F Math 12

5.2 Probability and Odds p. 304

Name _____

Date _____

Goal: Understand and interpret odds, and relate them to probability.

1. **odds in favour**: the ratio of the probability that an event will occur to the probability that the event will not occur, or the ratio of the number of favourable outcomes to the number of unfavourable outcomes.

2. **odds against**: The ratio of the probability that an event will not occur to the probability that the event will occur, or the ratio of the number of unfavourable outcomes to the number of favourable outcomes.

EXPLORE…

An oil and vinegar salad dressing is made using 2 parts oil to 1 part vinegar. So, the ratio of oil to vinegar is 2:1. What fraction of the dressing is oil?

INVESTIGATE the Math

Suppose that, at the beginning of a regular CFL season, the Saskatchewan Roughriders are given a 25% chance of winning the Grey Cup.

a. The event in this situation is _____

_____

b. Express the probability that this event will occur as a fraction.

P(Roughriders will with the Grey Cup) =

c. The complement of this event is _____

_____

d. Express the probability that the complement will occur as a fraction.

$P(A') = 1 - P(A)$

P(Roughriders don't win the Grey Cup) =

e. Write the odds in favour of the Roughriders winning the Grey Cup.

Odds in favour of event A

$\frac{P(A)}{P(A')}$ *or* $P(A): P(A')$

f. Write the odds against the Roughriders winning the Grey Cup.

Odds against event A

$\frac{P(A')}{P(A)}$ *or* $P(A'): P(A)$

Example 1: Determining odds from probability (p. 306)

Research shows that the probability of an expectant mother, selected at random, having twins is $\frac{1}{32}$.

a. What are the odds in favour of an expectant mother having twins?

P(twins) = So, the ratio of twins to all birth combinations is:

P(not twins) =

So, the ratio of birth combinations that are not twins to all birth combinations is:

The odds in favour of having twins,

b. W hat are the odds against an expectant mother having twins?

Example 2: Making a decision based on odds and probability

A hockey game has ended in a tie after a 5 min overtime period, so the winner will be decided by a shootout. The coach must decide whether Ellen or Brittany should go first in the shootout. The coach would prefer to use her best scorer first, so she will base her decision on the players' shootout records. Who should go first?

Player	Attempts	Goals Scored	Not Scored
Ellen	13	8	
Brittany	17	10	

HW: 5.2 p. 310-312 #1, 2, 4, 5, 8, 9, 11, 12, 15 & 16