

WHEEL OF FORTUNE

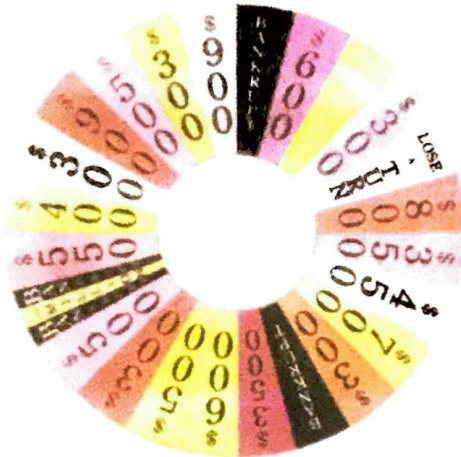
Is Wheel of Fortune rigged?

Tiers B/C



Act One: Wheel...

1. In the game show *Wheel of Fortune*, contestants spin a wheel to determine how much money they'll win. To the nearest percent, how often do you expect the wheel to land on each of the following amounts?



Amount	\$300	\$350	\$400	\$450	\$500
Pieces	$\frac{5}{24}$	$\frac{1}{24}$	$\frac{1}{24}$	$\frac{1}{24}$	$\frac{3}{24}$
Percent	21%	4%	4%	4%	13%
Amount	\$550	\$600	\$700	\$800	\$900
Pieces	$\frac{1}{24}$	$\frac{2}{24}$	$\frac{1}{24}$	$\frac{1}{24}$	$\frac{2}{24}$
Percent	4%	8%	4%	4%	8%
Amount	\$3500	\$1 million	Free Play	Lose Turn	BANKRUPT
Pieces	$\frac{1}{24}$	$\frac{1}{24}$	$\frac{1}{24}$	$\frac{1}{24}$	$\frac{2\frac{2}{3}}{24} = \frac{8}{3} \div \frac{24}{1} = \frac{1}{9}$
Percent	4%	1%	4%	4%	11%

2. Pick one of the percents above and explain what it means within the context of *Wheel of Fortune*.

answers vary.
It is really difficult to get \$1 mill → only 1%.
Most likely to get \$300.

3. If you watched an episode of *Wheel of Fortune*, what would need to happen for you to be suspicious that the show was rigged? Explain.

answers vary
If a contestant gets bankrupt 50% of the time.

Act Two: Wheel of Fortune

5. On the first page, you figured out the theoretical probability of getting each outcome on the Wheel of Fortune. Now you will be watching the episode (you have been given the link) and recording the experimental probability. While watching this episode, be sure to change the speed to 0.5 and record the results of the spins on the chart below. Put tally marks in the chart below each time the amount is spun. Some of the spins land on bonuses, which are cards on top of one of these amounts, so look carefully! After the game is finished, compute the percentages of each amount.

\$300 Tally marks → Percent: $\frac{4}{27}$ 14.8%	\$350 Percent: $\frac{1}{27}$ 3.7%	\$400 Percent: $\frac{2}{27}$ 7.4%	\$450 Percent: $\frac{1}{27}$ 3.7%
\$500 Percent: $\frac{5}{27}$ 18.5%	\$550 Percent: _____	\$600 Percent: $\frac{1}{27}$ 3.7%	\$700 Percent: $\frac{3}{27}$ 11.1%
\$800 Percent: $\frac{2}{27}$ 7.4%	\$900 Percent: $\frac{3}{27}$ 11.1%	\$3,500 Percent: _____	\$1 million Percent: _____
Free Play Percent: _____	Lose a Turn Percent: $\frac{1}{27}$ 3.7%	Bankrupt Percent: $\frac{4}{27}$ 14.8%	Total Spins 27

6. Compare the theoretical and experimental probability of spinning \$500 on the wheel.

theoretical
of \$500 → 4%

experimental
of \$500 → 18.5%

Compare:
Experimental is much higher than the theoretical. This is probably because there were not a lot of trials.

7. Compare the theoretical and experimental probability of spinning "bankrupt" on the wheel.

Theoretical - 11%

Exp - 15%

These are pretty close.

8. Based on your results, do you think the game show, Wheel of Fortune, is rigged? Why or why not?

Do you think it is fair?

Yes, because the # of bankrupts in the experimental is not so different from the theoretical.