Microeconomics Sample Performance Assessments

The Waymaker project team has created sample performance assessments (PAs) that align with course learning outcomes. Instructors may use these sample assessments as is or modify them as appropriate to fit the way they are teaching the course. Instructors may also use their own performance assessments. This approach can work well so long as there is strong alignment between the learning outcome(s), the assessment and the course content.

Instructors determine the number of performance assessments. Because PAs are human-graded, we are sensitive to the workload required for instructors to review, provide meaningful feedback and grade the PAs. We recommend including at least 3-5 PAs across the course. As the course progresses, the PAs should assess mastery on all primary learning outcomes.

Recommended Process for Selecting Performance Assessments

Use the following process to determine how and where to use PAs in your course.

1. **Decide how many performance assessments to use** in your course and where they should fit. Each PA should ask students to demonstrate mastery of the set of primary learning outcomes covered prior to the performance assessment.
2. **Review sample performance assessments** to determine how well they fit your course structure and flow. Decide whether to use the sample PAs as is, adapt or combine them - or use something completely different. Be sure that all performance assessment tasks align with learning outcomes covered prior to the assessment.
3. **Create the performance assessment in your LMS.** Be sure the PA includes any appropriate background information students need to complete the assessment tasks successfully.
4. **Create (or modify) a grading rubric** for the performance assessment. Provide this rubric to students when you introduce the PA, and use it as the foundation for providing constructive feedback to students.
5. **Define the format, length and other parameters** for the assessment. Should the student’s work product(s) be visual? Graphical? Written?
Multimedia? What length are you looking for? Are there particular dimensions of the problem you want them to cover? Make sure your expectations are clearly stated, so students know what they need to prepare. To encourage creativity and skill development, consider using formats besides traditional written/quantitative responses for some performance assessments.

6. **Define your policy on allowing students to resubmit** performance assessments. Part of the Mastery Learning approach is to use assessments as feedback and learning opportunities. We encourage instructors to allow at least one resubmission of performance assessments after students have received feedback on their first submission. Clearly state your policy.

7. **Repeat for other performance assessments**, targeting 3-5 across the full course and ultimately including PAs that assess mastery on all primary learning outcomes.

Sample assessments provided by Waymaker are openly licensed. Anyone may freely use or adapt these materials, so long as they provide proper attribution.

It is your responsibility to handle this material appropriately, with proper security to prevent (where possible) worked solutions from being widely available and searchable via the internet.

**Comments and Feedback**

Lumen Learning seeks to continuously improve all materials associated with the courseware. We encourage constructive feedback on what’s working, what isn’t working and how to improve the sample performance assessments we publish with the courseware. Please direct comments or feedback to support@lumenlearning.com.

**Contribute to a Sample Performance Assessment Library**

Over time, a goal of Waymaker is to assemble a broad library of sample performance assessments for instructors to reference, use and contribute to. As you are creating or adapting assessments for your course, consider contributing them back to the library. We encourage contributors to use a Creative Commons 4.0 Attribution License (CC BY), which allows greatest flexibility for use, adaptation and sharing, and your work will still be attributed to you personally.
If you have PAs you are willing to contribute, please send them with an explanatory message to share@lumenlearning.com. Be sure to note which learning outcome(s) they align with.

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**Sample Assessment #1: Use Data to Explain Scarcity**

**Recommended Placement:** Micro or Macroeconomics course after Scarcity

**Module Alignment:**
- Explicitly addresses Scarcity
- Implicitly addresses none

**Performance Assessment Description**

In this assessment, you will demonstrate your ability to draw a simple production possibilities curve given data on the quantity of one input (labor) available and the amount of labor required to produce each of two outputs (guns and butter). You should also be able to identify the opportunity cost of one good in terms of the other as the slope of the PPC. You will explain your analysis of the figures to explain why it’s not possible to produce combinations of the two goods outside the PPC.

Suppose a nation has a total of 12 units of labor, which can be used to produce either guns or butter. One gun takes 6 units of labor to produce and 1 butter takes 2 units of labor to produce.

