<u>**WAMC Lab Template**</u>
Math Concept(s): Types of Automobile Insurance
Source / Text: Cengage Financial Algebra
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<u>**Attach the following documents:**</u>
- Lab Instructions
- Student Handout(s)
- Rubric and/or Assessment Tool

<u>**Short Description (Be sure to include where in your instruction this lab takes place):**</u>
- This game should be played after students have been introduced to the different types of automobile insurance and after completing the "Holdable Foldable" lesson. The scenarios with math integration can be played AFTER students have had the opportunity to complete the Holdable Foldable AND completed some application problems in the Cengage Financial Algebra book or provided by the teacher.

<u>**Lab Plan**</u>
Lab Title: Insurance Quest (no math, vocabulary only)
At the end of the lab, there are additional scenarios that can be used that include math computations for auto insurance.

Prerequisite skills:
Understanding of automobile insurance vocabulary

Lab Objectives:
Reinforce understanding of the different types of automobile insurance and when each type of insurance fits a particular scenario.

Insurance Quest

Objective:

To understand the different types of automobile insurance and how they apply in various scenarios.

Materials Needed:

- Scenarios (1 per page w/o answers) or you can make several sets if playing with groups.
- List of Insurance types on the overhead/board
- Score sheets (print and copy)
- Pens or pencils

Game Setup:

1. Students can play individually, in pairs, or in groups of 3-5.
2. Wad/crumple up all 18 scenarios so they can be shot like basketballs into a trash can.
3. On 5 separate sheets of colored paper, write the number 1 on 3 sheets of paper, write 2 on the 4th sheet, and 3 on the 5th sheet. Wad/crumple these up also. They will be shot to determine how many points the scenario is worth when answered correctly.
4. Give each group a score sheet and pens or pencils.

Types of Automobile Insurance:

1. **Liability Insurance** - Covers damages to others if you are at fault in an accident.
2. **Collision Insurance** - Covers damages to your own car in an accident, regardless of fault.
3. **Comprehensive Insurance** - Covers damages to your car not caused by a collision (e.g., theft, fire).
4. **Personal Injury Protection (PIP)** - Covers medical expenses for you and your passengers after an accident.
5. **Uninsured/Underinsured Motorist Coverage** - Covers you if the other driver is at fault and does not have sufficient insurance.
6. **Gap Insurance** - Covers the difference between the car's value and the amount owed on a loan if the car is totaled.

How to Play: (this game can be played individually, with a partner, or a small group)

1. The game starts with shooting the scenario balls into the trash can. The first one in the can is the question that the person/pair/group will solve.
2. After reading the scenario, the individual/pair/group discusses and decides which type(s) of insurance would apply to that scenario.
3. The individual/pair/group then selects the insurance type and writes their choice(s) on the score sheet.
4. The teacher confirms if the choice is correct using the answer key provided.
5. After confirming correct answers, the individual/pair/group shots the 5 "balls" with points. The correct answer earns the sum of the numbers on the balls that are in the "basket". If no balls make it in the basket, the default point is "1".
6. If correct, the individual/pair/group earns the point(s). If incorrect, they do not earn point(s).
7. The game continues until all scenarios have been read or until the predetermined amount of time has elapsed.
8. The individual/pair/group with the most points at the end of the questioning wins the game.

After the game, hold a discussion to review each scenario and the correct insurance types. Discuss why each type of insurance is important and how they protect drivers in various situations.

Scenarios:

1. **Scenario**: "A hailstorm damages the roof and hood of your car."
   o **Answer:** Comprehensive Insurance.
2. **Scenario:** "You accidentally back into a pole, causing damage to your rear bumper."
   o **Answer:** Collision Insurance.
3. **Scenario:** "Your parked car is hit by a hit-and-run driver, causing significant damage."
   o **Answer:** Uninsured/Underinsured Motorist Coverage, Collision Insurance.
4. **Scenario:** "Your car is damaged in a flood."
   o **Answer:** Comprehensive Insurance.

