

GRADE 12 APPLIED
UNIT A – PROBABILITY
ODDS

Name: _____

Date: _____

There is more than one way to express the chance of something happening or not happening!

$$\text{Probability} = \frac{\# \text{ of favourable outcomes}}{\# \text{ of total possible outcomes}}$$

Odds is basically the same but instead of comparing **what you want** with what **you could have**, you are comparing **what you want** to what you **don't want!** Just that easy!

There are **two forms** of odds:

Odds in Favour of something happening;

Odds in favour = **# of favourable outcomes** : **# of unfavourable outcomes**

Odds Against something happening;

Odds against = **# of unfavourable outcomes** : **# of favourable outcomes**

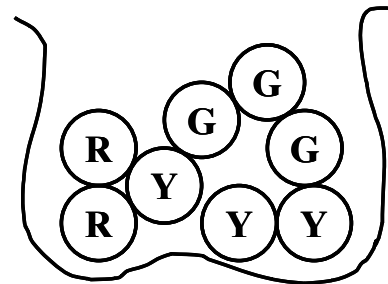
Notice we tend to not write odds as a fraction but as a ratio with a colon symbol, **:**, especially to avoid confusion with the probability ratio. Or some time just the word 'to'.

Example: If the favourable event is drawing a Green marble from the bag then:

$$\text{Prob (Green)} = \frac{3}{8} \text{ or } 0.375 \text{ or } 37.5\%$$

Odds in Favour of Green = **3 : 5**

Odds Against Green = **5 : 3**



1. Kyla has four different dollies. Her favourite is Misha. There are 24 ways she can line up all the different dolls on a shelf.

- how many ways are there that Misha is on the left?
- what is the probability that Misha is on the left?
- what are the Odds in Favour of Misha being on the left?

2. The weather network says there is a 30% probability of rain.
 - a. what are the Odds in Favour of rain?
 - b. what are the Odds Against rain?

3. On a quiz out of 10 marks, the scores of several students were: 3, 4, 6, 7, 7, 8, and 10. A school inspector comes by and wants to see one random student's quiz. Express the odds that a randomly selected student scored greater than 50% on the quiz.

4. The Odds Against an event occurring are 1 to 5. Express the **probability** for the event occurring.

5. Describe a situation that would have favourable odds (ie: odds in favour) of **5 : 2**

6. Express the probability (in any particular year) of there being an October snowstorm somewhere in Manitoba if the Odds For this occurrence are **3 to 1**.

7. Explain the difference between odds and probability

8. The City of Selkirk is planning a Fun Day.
- The probability of it raining on Fun Day is **3 out of 20**. State the odds that it will **not** rain on Fun Day.
 - The Odds **For** winning a prize at Fun Day are **5 : 3**. State the probability of winning a prize.
 - With Odds For of **5 : 3**, your child plays 16 games; how many prizes does your child win?

9. The **Odds Against** a certain horse to **Win** a race (as opposed to **Place** or **Show**) is listed in the race program as **5 : 1**.
- What is the probability the horse will win?
 - Optional Advanced.** If the winnings for the '**Win Pool**' are fairly distributed, how much would you 'win' for a normal **\$2.00** wager.

Example Entry in a Race Program:

Pgm #	Horse Jockey (St-W-P-S Win%) ITM%	Pedigree / Breeder / Owner / Trainer (St-W-P-S Win%) ITM%	Turf	Pace	Speed	M	
1	Sunday in Malibu	Ch f. 4 (Feb 28, 2006) (FTK SUM YRLG 07 \$30,000) Malibu Moon (\$30,000) (A.P. Indy) - Sunday Sonata (Palaci Br: Columbiana Farm (KY) Own: Country Life Farm					
	\$25,000	Tr: Michael J. Trombetta (3-0-0-1 0%) 33%					
	RAMON A. DOMINGUEZ (116-32-27-19 28%) 67%	2010: (121-33-27-20 27%) 66%					
		2010: (46-7-4-14 15%) 54%				(L)	
	Burnt Orange, Blue Collar, Blue Dots and Cuffs on Slee						
13Jan10	Aqu9	ft ☉	6f23	:2302	:4774	1:1422 4↑ F S Mc	12 99½ 711½ D
25Nov09	Aqu4	ft	6f70	:2326	:4730	1:1288 3↑ F S Mc 16000 /	42-43 9 83¾ 67½ 59½ 513 S

10. Complete the blanks in the table. Reduce fractions and ratios to simplest form.

Probability% of Event	Probability Fraction	Odds in Favour of Event	Odds Against Event
20%			
90%			
5%			
		4 : 1	
		3 'gets you' 12	
		1 : 3	
			6:2
			3:1
			4:5
	$\frac{3}{4}$		
	$\frac{5}{8}$		
<i>Optional →</i>		m : n	
<i>Make up your own couple!</i>			