- Explain why scarcity exists in this economy. Use the data as evidence of your reasoning.
- What is the maximum quantity of guns that can be produced?
- What is the maximum quantity of butter than can be produced?
- Draw the nation’s production possibility curve.
- What is the opportunity cost of guns in this nation?
- Explain why the nation can’t produce both 3 guns and 4 butters.
- Explain why the nation shouldn’t produce both 1 gun and 2 butters.

**Sample Grading Rubric**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Not Evident</th>
<th>Developing 55%</th>
<th>Proficient 80%</th>
<th>Distinguished 100%</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Explain why scarcity exists in this economy, and use data to justify</td>
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<tr>
<td>Calculate maximum quantity of guns that can be produced</td>
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<td></td>
<td></td>
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<td>10</td>
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<tr>
<td>Calculate maximum quantity of butter than can be produced</td>
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<tr>
<td>Draw the nation’s production possibility curve</td>
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<tr>
<td>Describe the opportunity cost of guns in this nation</td>
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</tr>
<tr>
<td>Explain why the nation can’t produce both 3 guns and 4 butters</td>
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<tr>
<td>Explain why the nation shouldn’t produce both 1 gun and 2 butters</td>
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</tr>
<tr>
<td>Articulation of response (citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas.)</td>
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<td>Total:</td>
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</tbody>
</table>

**Worked Solution**

This assessment, which asks you to use assume that the nation has 12 units of labor, which can be used to produce either guns (requiring 6 units of labor for each) or butter (requiring 2 units of labor for each).
If all the labor was used to produce guns, the nation could produce a maximum of \( \frac{12}{6} = 2 \) guns. Of course, that would leave no labor to produce butter. If all the labor was used to produce butter, the nation could produce a maximum of \( \frac{12}{2} = 6 \) butters. But then the nation would have no guns.

More likely, the nation would divide its labor between guns and butter. This production possibilities frontier (or curve) can be drawn on a set of axes where the horizontal axis shows butter and the vertical axis shows guns. The PPC is the line from \((0, 12)\) to \((6, 0)\).

Since resources (labor) are limited in this economy, there is a limit on the amount of guns and butter that can be produced. In other words, scarcity exists beyond the PPC. The slope of the PPC always shows the trade off between guns and butter. The trade off in this case is 3 butters for every gun. Economists call this trade off the opportunity cost, since if you choose one more gun, you give up 3 butters.

This economy is limited to producing combinations of guns and butter inside the PPC. For this reason, the nation cannot produce the combination of 3 guns and 4 butters since that would require more than 12 units of labor to achieve. It would be wasteful to produce the combination of 1 gun and 2 butters since that would leave 2 units of labor unused (unemployed). This is called productive inefficiency.

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**Sample Assessment #2: Economic Model of Rational Crime**

**Recommended Placement:** Micro or Macroeconomics course after Scarcity

**Module Alignment:**

- Explicitly addresses Scarcity
- Implicitly addresses not applicable

**Performance Assessment Description**
Create an economic model of rational crime.

For example, imagine a burglar is deciding which house to break into or a car thief is deciding which car to steal.

- Explain assumptions of rationality by individuals or firms.
- What factors would a rational criminal take into account in deciding to commit a crime? Be sure to explain how economic models are used by economists to assess the example.
- What would convince the criminal to do the deed? Explain the circumstances that would convince the criminal to do the deed. Address the concept of marginality and use your calculations of marginal changes as justification.
- What are some policy implications of your economic model of rational crime? In other words, what does your model predict would cause an increase and a decrease in crime?
- Use the distinction between positive and normative reasoning to explain the limits to using your economic model of rational crime to argue for capital punishment as punishment for burglary or car theft.