5. **Scenario:** "You are injured in an accident caused by another driver who has no insurance."
   - ○ **Answer:** Uninsured/Underinsured Motorist Coverage, Personal Injury Protection (PIP).
6. **Scenario:** "Your car is vandalized while parked on the street."
   - ○ **Answer:** Comprehensive Insurance.
7. **Scenario:** "A deer runs in front of your car, causing you to swerve and hit a tree."
   - ○ **Answer:** Comprehensive Insurance (for hitting the deer), Collision Insurance (for hitting the tree).
8. **Scenario:** "You loan your car to a friend who gets into an accident that is their fault."
   - ○ **Answer:** Liability Insurance (for damages to others), Collision Insurance (for damages to your car).
9. **Scenario:** "Your car is damaged by falling debris from a construction site."
   - ○ **Answer:** Comprehensive Insurance.
10. **Scenario:** "You hit a pedestrian who suffers minor injuries."
    - ○ **Answer:** Liability Insurance, Personal Injury Protection (PIP).
11. **Scenario:** "Your car is totaled in an accident and the insurance payout is less than what you owe on your car loan."
    - ○ **Answer:** Gap Insurance.
12. **Scenario:** "You suffer whiplash after being rear-ended by another driver."
    - ○ **Answer:** Personal Injury Protection (PIP), Uninsured/Underinsured Motorist Coverage (if the other driver is underinsured).
13. **Scenario:** "Your car is stolen and used in a crime, then found damaged."
    - ○ **Answer:** Comprehensive Insurance.
14. **Scenario:** "Your car battery dies and needs replacement."
    - ○ **Answer:** Not typically covered by auto insurance (this is considered regular maintenance).
15. **Scenario:** "A fire in your garage damages your car."
    - ○ **Answer:** Comprehensive Insurance.
16. **Scenario:** "You rear-end another car, causing damage to both vehicles."
    - ○ **Answer:** Liability Insurance (for the other car's damage), Collision Insurance (for your car's damage).
17. **Scenario:** "Your car is stolen from the parking lot."
    - ○ **Answer:** Comprehensive Insurance.
18. **Scenario:** "You are hit by an uninsured driver and suffer minor injuries."
    - ○ **Answer:** Uninsured/Underinsured Motorist Coverage, Personal Injury Protection (PIP).

Scenarios with Math Integration:

6. **Scenario: "A hailstorm damages the roof and hood of your car."**
   - ○ **Answer:** Comprehensive Insurance.
   - ○ **Math Integration:** Calculate the cost of repairs if the total damage is estimated at $3,500 and your deductible is $500. How much will the insurance company pay?
     - ▪ **Calculation:** $3,500 - $500 = $3,000
7. **Scenario: "You accidentally back into a pole, causing damage to your rear bumper."**
   - ○ **Answer:** Collision Insurance.
   - ○ **Math Integration:** Estimate the repair costs using a linear function where the cost of repair increases by $200 for every additional inch of damage. If the damage is 5 inches, what is the cost?
     - ▪ **Calculation:** 5 inches * $200/inch = $1,000

8. **Scenario: "Your parked car is hit by a hit-and-run driver, causing significant damage."**
   - **Answer:** Uninsured/Underinsured Motorist Coverage, Collision Insurance.
   - **Math Integration:** If the damage amounts to $4,000 and your Collision Insurance covers 80% of the repair costs after a $500 deductible, how much will you need to pay out-of-pocket?
     - **Calculation:** $4,000 - $500 = $3,500; $3,500 * 0.80 = $2,800 (insurance pays); $4,000 - $2,800 = $1,200 (out-of-pocket)

9. **Scenario: "Your car is damaged in a flood."**
   - **Answer:** Comprehensive Insurance.
   - **Math Integration:** Using probability, determine the likelihood of needing Comprehensive Insurance if the probability of a flood in your area is 5% per year and you plan to own the car for 10 years.
     - **Calculation:** P(at least one flood) = $1 - (1 - 0.05)^{10} \approx 0.4013$ or 40.13%

10. **Scenario: "You are injured in an accident caused by another driver who has no insurance."**
    - **Answer:** Uninsured/Underinsured Motorist Coverage, Personal Injury Protection (PIP).
    - **Math Integration:** Create an equation to calculate the total medical expenses if the average cost per visit is $150 and you expect to need 10 visits. How much will your PIP cover if it has a limit of $1,200?
      - **Calculation:** Total cost = 10 visits * $150/visit = $1,500; PIP covers $1,200; You pay $1,500 - $1,200 = $300**Scenario: "Your car is vandalized while parked on the street."Scenario: "Your car is vandalized while parked on the street."**

11. **Scenario: "Your car is vandalized while parked on the street."**
    - **Answer:** Comprehensive Insurance.

