Standard 12: The student will explain and evaluate the financial impact and consequences of gambling.

Standard 12. Gambling
Lesson 12.1 Cost and Benefits of Gambling
1.1. Analyze the probabilities involved in winning at games of chance.

1.2. Evaluate costs and benefits of gambling to individuals and society (e.g., family budget; addictive behaviors; and the local and state economy).
Standard 12.1
Gambling

The Costs and Benefits of Gambling
Simone, Paula and Randy meet in the library every day to work on their homework. Here is the problem they need to solve today.
Ryan is flipping a coin, and he is not cheating. He has just flipped seven heads in a row. Is Ryan’s next flip more likely to be heads, or tails, or heads and tails are equal chances.

- Paula says, “HEADS.”
- Randy says, “TAILS.”
- Simone says, “EITHER!”

Who is correct?
Payoff

- Recognize gambling as a form of risk.
- Calculate the probabilities of winning in games of change.
- Explore the potential benefits of gambling for society.
- Explore the potential costs of gambling for society.
- Evaluate the personal costs and benefits of gambling.
Cache

- Dependent event
- Gambling
- Independent event
- Predictability
- Probability
Building Interest

Why do people gamble?

• Enjoy taking a risk
• Entertainment
• Potential to win/lose
• Can be addictive
Gambling

- Involves taking a chance with your personal finances, or
- Risking your money or something else of value on an activity with an uncertain outcome.
Social Costs and Benefits

- The gaming industry nets about $100 billion in revenue annually.
- This is about the same amount the U.S. has spent yearly on the war in Iraq.
- In Oklahoma, the gaming industry nets about $2 billion annually.
  - 97 casinos
  - Over 45,000 gaming machine, which is about 5.5% of all gaming machines nationally!
  - Casinos employ thousands of people
Casinos take revenue from other businesses.
- There is an opportunity cost

Lotteries are similar to regressive taxes.
- Lower income have greater impact
- Income reduced by about 5%
Gambling is Risky Business

- Principles of Risk
  - Probability of loss
    - Likelihood that something will happen
    - Playing the odds
- Managing Risk
  - Avoid it
  - Transfer it
  - Reduce it
  - Retain it
Gambling is Risky Business

- When gambling
  - The odds are in the sponsor’s favor!
    - Lotteries
    - Casinos
    - Others
  - Sponsors earn profits based on the odds.
  - Why do people play, when the odds are against them?
## Powerball

<table>
<thead>
<tr>
<th>Match</th>
<th>Prize</th>
<th>Odds</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 numbers + PB</td>
<td>Grand Prize</td>
<td>1 in 146,107,962.00</td>
</tr>
<tr>
<td>5 numbers</td>
<td>$200,000</td>
<td>1 in 3,563,608.83</td>
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<tr>
<td>4 numbers + PB</td>
<td>$10,000</td>
<td>1 in 584,431.85</td>
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<tr>
<td>4 numbers</td>
<td>$100</td>
<td>1 in 14,254.44</td>
</tr>
<tr>
<td>3 numbers + PB</td>
<td>$100</td>
<td>1 in 11,927.18</td>
</tr>
<tr>
<td>3 numbers</td>
<td>$7</td>
<td>1 in 290.91</td>
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<tr>
<td>2 numbers + PB</td>
<td>$7</td>
<td>1 in 745.45</td>
</tr>
<tr>
<td>1 number + PB</td>
<td>$4</td>
<td>1 in 126.88</td>
</tr>
<tr>
<td>PB</td>
<td>$3</td>
<td>1 in 68.96</td>
</tr>
</tbody>
</table>

The overall odds of winning a prize are 1 in 36.61. The odds presented here are based on a $1 play.

Source: [http://www.powerball.com](http://www.powerball.com)
Horseracing

Odds are 7 to 1

- You bet $20.
  - You agree to pay the race track $20 if you lose and it will pay you $140 if you win.
  - You have about a 15% chance of winning
    - \( \frac{100}{7} = 14.28 \).
- The odds of winning depend on how many horses are in the race.
- As more horses are added, the odds change.
Odds of Winning

Games of chance

• The higher the odds, the higher the potential payout.
• The greater the potential payout, the greater the risk of losing.
• If you want people to take high risk, you need to offer potentially high rewards.
Calculating Odds

Drawing an ace from a deck of cards:

• 4/52 or a 1/13 chance
• 12/13 chance you will draw another card
• Rather low risk of “winning”
What Have You Learned?

Pick 3 Lottery Game:

- You have to pick the exact numbers
- 10 numbers
- \( \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10} = \frac{1}{1,000} \)
- \( \frac{999}{1000} \) to lose
Independent vs. Dependent

**Independent Event:**

- Flipping a coin
- The odds of getting heads or tails does not change.
- $\frac{1}{2}$
Independent vs. Dependent

Dependent Event:

- Card games such as Poker or Blackjack
- 4/52 chance of an ace at the beginning of the game, until the dealer deals an ace
- Royal Flush in Poker
- Odds are 1/2,598,950
Probability vs. Predictability

**Probability**
- Luck
- Little or no strategy involved
- How likely will something happen

**Predictability**
- Strategy based on past performance
- Some knowledge about outcome
- Informed choices (even if information is not perfect)
Probability vs. Predictability

Does this mean you should never take a risk?
• Life is a risk
• Investing is a risk
• Driving is a risk

Does this mean you should never gamble?
• Be informed about your odds
• “Don’t gamble with the rent or the milk money!”
Gambling is high risk!
- You are playing the odds and the odds are not in your favor!
- It can be fun and entertaining, but also addictive.

Gambling involves costs and benefits.
- All choices have costs!

There is no guarantee you will win; that is why they call it “gambling.”
Balance Sheet

- Why do people gamble?
- Who gambles?
- What are the costs and benefits of gambling?
- What is the difference between a dependent and independent event?
- What is the difference between probability and predictability?
- Is gambling based on “probability” or “predictability”?
What about the coin flip? If you said, “Simone,” you are correct!

Paula is assuming that the pattern of flipping coins will continue.

Randy is certain Ryan’s luck will change.

Simone knows the odds are 50/50 because each flip is an independent event.
When playing games of chance, remember this:

“Even though you have a winning streak, there is no guarantee that streak will continue!”