Sample Grading Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Not Evident</th>
<th>Developing</th>
<th>Proficient</th>
<th>Distinguished</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explain the assumption of rationality by individuals or firms</td>
<td></td>
<td>55%</td>
<td>80%</td>
<td>100%</td>
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<tr>
<td>Describe the factors a rational criminal takes into account in deciding to commit a crime, and provide support with economic model examples</td>
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<tr>
<td>Explain the circumstances that would convince the criminal to do the deed, and use the concept of marginality to justify</td>
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<tr>
<td>Explain the policy implications of the economic model of crime, and includes the model's prediction</td>
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<tr>
<td>Explain how this model highlights the difference between positive and normative</td>
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<td>18</td>
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</tbody>
</table>
Worked Solution

Economists analyze issues and problems differently than other people using a frame of reference called the Economic Way of Thinking. The main tool used by economists is economic models. Economic models differ from those of other disciplines in several ways: First, they emphasize marginality, that people generally make few all or nothing decisions; rather, they tend to choose a little more of something, or a little less. Second, economic models generally assume that people are economically rational. Rationality has a very specific meaning in economics. It means that people generally seek benefits and avoid costs. When combined with marginality, this means that economists analyze people’s decisions by assuming they compare the marginal benefits and marginal costs of any option, and only select the option if MB > MC.

This economic way of thinking can be applied to a variety of issues, including crime. Suppose we design an economic model of rational crime. Rationality implies that the prospective criminal would consider the costs and benefits of the act. The benefit of burglary is the money one would get from stealing and selling property. The costs would include the difficulty in committing the crime (for example, how hard it was to break into the home or business), the likelihood of getting caught and the sentence one would receive if convicted. Note that costs and benefits need not be only monetary. The guilt of committing a crime might also be considered a cost. The model predicts that one would only commit the crime if the expected benefits exceeded the expected costs.

If this model is correct, it should provide insights about what might increase or decrease the incidence of crime. In general, anything that increases the benefits or decreases the costs should make crime more likely. Living in a more expensive house might signal greater benefits to burglary to prospective criminals. Similarly, having valuable electronics visible in a living room window could increase burglary. Greater police protection, the use of security systems (or just the appearance of them, like a security
alarm company sticker on a window), or harsher criminal penalties should reduce the amount of burglary. The opposite should increase the amount of burglary.

Finally, economists make a careful distinction between positive and normative reasoning. Positive reasoning is scientific and objective. Economists have particular expertise at using positive reasoning to analyze economic issues. For example, the economic theory of crime can explain why crimes occur and what could be done to prevent them. Normative reasoning is subjective. Economists have no more expertise on normative judgments than anyone else. In this case, economists could predict from the model that capital punishment would reduce the occurrence of burglary (a positive judgment), but they can’t prove that it’s the right thing to do (a normative judgment).

Sample Assessment #3: Comparative Advantage

Recommended Placement: Micro or Macroeconomics courses after Globalization, Trade, and Finance

Module Alignment:

- Explicitly addresses Globalization, Trade, and Finance
- Implicitly addresses None

Performance Assessment Description

Suppose that the United States and Saudi Arabia can each produce two products, oil and personal computers. The labor requirements per unit of output are provided in the table below.

Labor Requirements Per Unit of Output
Calculate the labor and opportunity costs for each good, and then compute each country’s absolute and comparative advantage. Use the results to determine what good each country should export and explain your reasoning.

### Sample Grading Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Not Evident 0%</th>
<th>Developing 55%</th>
<th>Proficient 80%</th>
<th>Distinguished 100%</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Calculate the labor and opportunity costs for each good and country, show your work with correct notation</td>
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<tr>
<td>Compute the absolute advantage each good, show your work with correct notation</td>
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<tr>
<td>Explain which country has the absolute advantage in each good and justify</td>
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<tr>
<td>Compute comparative advantage for each good, show you work with correct notation</td>
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<tr>
<td>Explain which country has the comparative advantage for each good and justify</td>
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<tr>
<td>Describe what good each country should export and justify</td>
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<tr>
<td>Articulation of response (citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas.)</td>
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<td>Total:</td>
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</table>
**Worked Solution**

Absolute advantage is determined by which country can produce a product with the lowest labor cost.

The U.S. requires 10 units of labor to produce a unit of Oil. Saudi Arabia requires 8 units of labor to produce a unit of Oil. Thus, Saudi Arabia has an absolute advantage in the production of Oil.

