

Title: Use of Rubrics in Undergraduate Economics Courses
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“At its most basic, a rubric is a scoring tool that lays out the specific expectations for an assignment. Rubrics divide an assignment into its component parts and provide a detailed description of what constitutes acceptable and unacceptable levels of performance for each of those parts.” (Stevens and Levi in Introduction to Rubrics)

In my presentation, I will state and explain the benefits of using rubrics in economics courses. For example, rubrics:

- can more clearly convey instructors’ goals and expectations to students
- ease the grading of short answer questions
- can be used in class as part of active learning where students grade each other’s work
- can help instructors refine their own teaching skills
- can be used for outcome assessment

In addition, I will explain how to construct rubrics for various short answer questions of economics problems and applications and present two or three examples (See appendix below).

Customarily rubrics are not used as part of instruction and evaluation in economics courses. Those instructors that currently use them typically use them for grading writing/essay assignments or oral presentation. In my presentation I will show how rubrics can be used not only for grading short answer questions (SAQ), such as problems and applications, but can be used as an effective learning and teaching tool.

Too often instructors avoid SAQ because they are too time-consuming to grade and use multiple choice questions (MCQ) instead. While MCQ are very convenient to measure student understanding of economics, they emphasize recall and guessing. In addition, unlike SAQ, MCQ do not encourage students to develop their abilities to present their ideas clearly by drawing graphs and diagrams, write clear and concise explanations.¹ With the use of rubrics we can significantly speed up the process of grading SAQ while providing students with valuable feedback.

Not only can rubrics be used to evaluate students’ knowledge, they can also serve as a valuable teaching and learning tool.² In class we can assign a problem and ask students to grade each other’s work by using an assigned rubric. After the students complete their answers, collect their work, and randomly

¹ Based on a recent survey of employers conducted by Hart Research (2010), 89% of employers said that that colleges should place a greater emphasis on developing students’ ability to communicate effectively, orally and in writing. The top five areas in which employers feel that colleges most need to increase their focus include 1) written and oral communication (89%), 2) critical thinking and analytical reasoning skills (81%), 3) the ability to apply knowledge and real-world setting through internship or other hands-on experiences (79%), 4) the ability to analyze and solve complex problems (75%), and 5) the ability to connect choices and actions to ethical decisions (75%).

² Walstad and Becker (1994) have found no differences in using MCQ or SAQ to measure students’ knowledge. However, according to Funk and Dickson (2011) performance on multiple-choice exams may provide inaccurate information to instructors concerning student learning and overestimate students’ learning of course information.

distribute the completed assignments back to the students.³ Work out the problem on the board and explain the rubric. Then ask students to evaluate the assignment that they have received. This way grading is done by your students (and not you), students obtain quick feedback, students learn from reading and evaluating someone else's work about the expectations and how to read/use the rubric. Most importantly they learn not to make the same errors in their own future work. It is often the case that we can more easily detect someone else's mistake than our own.

In addition, rubrics can help us to refine our own teaching skills. The act of constructing a well formulated rubric forces the instructor to carefully think about the steps involved in solving a complex problem which in turn can lead to more effective teaching and instruction. In addition, rubrics reveal details of what students may or may not have learned. By breaking each question down to smaller parts, we can now pinpoint the areas or skills that students are struggling with. This might not be obvious by simply tallying up the score for the entire question. With this information on hand, we can tailor our lectures to focus on the areas that students need additional help with.

Finally, the use of rubrics can be used as an effective outcome-assessment tool. The same rubric can be used by different instructors so that even when instructors are not using the same questions, rubric scores can still be compared and combined for the entire department and be used for the departmental outcome-assessment project.

