b. Picking a King and then an Ace out of a deck of cards

Dependent

c. Picking a watermelon Jolly Rancher, putting it back, then picking a Cherry Jolly Rancher.

Independent

d. Picking a watermelon Jolly Rancher, then picking a Cherry Jolly Rancher.

Dependent

e. Flipping 3 tails in a row with a single coin

Independent

4. Are the following events mutually exclusive or non-exclusive?

a. Rolling a 4 and an odd number on a single dice.

Mutually Exclusive

b. Rubbing your belly and scratching your head.

Mutually Exclusive

c. Kings and Hearts in a deck of cards

Non Mutually Exclusive

d. Kings and Aces in a deck of cards

Mutually Exclusive

~~e. Heads and tails on a dice~~

Right on Track...

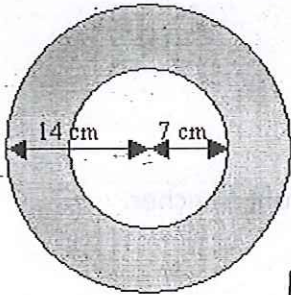
A spinner numbered 1-10 is spun. Each outcome is equally likely. Write each probability as a fraction, decimal, and a percent.

1. $P(9) = \frac{1}{10} = .1 \quad 10\%$

2. $P(\text{even}) = \frac{5}{10} = .5 \quad 50\% \quad \frac{1}{2}$

3. $P(N > 0) = \frac{10}{10} = 1 \quad 100\%$

4. What is the probability of hitting the shaded region with a dart?



$$A_{r=14} = \pi(14)^2 = 196\pi$$

$$A_{r=7} = \pi(7)^2 = 49\pi$$

$$\text{Area of Shaded Region} = 196\pi - 49\pi = 147\pi$$

$$P(\text{shaded}) = \frac{147\pi}{196\pi} = \frac{3}{4} = .75$$

Suppose you have a box that contains 12 slips of paper as shown below. Each slip of paper is equally likely to be drawn. Find the probability of each event.

Red	Blue	Yellow	Blue
Yellow	Red	Blue	Red
Red	Red	Red	Yellow

5. $P(\text{red or blue}) = \frac{9}{12} = \frac{3}{4} = .75$

6. $P(\text{blue or yellow}) = \frac{6}{12} = \frac{1}{2} = .5$

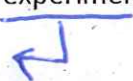
7. $P(\text{red}) + P(\text{blue}) = \frac{6}{12} + \frac{3}{12} = \frac{9}{12} = .75$

8. How do your answers for 5 and 7 relate to each other? Will this always be true? Explain.

They are the same answer. Yes, or means add!

9. What's the difference between experimental and theoretical probability?

what actually happens



what should happen

10. If the theoretical probability of flipping a tails on a coin is $1/2$; how could I determine what an experimental probability might be?

Actually flip a coin many times

More good things...

When finding the probability of one event happening or another event happening you need to add the probabilities of the separate events.

1. What is the probability of rolling a 4 or 6 on a six-sided die?

$$\frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3} \approx .33$$

2. What is the probability of drawing a queen or a king from a standard deck of 52 cards?

$$\frac{4}{52} + \frac{4}{52} = \frac{8}{52} = \frac{2}{13} \approx .15$$

3. What is the probability of drawing a spade from a deck of cards or rolling an even number on a six sided die?

$$\frac{13}{52} + \frac{3}{6} =$$

4. What is the probability of drawing a red jack or a club from a deck of cards?

$$\frac{2}{52} + \frac{13}{52} = \frac{15}{52} \approx .29$$

When finding the probability of one event happening and another event happening you need to multiply the probabilities of the separate events.

5. What is the probability of getting 2 multiple choices correct in a row on the ACT?

$$\frac{1}{5} \cdot \frac{1}{5} = \frac{1}{25} = .04$$

6. What is the probability of flipping tails on a quarter 3 times in a row?

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8} = .125$$

7. There are 8 movie DVDs, 3 exercise DVDs, and 5 cartoon DVDs on the shelf. Suppose two DVDs are to be selected at random from the shelf. Find each probability.

- a. P(2 cartoon DVDs)

$$\frac{5}{16} \cdot \frac{4}{15} = \frac{20}{240} = \frac{1}{12} \approx .08$$

- b. P(a movie DVD & a cartoon DVD)

$$\frac{8}{16} \cdot \frac{5}{15} = \frac{40}{240} = \frac{1}{6} \approx .17$$

Challenge: The probability that one basketball player makes a 3 point shot is .775. The probability of another player making a 3 point shot is .862. What is the probability that both of these players make a 3 point shot on their first try?

I'm Awesome w/ 2-way tables...

2. A principal of a school with 484 students collected information about how many of the students wear glasses.

	Always wears glasses	Sometimes wears glasses	Never wears glasses	Total
Boys	40	48	161	249
Girls	36	55	144	235
Total	76	103	305	484

Complete the table.

1. What is the probability that a randomly selected student is a boy?

$$\frac{249}{484} \approx .51$$

2. What is the probability that a randomly selected student never wears glasses?

$$\frac{305}{484} \approx .63$$

3. What is the probability that a randomly selected student is a girl and sometimes wears glasses?

$$\frac{55}{484} = \frac{5}{44} \approx .11$$

4. What is the probability that a randomly selected student always wears glasses and is a boy?

$$\frac{40}{484} = \frac{10}{121} \approx .08$$

5. What is the probability that a randomly selected student is a girl or always wears glasses?

$$\frac{235}{484} + \frac{76}{484} - \frac{36}{484} = \frac{293}{484} \approx .61$$

6. What is the probability that a randomly selected student is a boy or sometimes wears glasses?

$$\frac{249}{484} + \frac{103}{484} - \frac{48}{484} = \frac{304}{484} = \frac{76}{121} \approx .63$$