The U.S. requires 30 units of labor per PC. Saudi Arabia requires 4 units of labor per PC. Thus, Saudi Arabia also has an absolute advantage in the production of PCs.

The opportunity cost of a PC in the U.S. is $30/10 = 3$ units of Oil.
The opportunity cost of a PC in Saudi Arabia is $4/8 = 0.5$ units of Oil. Since Saudi Arabia has the lower opportunity cost it has a comparative advantage in PCs.

The opportunity cost of a unit of Oil in the U.S. is $10/30 = 0.33$ PCs.
The opportunity cost of a unit of Oil in Saudi Arabia is $8/4 = 2$ units of Oil. Since the U.S. has a lower opportunity cost, it has a comparative advantage in Oil.

Thus, according to the figures in the table, Saudi Arabia should specialize in the production of and export PCs, while the U.S. should specialize in and export Oil.

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**Sample Assessment #4: Price Controls after an Ice Storm**

**Recommended Placement**: Micro or Macroeconomics course after Surplus

**Module Alignment**:

- Explicitly addresses Supply and Demand and Government Action
Implicitly addresses Surplus

Performance Assessment Description

In 2014, a major ice storm hit the southeastern U.S. The storm brought down power lines and trees, cutting electricity in many areas, making travel difficult, and slowing down repair crews. Heating homes became a major challenge. The storm created shortages of power generators. As a result, those products sold at prices much higher than normal. These high prices provoked cries of “price gouging” and calls on the government to impose price controls to prevent gouging. While no one likes to pay a higher price than normal for something, consider what would have happened with a price ceiling. The economic intuition is revealing.

Draw a diagram showing the market for generators with an equilibrium price at $250. Now impose a price ceiling at $200 per generator. What would be the impact of the price ceiling on the quantity demanded? On the quantity supplied? Who would benefit from the price ceiling and who would be harmed? Let the graph guide your thinking. Don’t start with your gut reaction! Did the price ceiling help the people it was designed to help? Explain the economic reasoning behind your analysis.

Sample Grading Rubric

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Not Evident (0%)</th>
<th>Developing (55%)</th>
<th>Proficient (80%)</th>
<th>Distinguished (100%)</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Analyze the consequences of the government setting a price ceiling</td>
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<tr>
<td>Graphically calculate a market’s equilibrium price and quantity</td>
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<tr>
<td>Graphically illustrate a market shortage</td>
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<tr>
<td>Calculate the impact of government regulations on price and quantity of a product produced</td>
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<td>20</td>
</tr>
<tr>
<td>Articulation of response (citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas.)</td>
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<td>20</td>
</tr>
</tbody>
</table>
**Worked Solution**

People often expect government to solve problems that they seem unable to solve on their own. Sometimes this is effective and sometimes it is not. Price controls, either price ceilings or price floors, often have unanticipated side effects. Think about it: Passing a law doesn’t by itself make economic problems go away! Such is the case with claims of price gouging, the charging of “excessively high” prices, which was exemplified by what occurred in the wake of an ice storm or other natural disasters.

![Diagram](image)

Imposing a price ceiling below the equilibrium price may create as many problems as it solves. The basic problem is that the demand for power generators is dramatically higher, since the supply of electricity was compromised. At the same time, the supply of generators was less as a result of storm damage and the inability to travel. The question is how to deal with the shortage, that is, how to allocate the limited supply of generators among competing needs and wants. When a price ceiling reduces the legal price of a product, businesses have less incentive to supply the product. Economically speaking,
the law of supply says that at lower prices, the quantity supplied will be lower. At the same time, the law of demand states that at a lower price, the quantity demanded will be higher. This can be seen clearly in the graph. So who gets the limited supply? As Shakespeare said, that is the question. Unfortunately, there is no clear answer to this. It could be first come, first serve. It could be friends of the seller. In many cases, what results are under-the-table payments by consumers willing to violate the law. What is certain is that fewer generators get to consumers than would be the case if the price were allowed to rise. Many would argue that this shortfall is not the best outcome.

