

QUIZ WARM UP

NAME key F'16

There are 6 green marbles, 3 blue, 4 red, and 2 yellow in a bag. If you pick 1 marble, find the following: 15 total

1. Odds against blue

not blue: blue  
12:3  
4:1 or 4

2. P (red)

$$\frac{4}{15}$$

3. Odds in favor of red

red: not red  
4:11 or  $\frac{4}{11}$

4. P(blue or green)

$$\frac{3}{15} + \frac{6}{15} = \frac{9}{15} = \frac{3}{5}$$

5. Ms. Norris's AFM class has odds of 14:3 of winning free Bojangles breakfast. What is the probability that they don't win?

win  $\rightarrow$  14  
lose  $\rightarrow$  3

$$\text{prob}(\text{don't win}) = \frac{3}{17}$$

6. You pay \$1.50 to play a game where you pick a single card from a standard deck of 52 cards. If you pick the Queen of Hearts, you win \$20. If you pick any other queens, you win \$15. If you pick any other face cards, you win \$1. If you pick anything else, you lose.

a) Find the expected value

b) Find the fair price

$$EV = \frac{1}{52}(\$18.50) + \frac{3}{52}(\$13.50) + \frac{8}{52}(\$1.50) + \frac{40}{52}(\$-1.50)$$

$$EV = \$-0.10$$

$$FP = -0.10 + 1.50$$

$$FP = \$1.40$$

7. You spin a spinner with 15 equal-sized sections. Find the following:

a. P(even or odd number)

$$1$$

b. P(multiple of 3 or odd number)

$$\frac{5}{15} + \frac{8}{15} - \frac{3}{15} = \frac{10}{15} = \frac{2}{3}$$

8. Choose 3 cards from a standard deck of 52 cards.

a. P(Ace then 3 then Ace) with replacement  
order matters!

$$\frac{4}{52} \cdot \frac{4}{52} \cdot \frac{4}{52} = \frac{64}{140608} = \frac{1}{2197}$$

b. P(Ace then 3 then Ace) without replacement  
order matters

$$\frac{4}{52} \cdot \frac{4}{51} \cdot \frac{3}{50} = \frac{48}{132600} = \frac{2}{5525}$$

c. P(at least one 8) without replacement

$$1 - P(\text{no 8's})$$

$$1 - \left( \frac{48}{52} \cdot \frac{47}{51} \cdot \frac{46}{50} \right)$$

$$\frac{1201}{5525}$$

d. P(Queen and king of spades and odd number)

With replacement order doesn't matter!

$$\left( \frac{4}{52} \cdot \frac{1}{52} \cdot \frac{16}{52} \right) \cdot \frac{3!}{0!} = \frac{6}{2197}$$