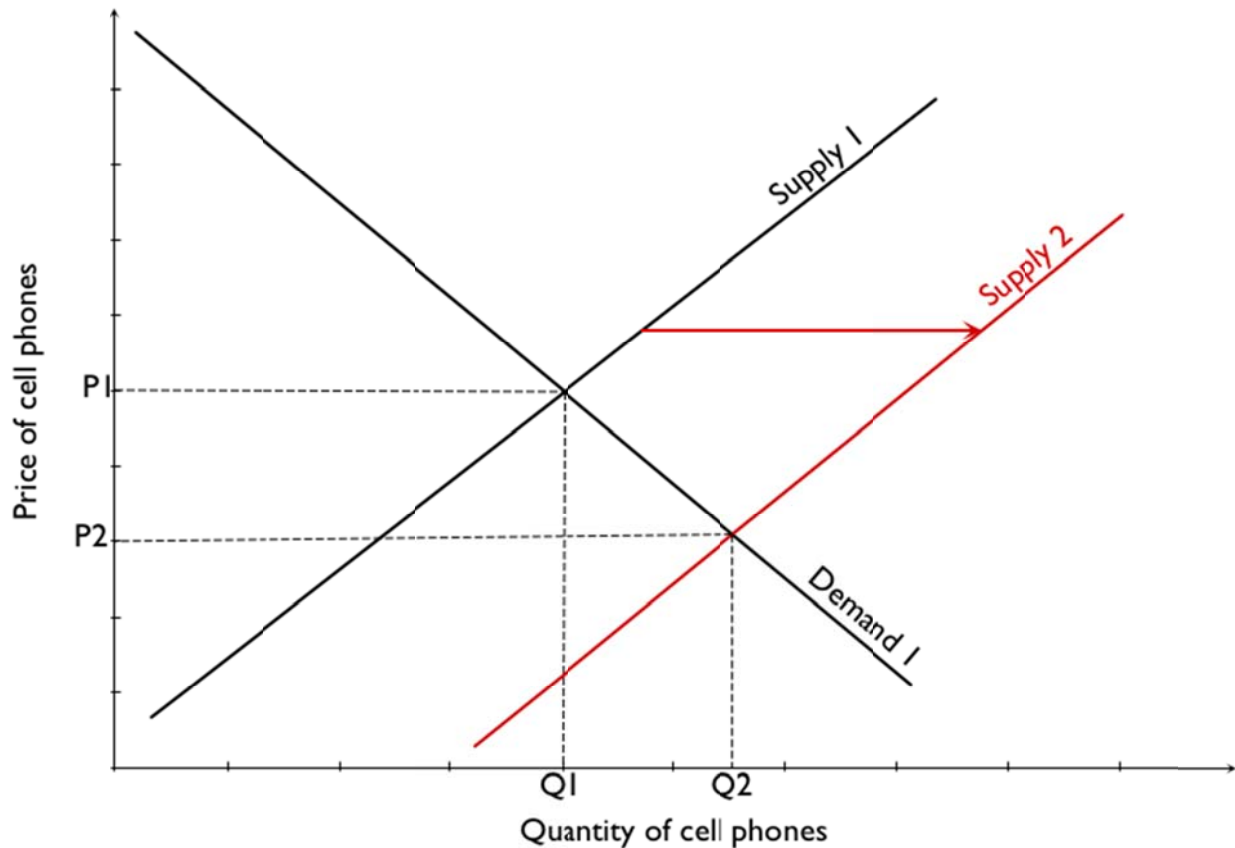
³ To preserve anonymity, you might ask students to use a specified code instead of using their real name.

APPENDIX

Sample Question for Introduction to Microeconomics:

Consider the perfectly competitive market for Cell Phones in the United States. Suppose that a new technological innovation makes the production of cell phones cheaper. On a clearly labeled supply and demand graph show what happens to the equilibrium price and quantity. In addition, write a brief explanation that states which curve or curves (if any) shift and why.

Answer:



Explanation:

Original equilibrium is where Supply 1 and Demand 1 intersect with equilibrium prices P_1 and equilibrium quantity Q_1 . Because of the technological innovation, the supply curve moves to the right, since this event makes production more profitable and suppliers wish to supply more cell phones at any given price. As a result, the new equilibrium is where the new supply curve (Supply 2) intersects the old demand curve (Demand 1) with lower equilibrium price (P_2) and higher equilibrium quantity (Q_2).