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**Sample Assessment #5: Maximizing Utility of Pizzas and Twinkies**

**Recommended Placement:** Microeconomics course after Utility

**Module Alignment:**

- Explicitly addresses Utility
- Implicitly addresses None

**Performance Assessment Description**

Suppose that as a consumer you have $34 per month to spend for munchies, either on pizzas which cost $6 each or on Twinkies which cost $4 each. Suppose further that your preferences are given by the following total utility table.

**Total Utility Table for Pizzas and Twinkies**

| Count |
First, graph the budget constraint with Pizzas on the horizontal axis and Twinkies on the vertical axis. What are the intercepts and slope of the opportunity cost? Express the budget constraint as an algebraic equation for a line.

Next, use the utility maximizing rule to identify the consumer equilibrium, that is, what combination of Twinkies and Pizzas will maximize your total utility. Confirm that the consumer equilibrium generates the highest combined total utility of any affordable combination of goods.

**Sample Grading Rubric**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Not Evident</th>
<th>Developing</th>
<th>Proficient</th>
<th>Distinguished</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurately graphs the budget constraint</td>
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<td>55%</td>
<td>80%</td>
<td>100%</td>
<td>25</td>
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<tr>
<td>Correctly identifies the intercepts</td>
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<td></td>
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<td>5</td>
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<tr>
<td>Expressed the budget constraint as an algebraic equation for a line</td>
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<td>5</td>
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<tr>
<td>Graph the slope as the opportunity cost</td>
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<td>5</td>
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<tr>
<td>Calculate the consumer equilibrium using the utility maximizing rule</td>
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<tr>
<td>Explain the process used to confirm that the consumer equilibrium generated the highest combined total utility of any affordable combination of goods</td>
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<td>30</td>
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</tbody>
</table>
Worked Solution

Step 1: The Budget Constraint. With a budget of $34, the prices of Twinkies and Pizzas at $4 and $6, respectively, the consumer could purchase either $34/4 = 8.5$ Twinkies and no Pizzas, or $34/6 = 5.67$ Pizzas and no Twinkies. The equation for the budget constraint is thus: $\text{Pizzas} = \frac{6}{4} \text{Twinkies} + 5.67$, where the slope (1.5) indicates the opportunity cost of Pizza in terms of Twinkies.

Step 2: Initial Consumer Equilibrium. Computing the marginal utility of Pizza and Twinkies as the change in total utility for $Q = 1, 2, \ldots, 7$ yields the following:

Marginal Utility Table for Pizzas

<table>
<thead>
<tr>
<th>Number of Pizzas</th>
<th>TU</th>
<th>MU</th>
<th>MU/P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>60</td>
<td>60</td>
<td>60/6</td>
</tr>
<tr>
<td>2</td>
<td>108</td>
<td>48</td>
<td>48/6</td>
</tr>
<tr>
<td>3</td>
<td>138</td>
<td>30</td>
<td>30/6</td>
</tr>
<tr>
<td>4</td>
<td>156</td>
<td>8</td>
<td>8/6</td>
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<tr>
<td>5</td>
<td>162</td>
<td>6</td>
<td>6/6</td>
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<tr>
<td>6</td>
<td>166</td>
<td>4</td>
<td>4/6</td>
</tr>
<tr>
<td>7</td>
<td>166</td>
<td>0</td>
<td>0/6</td>
</tr>
</tbody>
</table>

Marginal Utility Table for Twinkies
To compare the two goods on a per dollar basis, the next step is to divide $MU$ by $P$, yielding the final rows. Now choose from highest $MU/P$ to lowest, until the budget is spent. The consumer equilibrium is 4 Twinkies and 3 Pizzas.

The sequence of purchases (in order of $MU/P$) is 1) a Twinkie, 2) a Pizza, 3) a Twinkie and a Pizza, 4) a Pizza, and 5) a Twinkie and a Pizza.

The student should note that with 4T, 3P, the consumer has exhausted their budget and the marginal utility per dollar spent is the same for both items. The total utility of this choice of purchases is $100+138 = 238$. No other set of affordable purchases yields more total utility.