    - **Math Integration:** If the vandalism causes $1,200 in damages and your policy has a $250 deductible, how much will the insurance pay?
      - **Calculation:** $1,200 - $250 = $950 (insurance pays)

7. **Scenario: "A deer runs in front of your car, causing you to swerve and hit a tree."**
   - **Answer:** Comprehensive Insurance (for hitting the deer), Collision Insurance (for hitting the tree).
   - **Math Integration:** If the comprehensive insurance covers $1,500 for hitting the deer and collision insurance covers $3,000 for hitting the tree after a $500 deductible, what is your total out-of-pocket cost?
     - **Calculation:** $3,000 - $500 = $2,500 (insurance pays for collision), $1,500 (comprehensive covers) = $0 out-of-pocket for comprehensive. Total out-of-pocket cost = $500

8. **Scenario: "You loan your car to a friend who gets into an accident that is their fault."**
   - **Answer:** Liability Insurance (for damages to others), Collision Insurance (for damages to your car).
   - **Math Integration:** If the accident causes $7,000 in damages to your car and your friend has to pay a $1,000 deductible, how much will the insurance pay for your car's repairs?
     - **Calculation:** $7,000 - $1,000 = $6,000 (insurance pays)

9. **Scenario: "Your car is damaged by falling debris from a construction site."**
   - **Answer:** Comprehensive Insurance.
   - **Math Integration:** Calculate the total claim amount if the damage is estimated at $2,400 and you have a $300 deductible.
     - **Calculation:** $2,400 - $300 = $2,100 (insurance pays)

10. **Scenario: "You hit a pedestrian who suffers minor injuries."**
    - **Answer:** Liability Insurance, Personal Injury Protection (PIP).

- o **Math Integration:** If the pedestrian's medical expenses are $800 and your liability insurance covers up to $1,000 per incident, how much will be covered by insurance?
  - ▪ **Calculation:** $800 (liability covers)
11. **Scenario: "Your car is totaled in an accident and the insurance payout is less than what you owe on your car loan."**
    - o **Answer:** Gap Insurance.
    - o **Math Integration:** If the insurance payout is $10,000 but you owe $12,500 on the loan, how much will Gap Insurance cover?
      - ▪ **Calculation:** $12,500 - $10,000 = $2,500 (Gap Insurance covers)
12. **Scenario: "You suffer whiplash after being rear-ended by another driver."**
    - o **Answer:** Personal Injury Protection (PIP), Uninsured/Underinsured Motorist Coverage (if the other driver is underinsured).
    - o **Math Integration:** If medical expenses total $2,000 and your PIP covers 80%, how much will you need to pay if the other driver's insurance is insufficient?
      - ▪ **Calculation:** $2,000 * 0.80 = $1,600 (PIP covers); $2,000 - $1,600 = $400 (your cost if the other driver's insurance does not cover)
13. **Scenario: "Your car is stolen and used in a crime, then found damaged."**
    - o **Answer:** Comprehensive Insurance.
    - o **Math Integration:** If the damage repair costs $3,000 and the insurance policy has a $500 deductible, how much will the insurance company pay?
      - ▪ **Calculation:** $3,000 - $500 = $2,500 (insurance pays)
14. **Scenario: "Your car battery dies and needs replacement."**
    - o **Answer:** Not typically covered by auto insurance (this is considered regular maintenance).
    - o **Math Integration:** Calculate the total cost if a new battery costs $150 and the service fee for installation is $50.
      - ▪ **Calculation:** $150 + $50 = $200 (total cost)
15. **Scenario: "A fire in your garage damages your car."**
    - o **Answer:** Comprehensive Insurance.
    - o **Math Integration:** If the damage is assessed at $5,000 and your deductible is $1,000, how much will the insurance pay?
      - ▪ **Calculation:** $5,000 - $1,000 = $4,000 (insurance pays)
16. **Scenario: "You rear-end another car, causing damage to both vehicles."**
    - o **Answer:** Liability Insurance (for the other car's damage), Collision Insurance (for your car's damage).
    - o **Math Integration:** If the other car's damage is $2,500 and your car's damage is $3,500 with a $500 deductible, calculate the total payout from the insurance.
      - ▪ **Calculation:** $2,500 (liability covers other car) + ($3,500 - $500) = $3,000 (collision covers your car) = $5,500 total payout
17. **Scenario: "Your car is stolen from the parking lot."**
    - o **Answer:** Comprehensive Insurance.
    - o **Math Integration:** If your car is valued at $10,000 and the insurance company reimburses you after subtracting a $1,000 deductible, how much will you receive?
      - ▪ **Calculation:** $10,000 - $1,000 = $9,000 (insurance pays)
18. **Scenario: "You are hit by an uninsured driver and suffer minor injuries."**
    - o **Answer:** Uninsured/Underinsured Motorist Coverage, Personal Injury Protection (PIP).
    - o **Math Integration:** If your medical expenses are $1,200 and your PIP covers 90%, how much will the Uninsured Motorist Coverage need to cover if the other driver has no insurance?