Rubric:

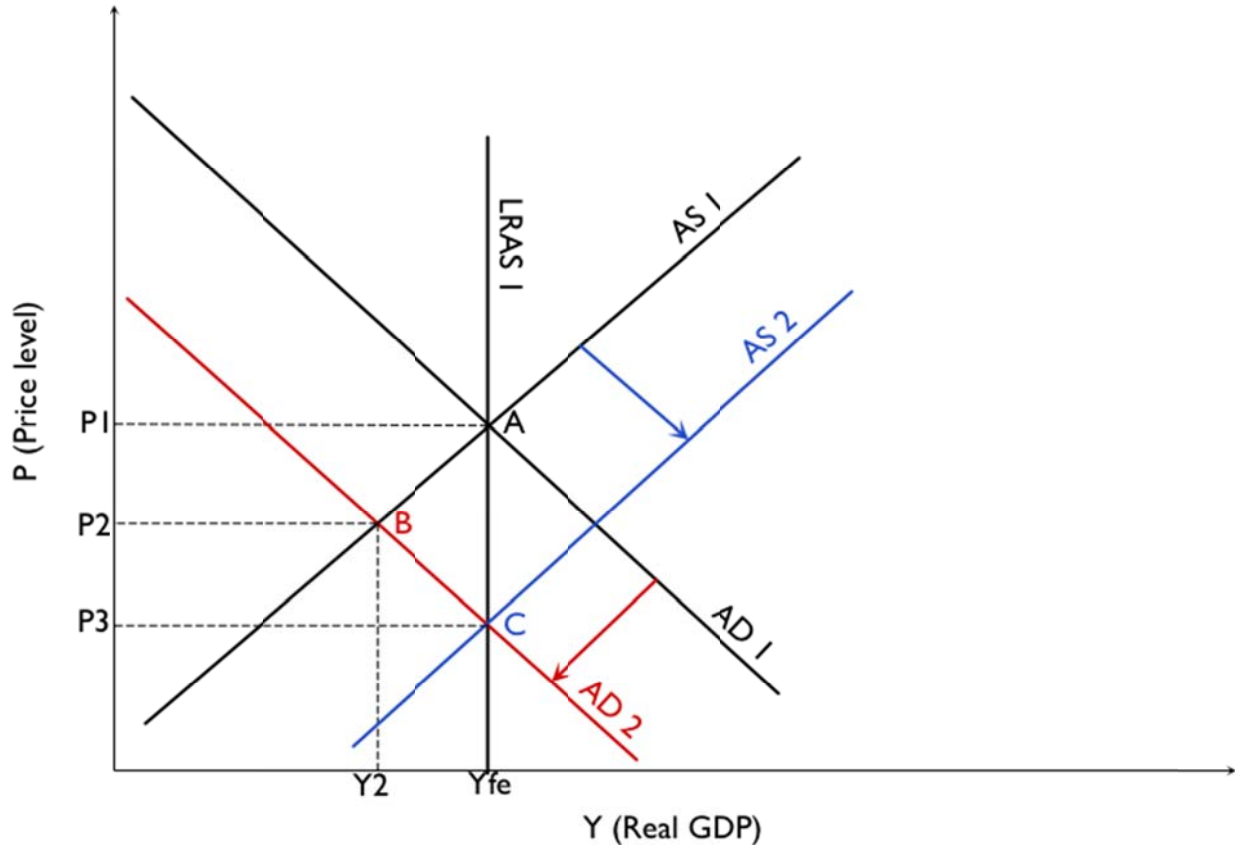
Dimensions	Exemplary	Competent	Unacceptable
Graph Labeling 10%	- All axes are correctly labeled with relevant numbers and units. If possible, the graph is drawn to scale. - If abbreviations are used, it is clear what the abbreviations stand for.	- Some axes are labeled. - Some units are correct. - Some numbers are correct. - If abbreviations are used, it is not clear what they stand for.	-There are no labels. -There are no units or numbers.
Supply Curve 10%	Supply curve has the correct shape (typically upward sloping) and location.	Supply curve does not have the correct shape.	There is no supply curve.
Demand Curve 10%	Demand curve has the correct shape (typically downward sloping) and location.	Demand curve does not have the correct shape.	There is no demand curve.
Original Equilibrium 10%	Original equilibrium is properly located and marked (i.e. with P1 and Q1).	Original equilibrium is not properly located or marked (i.e. with P1 and Q1).	It is not clear where the original equilibrium is.
Shifts in the Curves 10%	- The correct curves shift. - If none of the curves shift it is clearly stated that this is the case.	- Incorrect curves shift. - If none of the curves shift it is clearly stated that this is the case.	- It is not clear at all which curves shift. OR - None of the curve shift. OR - If the answer is that none of the curves shift, this is not clearly stated or incorrect curves shift.
Shifts in the Curves 10%	The curves shift in the correct direction.	The curves shift but in wrong direction.	- It is not clear at all which curves shift. OR - None of the curve shift. OR - If the answer is that none of the curves shift, this is not clearly stated or incorrect curves shift.
New Equilibrium 20%	New equilibrium is properly located and marked (i.e. with P2 and Q3).	New equilibrium is not properly located or marked (i.e. with P2 and Q3).	It is not clear where the new equilibrium is.
Explanation 20%	- The description of the graph is clearly written. - The explanation of the curve shift is given. - It is clearly stated what happens to the equilibrium price and quantity.	-There is some description of the graph, but it is very short and incomplete. - It is not clear why the curve has shifted. - It is not completely clear what happens to the equilibrium price and quantity.	-There is no explanation of the graph or it is incomprehensible.

