

### 3.23.15

If the cards shown below were face down and I drew one at random, what would be the chance I would draw a 7? How do you know?

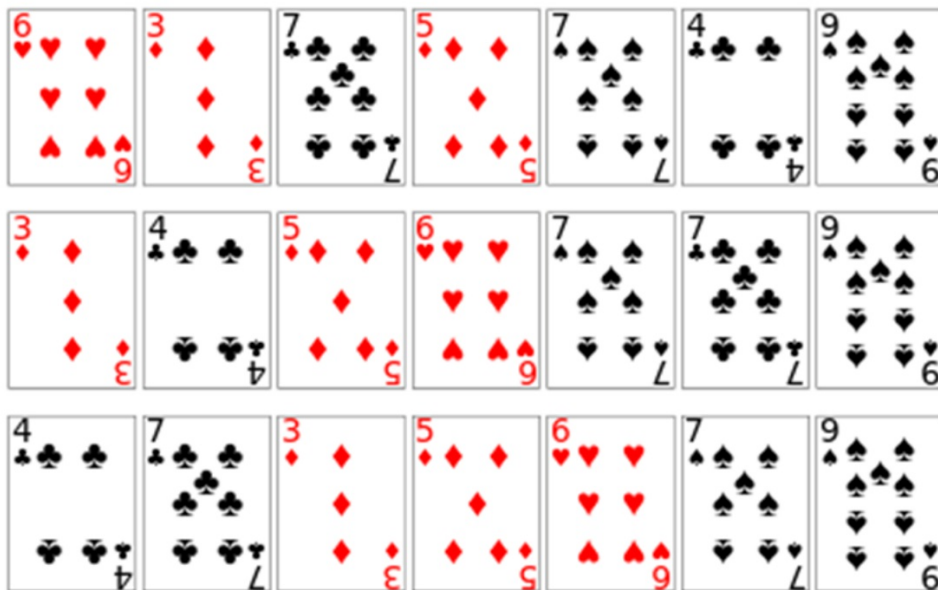
$$\frac{6}{21}$$

$$\frac{3}{21}$$

$$\frac{6}{21}$$

$$\frac{2}{7}$$

$$29\%$$



# Objectives

- Theoretical vs experimental probability
- Students will write to explain their understanding and questions about probability.

1. Form groups of 2 (3 if necessary).
2. Everyone draw the table below in your notes.  
This is the SUM of TWO DICE.
3. Each of you choose one of the sums to be yours.
4. Roll the dice as many times as you can. Record the sum every time with tally marks. **Whoever gets the most rolls of your sum wins!**

Sum of Two Dice

2	3	4	5	6	7	8	9	10	11	12
					✓		✓			

< 6 9 < 3  
1 1 6

## Experimental

2	3	4	5	6	7	8	9	10	11	12
$\frac{3}{72}$	$\frac{2}{43}$	$\frac{7}{26}$	$\frac{3}{44}$	$\frac{3}{23}$	$\frac{8}{60}$	$\frac{3}{25}$	$\frac{8}{73}$	$\frac{3}{41}$	$\frac{2}{27}$	$\frac{1}{30}$
3/64	1/28									
4%	4%	27%	6.8%	13%	12%	12%	10.9%	7%	7.6%	3%

2	3	4	5	6	7	8	9	10	11	12
1, 1	2, 1	2, 2	4, 1	3, 3	5, 2	4, 4	5, 4	5, 5	5, 6	6, 6
$\frac{1}{36}$	1, 2	3, 1	1, 4	5, 1	2, 5	6, 2	4, 5	6, 4	6, 5	
3%	$\frac{2}{36}$	1, 3	2, 3	1, 5	6, 1	2, 6	6, 3	4, 6		3%
	5%	$\frac{3}{36}$	3, 2	4, 2	1, 6	5, 3	3, 6		5%	
		8%	$\frac{4}{36}$	2, 4	4, 3	3, 5		8%		
			11%	5, 1	3, 4	14%	11%			

# Theoretical

5/36 3, 4 14  
14% 6/36 17%

# Probability

**Probability:** 0 or 0% = never. 1 or 100% = certain.

**Experimental** probability – the likelihood that an *outcome* will happen based on *real data* (experiments)

**Theoretical** probability – the *calculated* likelihood of an *outcome* based on counting the *total number of possible outcomes*.