Note: some students may be able to find the answer through trial and error, or even luck, but the process being assessed is more important than the numerical answer. Key issues are:

- Does the student compute $MU$ for each good?
- Does the student select purchases by comparing $MU$ per dollar of expenditure?
- Does the selected consumer equilibrium exhaust the budget?
Sample Assessment #6: Grocery Store Competition

Recommended Placement: Microeconomics course after Monopolistically Competitive Industry

Module Alignment:
- Explicitly addresses Monopolistically Competitive Industry
- *Implicitly addresses Perfect Competition, Monopoly and Oligopolies*

Performance Assessment Description

Suppose you manage a local grocery store and you learn that a very popular national grocery chain is about to open a store in your town a few miles away.

Use the model of monopolistic competition to analyze the impact of this new store on the quantity of output your store should produce (Q) and the price your store should charge (P). Note, we are assuming you each sell one representative good.

Explain how the opening of this new store may affect your business. Be sure to address what can happen to your customers, supply and demand, and prices. What will happen to your profits? Show graphically and explain your reasoning in detail. (e.g., how and why will your profits change? How can that be seen on the graph?)

Explain at least one strategy that could be used to defend your market share against the new store (e.g., address what you are going to do to keep your customers).

Sample Grading Rubric
<table>
<thead>
<tr>
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<th>Not Evident (0%)</th>
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<th>Proficient (80%)</th>
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<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate the quantity of output your store should produce, before and</td>
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<td>15</td>
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<tr>
<td>and after the new competitor, using the model of monopolistic competition</td>
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<tr>
<td>Calculate the price your store should charge, before and after the new</td>
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<tr>
<td>competitor, using the model of monopolistic competition</td>
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<tr>
<td>Explain the impact the new store will have on your profits using a</td>
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<td>graph that shows profits before and after as evidence</td>
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<td>Explain at least one strategy that could be used to defend your market</td>
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<td>share against the new store</td>
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**Worked Solution**

Start the analysis from a standard short run equilibrium in the monopolistic competition model showing a small, but positive economic profit.

The coming of the new grocery chain will be reflected as a decrease in demand for the local store’s product. This will cause a leftward shift in demand and marginal revenue, and a decrease in P & Q at the new equilibrium.

Profits will be smaller, since demand is less. To fight back, you might wish to launch an advertising campaign to promote your store’s products, but this will increase your costs. If the campaign is successful, demand will increase and MR will rise more than MC does. This can be shown graphically.
Sample Assessment #7: Wage and Labor Pressures

**Recommended Placement:** Microeconomics course after Income Distribution

**Module Alignment:**

- Explicitly addresses Income Distribution
- *Implicitly addresses Perfect Competition, Monopoly, Oligopolies and Monopolistically Competitive Industry*

**Performance Assessment Description**

Suppose you manage a firm, which is a monopsony in the labor market and a monopoly in the product market. Suppose another firm moves into your market, hiring from the same pool of workers and selling an identical product to the same set of customers. Use the model of monopsony to analyze the impact of the new firm on the quantity of output you produce (Q), the price your firm should charge (P), the quantity of workers you employ (L), and the wage you pay (W).

Show graphically and explain your reasoning in detail. For example, if wages change, how and why do they change the way you say? Complete the following:

- Create a graphic to illustrate producer equilibrium for monopsony in the labor market. Draw labor supply, labor demand and equilibrium for quantity of workers and wage.
- Create a graphic to illustrate producer equilibrium for monopoly in the product market. Draw monopsony producer equilibrium with downward sloping marginal revenue product curve, and upward sloping labor supply and marginal cost of labor.
- Conduct appropriate qualitative analysis based on the relationship of variables as they change, explain the impact and create a graphic to illustrate the results.