Sample Question for Introduction to Macroeconomics:

Draw the AD-SRAS-LRAS diagram for the U.S. economy starting in a long-run equilibrium.

Suppose that there is a stock market crash. Use your diagram to determine the Short-Run and Long-Run effects on U.S. GDP, the price level, and unemployment in the absence of any policy intervention. In addition to a fully labeled diagram, your answer should include a brief explanation of your diagram.

Answer:



Explanation:

The economy starts in the long run equilibrium represented by point A at the intersection of AD 1, AS 1, and LRAS 1 with price level P_1 and at the full level of employment (Y_{fe}). The stock market crash reduces consumers' wealth, which depresses their spending. The AD curve shifts to the left. The new short run equilibrium is at point B at the intersection of AS 1 and new AD 2. At this point, price levels are lower (deflation), real GDP is lower and as a result unemployment is higher. At point B actual prices are lower than expected prices. Over time, expected prices fall, wages fall, and sticky prices become flexible and fall. The SRAS curve moves rightward. This process continues until the economy arrives at point C, where GDP and unemployment are back at their natural rates at full level of employment but with lower level of overall prices.

Rubric:

Dimensions	Exemplary	Competent	Unacceptable
Graph Labeling 5%	- All axes are correctly labeled with relevant numbers and units. If possible, the graph is drawn to scale. - If abbreviations are used, it is clear what the abbreviations stand for.	- Some axes are labeled. - Some units are correct. - Some numbers are correct. - If abbreviations are used, it is not clear what they stand for.	-There are no labels. -There are no units or numbers.
Original Equilibrium 5%	Original equilibrium is properly located and marked (i.e. with P1 and Yfe, letter A).	Original equilibrium is not properly located or marked (i.e. with P1 and Yfe).	It is not clear where the original equilibrium is.
Short Run Shifts in the Curves 10%	- The correct curves shift. - If none of the curves shift it is clearly stated that this is the case.	- Incorrect curves shift. - If none of the curves shift it is clearly stated that this is the case.	- It is not clear at all which curves shift. OR - None of the curve shift. OR - If the answer is that none of the curves shift, this is not clearly stated or incorrect curves shift.
Short Run Shifts in the Curves 10%	The curves shift in the correct direction.	The curves shift but in wrong direction.	- It is not clear at all which curves shift. OR - None of the curve shift. OR - If the answer is that none of the curves shift, this is not clearly stated or incorrect curves shift.
New Short Run Equilibrium 20%	New equilibrium is properly located and marked (i.e. with P2 and Y2, point B).	New equilibrium is not properly located or marked (i.e. with P2 and Y2, point B).	It is not clear where the new equilibrium is.
Long Run Shifts in the Curves 10%	- The correct curves shift. - If none of the curves shift it is clearly stated that this is the case.	- Incorrect curves shift. - If none of the curves shift it is clearly stated that this is the case.	- It is not clear at all which curves shift. OR - None of the curve shift. OR - If the answer is that none of the curves shift, this is not clearly stated or incorrect curves shift.
Long Run Shifts in the Curves 10%	The curves shift in the correct direction.	The curves shift but in wrong direction.	- It is not clear at all which curves shift. OR - None of the curve shift. OR - If the answer is that none of the curves shift, this is not clearly stated or incorrect curves shift.
Explanation 30%	- The description of the graph is clearly written.	-There is some description of the graph, but it is very	-There is no explanation of the graph or it is

