5.7 Probability and Odds

Ex.) Bailey holds all the spades from a standard deck of cards. He asks Morgan to pick any card.

- Determine the odds in favour of Morgan choosing a face card.

face cards : non-face cards

3 : 10

- Determine the odds *against* Morgan drawing a face card.

non-face : face

10 : 3

- Determine the odds against Morgan drawing a card 5 or less.

not 5 or less (more than 5) : 5 or less

9 : 4

May 9-1:12 PM

Ex.) The probability of an expectant mother, selected at random, of being pregnant with twins is 1/32.

- What are the odds of a mother being pregnant with twins?

wins : losses

twins : not

1 : 31

- What are the odds against an expectant mother having twins?

31 : 1

May 9-1:18 PM

Ex.) Suppose the probability of an event happening is 2/5 .

- What is the probability of the event *not* happening?

$\frac{3}{5}$

- What are the odds of the event happening?

2 : 3

- What are the odds of the event not happening?

3 : 2

May 9-1:19 PM

Ex.) You have entered a contest 250 times and a computer says your odds of winning are 1 in 9. How many entries are in the contest? What is your probability of winning?

$\frac{1}{10} = 10\%$

$\frac{1}{10} = \frac{250}{x}$ $x = 2500$

Ex.) Suppose that the odds in favour of an event are 5:3. Is the probability that the event will happen greater or less than 50%?

$\frac{5}{8} \times 100\%$

$= 62.5\%$ greater than 50%

May 9-1:20 PM

Ex.) A hockey game is tied after overtime and is going into a shootout. The coach wants to decide who to use in the shootout. Show that Ellen is the better shootout scorer using *both* odds and probabilities. Why might the coach choose Brittany over Ellen?

Odds

8:5

10:7

Prob

62% 59%

Player	Attempts	Goals Scored	
Ellen	13	8	$\frac{8}{13}$
Brittany	17	10	$\frac{10}{17}$

Ex.) You are at a carnival and have a choice of playing Bim (odds against winning are 5:2) or Zap (odds against winning are 7:3). Which game has the better odds?

not win

$prob(\text{winning Bim}) = \frac{2}{7} \times 100$

$= 28\%$

$prob(\text{winning Zap}) = \frac{3}{10} \times 100$

$= 30\%$

Zap

May 9-1:21 PM

Ex.) You are trying to raise money for an animal shelter and are working a volunteer game at a charity carnival. The odds against winning Game A are 11:3 and the odds against winning game B are 17:6. You want to raise as much money for the shelter as possible. Which game should you encourage the public to play?

Want them to lose

$prob(\text{losing A}) = \frac{11}{14} \times 100$

$= 79\%$

$prob(\text{losing B}) = \frac{17}{23} \times 100$

$= 74\%$

Game A

Pg. 148 # 1-3, 5-7, 14, 15.

May 9-1:22 PM