**Sample Grading Rubric**
Criteria | Not Evident 0% | Developing 55% | Proficient 80% | Distinguished 100% | Weight
--- | --- | --- | --- | --- | ---
Create a graphic to illustrate producer equilibrium for monopsony in the labor market |  |  |  |  | 10
Create a graphic to illustrate producer equilibrium for monopoly in the product market |  |  |  |  | 10
Explain the impact of the new firm on quantity of output produced and price charged using the model of monopsony, and justify |  |  |  |  | 20
Explain the impact of the new firm on quantity of workers you employ and the wage you pay using the model of monopsony, and justify |  |  |  |  | 20
Create a graphic to illustrate the results of your analysis of the impact of the new firm |  |  |  |  | 10
Explain the results of your analysis of the impact of the new firm and justify |  |  |  |  | 20
Articulation of response (citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas.) |  |  |  |  | 10
Total: |  |  |  |  | 100%

**Worked Solution**

This firm goes from a monopoly position both in employing labor and selling output to having competition in both arenas. Start the analysis using the standard model of monopsony, where the firm’s marginal revenue product is defined as marginal physical product x marginal revenue. Competition from the new firm is going to be reflected in two ways:

- First, as a leftward shift in the labor supply curve, because employees now have the option of another employer, and
• Second, as a leftward shift in the product demand curve, because customers now have another supplier. This translates into a leftward shift in the marginal revenue product (since a decrease in product demand, decreases MR).
• The effect of the first effect is to reduce employment (as some workers choose to work for the competition), and to increase wages (necessary to retain the remaining workers).
• The effect of the second effect is to reduce employment even more, and to reduce wages (since labor is worth less to the firm).
• Employment clearly falls. The effect on wages is indeterminate depending on whether the decreased demand or decreased supply dominates.

There are several elements to this problem. First, students need to demonstrate understanding of the initial equilibrium under monopsony, especially how to find the equilibrium wage and employment. Second, students need to demonstrate how the competition in the labor market will shift their labor supply curve, and its effect on wages and employment. Third, students need to demonstrate how the competition in the product market will shift their labor demand curve, and its effect on wages and employment. Finally, students need to combine the two to obtain the overall effect, noting especially that the effect on wages is unclear. They may get to this stage without noting the latter, simply drawing a conclusion for wages based on how they drew the graph.

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**Sample Assessment 8: Public Goods**

**Recommended Placement:** Microeconomics course after Public Goods

**Module Alignment:**

• Explicitly addresses Public Goods
• Implicitly addresses Supply & Demand

**Performance Assessment Description**
Public goods are often thought to be goods or services that are provided by the government, but that is confusing cause and effect. What are the characteristics of a public good? Hint: Who provides the public good is not one of the characteristics.

Consider open educational resources (OER), for example, open textbooks. These are available free online from companies like OpenStax College and Lumen Learning. Make a case for why OER can be considered public goods. Hint: Who covers the cost of providing these products and why is that relevant to your answer?

**Sample Grading Rubric**

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<th>Criteria</th>
<th>Not Evident</th>
<th>Developing 55%</th>
<th>Proficient 80%</th>
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<tr>
<td>Identifies one characteristic of public goods: Non-excludable</td>
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<td>Identifies one characteristic of public goods: Non-rivalrous</td>
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<td>Explains how OER has those characteristics</td>
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<td>Suggests ways of paying the costs of OER</td>
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<td>Articulation of response (citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas.)</td>
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**Worked Solution**

Public goods are goods and services that have two key characteristics: They are non-excludable and non-rivalrous. The first characteristic means that once the public good is provided, it is available for everyone to use (whether they pay for it or not). National defense, the classic example of a public good, protects everyone in the country. Once it’s provided, it’s provided for all. The second characteristic means that one person’s consumption or use of the public good doesn’t prevent other people from using it at the same time. An apple is a private good. If you eat the apple, no one else can. Public goods, like national defense, are usable by all simultaneously.
Now consider open educational resources. They have significant costs to develop, such as paying the author to write an open source book and editors to polish it, creating the online platform on which to host the book, etc. But once the OER is available, anyone can download a copy or use it, and one person’s consumption does not prevent other people from consuming it at the same time. Thus, OER are public goods! We know that public goods, because they are available for free, are under-produced by the market. Few individuals could afford to pay for national defense on their own, even if they were willing. Who pays the costs of creating OER? To date, most OER has been either created for free by the authors, or supported by private grants.