	<ul style="list-style-type: none">- The explanation of the curve shift is given.- It is clearly stated what happens to the equilibrium price and quantity.	<p>short and incomplete.</p> <ul style="list-style-type: none">- It is not clear why the curve has shifted.- It is not completely clear what happens to the equilibrium price and quantity.	<p>incomprehensible.</p>
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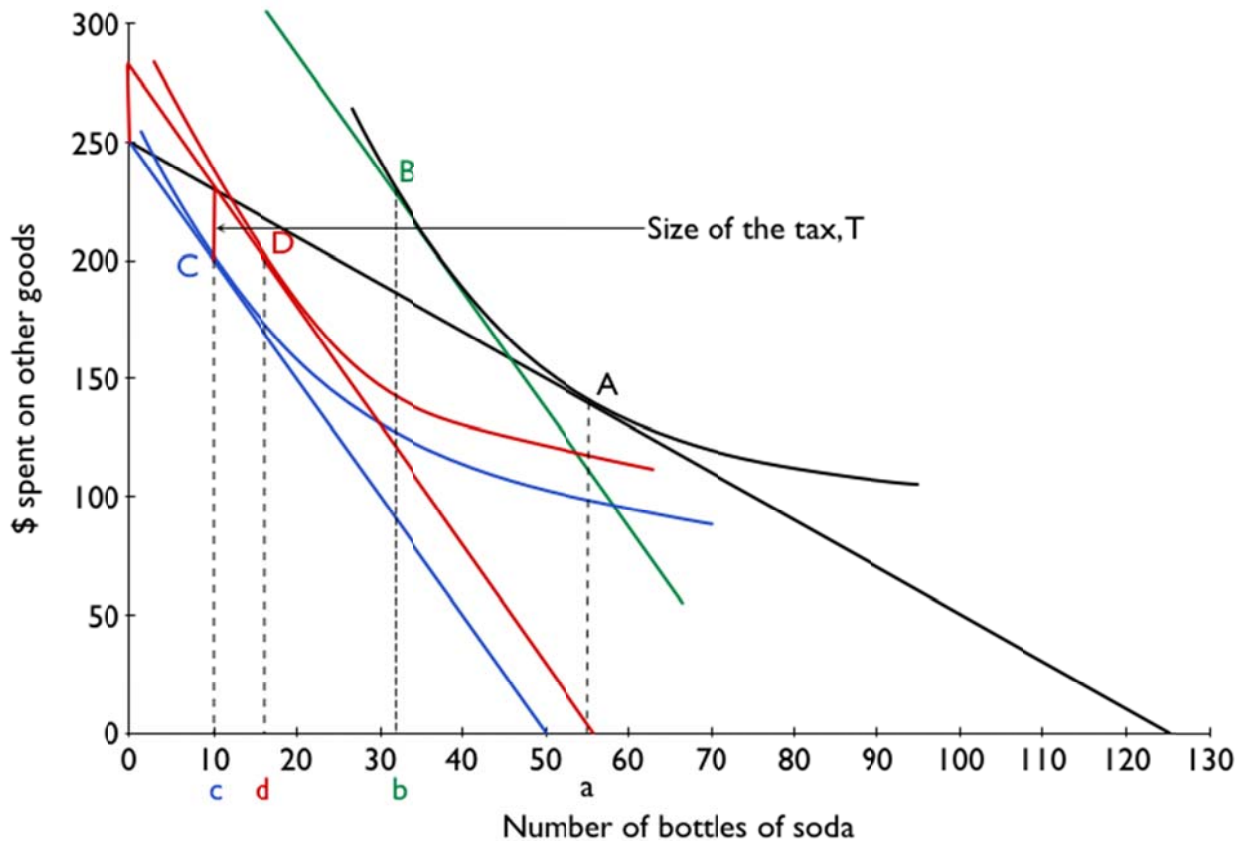
Sample Question for Intermediate Microeconomics:

Given the concerns about obesity epidemic in the US, many have proposed increasing the tax on sugary soda drinks. Suppose a consumer has weekly income of \$250 and suppose the price of a bottle of soda is \$2.

- a. Illustrate the consumer's budget constraint with "number of bottles of soda" per year on the horizontal axis and "dollars spent on other goods" on the vertical. Then illustrate how this changes if the government imposes a tax on price of soda drinks that raises the price per bottle of soda to \$5.00. Clearly show the income and substitution effect, assuming soda drinks are a **normal good**.
- b. Illustrate in your graph how much in soda taxes this consumer is paying and call this amount T.
- c. One of the concerns about using soda taxes to combat obesity is that it will impose hardship on consumers (and, perhaps more importantly, voters). Some have therefore suggested that the government simply rebate all revenues from the soda tax to taxpayers. Suppose that our consumer receives a rebate of exactly T. Illustrate how this alters the budget of our consumer.
- d. Can you tell whether the tax/rebate policy is successful at getting our consumer to consume less sodas than she would were there neither the tax nor the rebate?
- e. True or False: Since the government is giving back in the form of a rebate exactly the same amount as it collected in soda taxes from our consumer, the consumer is made no better or worse off from the tax/rebate policy. Explain.

Note: To make the graph a bit more readable, you should include only the relevant quantities for soda and ignore the ones for other goods.

Answer:



Explanation:

- The black lines represent the original budget constraint and indifference curve, with point A representing the original optimal consumption bundle.
- Movement from point A to point B shows the substitution effect. Since soda is now effectively more expensive as a result of the tax, consumer is substituting away from it towards consumption of other goods.
- Given the introduction of a tax on soda, consumer feels as if her income has decreased. Since both soda and other goods are assumed to be normal, she will buy less of both soda and other goods. This income effect is shown as the movement from point B to point C. Point C with the blue budget constraint and indifference curve shows the new optimal consumption bundle that this consumer will purchase after the introduction of the tax.
- The red vertical line on the graph shows the amount of the tax that this consumer is paying given her optimal consumption bundle, C.
- If the tax is fully rebated back to the consumer, the budget constraint will move from the blue line to the red line. Notice that the two lines are parallel, since the relative prices have not changed. Given this new budget constraint and the assumption of both goods being normal, this consumer will find her new optimal consumption bundle to be at point D.
- It is obvious from the graph, that the consumer is drinking less soda after the tax is imposed ($c < a$). In addition, we see that with the tax/rebate program, this consumer is still consuming less soda compared to no policy ($d < a$) but slightly more soda compared to the policy with only the tax ($d > c$).
- Policy Evaluation: False. While it is true that the consumer gets back the dollars she sent to the government as tax payment, she nevertheless ends up on a lower indifference curve than the pre-tax, pre-rebate indifference curve. This is obvious from the graph, notice that point D (the optimal consumption bundle with the red tax/rebate budget line) is on a lower indifference curve than original consumption bundle, point A. Thus, the consumer is worse off as a result of the tax/rebate. This ignores any potential benefit to the consumer from potentially lower body mass index that might result from this policy.

