

12.2 More Probability

Backwards Probability:

There's a 1 in 5 chance of picking a blue marble out of a bag. If there's 20 marbles in the bag, how many blue marbles would you expect?

Homer works at McDonalds has found that there is about one customer out of 80 that complains about something. If Homer works 6 hours and serves about 135 customers each hour, how many complaints should he expect on his next shift?

The probability of passing this Mastery Check on the first attempt is 84%. If Sully has 125 students, about how many students can he expect to pass the MC on the first attempt?

What's the probability of rolling a 2 and flipping a tail?

Multiplication Principle of Probability

What's the probability of rolling a 5 or flipping a tail?

Addition Principle of Probability

What's the probability of picking a heart and rolling a 6?

What's the probability of picking a queen or rolling a 6?

What's the probability of drawing two aces from a deck of cards?

A jar contains 5 green jelly beans, 6 blue jelly beans and 10 white jelly beans. What is the probability Moe picks 2 green jelly beans out without putting the first one back?

You Try:

Summary:

12.2 Practice Problems

Directions 1-4: Find the following using backwards probability.

1) About 2 in 7 people "win" during the McDonalds Monopoly contest. If a person buys two meals everyday for the duration of the 60 day contest about how many "prizes" will they win?

2) 97% of all Unit tests are better than 70% and do not need to be retaken. If Sully gives 1500 Unit tests this year about how many of those will need to be retaken?

3) There's 3 out of 5 chance that when you pick a marble out of a bag it will be red. If there 45 marbles in the bag, about how many of the marbles would you expect to be red?

4) There's a 35% chance of rain for each day in the month of June in Germany. There are 30 days in June, about how many days should you expect it to rain for the month?

Directions: Find the given probability

5) What's the probability of rolling a 5 or flipping a coin and it landing on tails?

6) What's the probability of rolling a 5 and flipping a coin and it landing on tails?

7) What's the probability of picking two cards such that the first is a heart and the second is a 5 when you put your original card back in the deck?

8) What's the probability of picking two cards such that the first is a heart and the second is a diamond without putting the original card back in the deck?

9) What's the probability of picking a heart or a 5 from a deck?

10) What's the probability of picking an even numbered card or a male face card?

11) What's the probability of picking an even numbered card and then a male face card when you don't put your original card back?

12) What's the probability of picking an even numbered card and then a male face card when you put your original card back?

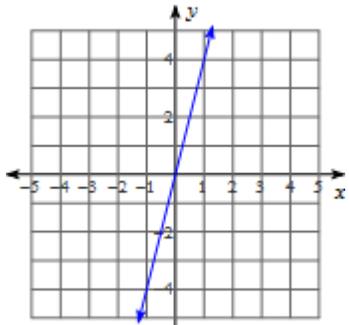
Use the following: A certain game has a person draw a card from a regular deck of cards and roll a six-sided die.

13) If a player draws a prime numbered card or rolls a prime number they win. Find $P(\text{winning})$.

14) If a player draws a prime numbered card and rolls a prime number they win. Find $P(\text{winning})$.

15) Find $P(\text{red card and rolling even number})$	16) Find $P(\text{non-face card or non-prime number})$
Use the following: A certain game has a spinner with 5 equal sectors (red, maroon, blue, white, black), and rolling a 12-sided die.	
17) If a player spins a red, and rolls a prime number they win. Find $P(\text{winning})$.	18) If a player spins a red, rolls a prime number they win. Find $P(\text{losing})$.
19) If a player spins a red, or rolls a prime number they win. Find $P(\text{winning})$.	20) If a player spins a red, or rolls a prime number they win. Find $P(\text{losing})$.

Algebra Review

Solve: $-6(k - 1) \geq 6 + 5k$	Solve: $4x + 8(-x + 1) = 8(1 + 4x)$	Write the equation of the line for the following graph. 
Factor Completely: Double Factor $24k^2 - 15k - 9$	Factor Completely: $25h^2 - 16$	Solve the system using elimination: $-2x - 6y = -10$ $-6x - 8y = 10$

12.2 APPLICATION and EXTENSION

1) $P(\text{roll a 5 and picking an ace}) =$

2) $P(\text{roll a 5 or picking an ace}) =$

3) Bart is in some real trouble. He is at risk of repeating the 4th grade (for the 20th year in a row). Ms. Krabappel makes a deal and tells Bart that he can take a True/False test. She tells him that if he can get all ten questions correct that he'll pass. Of course Bart didn't study. What's the probability of him guessing all the answers correctly? (Hint: Is it get the first one right or the second one right or....)

4) Lisa is just five face-to-face Spell-Offs away from making it to the state spelling bee. She has a 90% chance of beating Ralph, a 95% chance in her second match, 80%, 84% and 86% chance on the rest. Bart claims she has a better chance of flipping a coin. Which has the higher chance of happening, Lisa winning all of his matches or flipping a coin?

5) Homer is getting scared of something horrific happening to him and dying so he goes to get life insurance. He decides that he'll most likely die from a lightning strike (1 in 130,000), plane crash (1 in 7000), car accident (1 in 98) or firework accident (1 in 650,000). What's his overall probability of dying from one of these? (Hint: Is there any overlap to subtract?)

6) Mr. Brust told the other Algebros that he was going to his yearly psychic reading. Sully and Kelly agreed that the psychic was going to "see" several things. They thought there was a good chance (80%) the psychic would mention a relative of Brust's who had died. They also thought the psychic may mention a "big change" in Brust's future (65%).

a) What's the probability that the psychic mentioned both a "relative" and a "big change"?

b) What's the probability that the psychic mentioned either a "relative" or a "big change"?