- **Calculation:** $1,200 * 0.90 = $1,080 (PIP covers); $1,200 - $1,080 = $120 (Uninsured Motorist Coverage covers)

By incorporating these mathematical problems into the lesson, students will engage with real-world applications of both insurance concepts and math standards. This enhances their understanding and demonstrates the relevance of math in everyday decision-making and financial literacy.

Score Sheet Template:

Round	Scenario Description	Insurance Type(s) Selected	Correct? (Y/N)	Points
1				
2				
3				
4				
5				
6				

Feel free to customize the scenarios and add more details to fit your students' needs. This game not only makes learning about automobile insurance fun but also helps students understand the practical applications of different types of coverage.

Standards: *(Note SPECIFIC relationship to Science, Technology, and/or Engineering)*
Mathematics K–12 Learning Standards:

These standards apply if you are using the scenarios with math integration.

- **CCSS.MATH.CONTENT.HSN.Q.A.1**: Use units as a way to understand problems and to guide the solution of multi-step problems.
- **CCSS.MATH.CONTENT.HSA.CED.A.1**: Create equations that describe numbers or relationships.
- **CCSS.MATH.CONTENT.HSF.IF.B.4**: Interpret functions that arise in applications in terms of the context.
- **CCSS.MATH.CONTENT.HSG.MG.A.3**: Apply geometric methods to solve design problems.
- **CCSS.MATH.CONTENT.HSS.MD.B.5**: Use probability to evaluate outcomes of decisions.

Standards for Mathematical Practice:
- Making sense of problems and persevere in solving them.
- Model with mathematics.
- Attend to precision.

- Reason abstractly and quantitatively.

K-12 Learning Standards-ELA (Reading, Writing, Speaking & Listening):
- Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.
- Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.

K-12 Science Standards
- NA

Technology
- NA

Engineering
- NA

Leadership/21st Century Skills:

21st Century Interdisciplinary themes (Check those that apply to the above activity.)
- ☐ Global Awareness
- ☒ Financial/Economic/Business/Entrepreneurial Literacy
- ☐ Civic Literacy
- ☐ Health/Safety Literacy
- ☐ Environmental Literacy

21st Century Skills (Check those that students will demonstrate in the above activity.)

LEARNING AND INNOVATION	INFORMATION, MEDIA & TECHNOLOGY SKILLS	LIFE & CAREER SKILLS	Productivity and Accountability
Creativity and Innovation	Information Literacy	Flexibility and Adaptability	
☐ Think Creatively	☒ Access and Evaluate Information	☐ Adapt to Change	☐ Manage Projects
☐ Work Creatively with Others	☐ Use and manage Information	☐ Be Flexible	☒ Produce Results
☐ Implement Innovations	Media Literacy	Initiative and Self-Direction	Leadership and Responsibility
Critical Thinking and Problem Solving	☐ Analyze Media	☒ Manage Goals and Time	☒ Guide and Lead Others
☒ Reason Effectively	☐ Create Media Products	☒ Work Independently	
☐ Use Systems Thinking	Information, Communications and Technology (ICT Literacy)	☐ Be Self-Directed Learners	☒ Be Responsible to Others
☒ Make Judgments and Decisions		Social and Cross-Cultural	
☒ Solve Problems	☐ Apply Technology Effectively	☒ Interact Effectively with Others	
Communication and Collaboration		☒ Work Effectively in Diverse Teams	
☒ Communicate Clearly			
☒ Collaborate with Others			

Teacher Preparation: (What materials and set-up are required for this lab?)
Materials

- Scenarios (1 per page w/o answers) or you can make several sets if playing with groups.
- List of Insurance types on the overhead/board
- Score sheets (print and copy)
- Pens or pencils

Set-Up Required:

- Room to shot paper "balls" into a waste basket or other container.

Lab Organization Strategies:

Leadership (Connect to 21st Century Skills selected):

- Problem Solving, Communication & Collaboration

Cooperative Learning:

- Students have the opportunity to collaborate with a partner or small group during this activity.

Expectations:

- The expectation is that students will be able to identify what types of insurance cover specific situations and realize the importance of the different types of "optional" insurance types such as collision (or what students think of as full coverage).

Timeline:

- This lab will take up to one class period or can be shortened if necessary.

Post Lab Follow-Up/Conclusions:

Discuss real world application of learning from lab

- As a consumer, you will be purchasing automobile insurance. It is important to know what your coverage is, how it works, and what questions to ask when making a purchasing decision. Having a general understanding of insurance will help you make the best decision when it comes time to purchase your own policy.

Career Applications

- Insurance Agent, Insurance Adjustor, Insurance Claims, Underwriter, Actuary

Optional or Extension Activities

- Have an insurance agent or broker as a guest speaker in your classroom.