Rubric:

Dimensions	Exemplary	Competent	Unacceptable
Graph Labeling	<ul style="list-style-type: none"> - All axes are correctly labeled with relevant numbers and units. If possible, the graph is drawn to scale. - If abbreviations are used, it is clear what the abbreviations stand for. 	<ul style="list-style-type: none"> - Some axes are labeled. - Some units are correct. - Some numbers are correct. - If abbreviations are used, it is not clear what they stand for. 	<ul style="list-style-type: none"> -There are no labels. -There are no units or numbers.
Original Budget Constraint	<ul style="list-style-type: none"> -Budget constraint is correctly drawn. -The two intercepts are clearly labeled. -If no specific numbers are given in the question, the intercepts are marked in fraction (i.e. $1/P1$). 	<ul style="list-style-type: none"> -Budget constraint has the correct shape, but the intercepts are not correctly labeled. 	<ul style="list-style-type: none"> -The budget constraint is not drawn or cannot be identified on the graph.
Indifference Curve	<ul style="list-style-type: none"> - The indifference curves have a correct shape based on the assumptions. - They are properly labeled or described. - They do not cross and satisfy all standard assumptions. 	<ul style="list-style-type: none"> -The indifference curves resemble the correct shape, but violate some of the standard assumptions or the indifference curves do not violate standard assumptions, but are not drawn based on the assumptions given in the question. 	<ul style="list-style-type: none"> -There are no indifference curves or cannot be identified on the graph.
Original Optimal Consumption Bundle	<ul style="list-style-type: none"> -Original consumption bundle is clearly labeled (i.e. point A, OCB1, etc). -It is also correctly located (i.e. at the tangency point or the corner solution). -The original quantities on the x and y axis are also clearly marked. 	<ul style="list-style-type: none"> -Original consumption bundle is clearly labeled, but it is at the incorrect location. OR -Original consumption bundle is at the correct location, but it is not clearly labeled. OR -The x and y axis are not clearly marked. 	<ul style="list-style-type: none"> -It is not clear, where the original consumption bundle is and what the original x and y quantities are.
New Budget Constraint	<ul style="list-style-type: none"> -Budget constraint is correctly drawn. -The two intercepts are clearly labeled. -If no specific numbers are given in the question, the intercepts are marked in fraction (i.e. $1/P2$). 	<ul style="list-style-type: none"> -Budget constraint has the correct shape, but the intercepts are not correctly labeled. 	<ul style="list-style-type: none"> -The budget constraint is not drawn or cannot be identified on the graph.

Dimensions	Exemplary	Competent	Unacceptable
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Substitution Effect	<ul style="list-style-type: none"> -The substitution effect is properly identified and located (i.e. as the point where the line parallel to the new budget constraint is tangent to the original indifference curve, if possible). -The new quantities on the x and y axis are also clearly marked. 	<ul style="list-style-type: none"> -The substitution effect is identified, but it is not correctly located (i.e. not on the correct indifference curve, or in the correct direction, etc.) -The new quantities on the x and y axis may also be missing. 	<ul style="list-style-type: none"> -There is no indication what the impact of the substitution effect is.
Income/Wealth Effect	<ul style="list-style-type: none"> -The income/wealth effect is properly identified and located based on the assumptions given in the question. - The new quantities on the x and y axis are also clearly marked. 	<ul style="list-style-type: none"> -The income/wealth effect is identified but it is not correctly located. -In addition, the new quantities on the x and y axis may be also missing. 	<ul style="list-style-type: none"> -There is no indication what the impact of the income/wealth effect is.
Explanation	<ul style="list-style-type: none"> - The description of the graph is clearly written. -The substitution and income/wealth effect are described, as well as their impact on x and y quantities. -The explanation for their location is given (i.e. how the assumptions in the question related to the observed movements). 	<ul style="list-style-type: none"> -There is some description of the graph, but it is very short and incomplete. -It is not clear what is the impact of substitution and income/wealth effect on quantities. -It is not clear what the reason is for observed changes in the graph (i.e. no connection to the assumptions stated in the question). 	<ul style="list-style-type: none"> -There is no explanation of the graph or it is incomprehensible.
Explanation and evaluation of the policy	<ul style="list-style-type: none"> - The effects of the policy are clearly stated. 	<ul style="list-style-type: none"> - Some effects are stated but are not complete or are partially incorrect. 	<ul style="list-style-type: none"> -There is no explanation and evaluation of the policy