

Microeconomics, budget line, final exam practice problems

(The attached PDF file has better formatting.)

*Question 1.1: Slope of Budget Line

- ~ In 20X7, a loaf of bread costs \$1.50 and a flask of wine costs \$6.00. A consumer with \$120 buys 40 loaves of bread and 10 flasks of wine.
- ~ In 20X8, a loaf of bread costs \$1.80 and a flask of wine costs \$8.00. The same consumer now has \$160.

Which of the following is true? (Assume that *better off* means the *same or better off*; *worse off* means the *same or worse off*. That is, assume that *better off* means *not worse off*; *worse off* means *not better off*.)

- A. The consumer is better off.
- B. The consumer is worse off.
- C. The consumer is better off if he prefers bread and worse off if he prefers wine.
- D. The consumer is worse off if he prefers bread and better off if he prefers wine.
- E. The consumer is neither better off nor worse off.

Answer 1.1: A

- ~ In 20X7, $40 \text{ loaves of bread} \times \$1.50 + 10 \text{ flasks of wine} \times \$6.00 = \$120$.
- ~ In 20X8, $40 \text{ loaves of bread} \times \$1.80 + 10 \text{ flasks of wine} \times \$8.00 = \$152$.

In 20X8, the consumer can still buy 40 loaves of bread and 10 flasks of wine and has \$8 left over.

- ~ A consumer who wants more wine can now buy 11 flasks of wine.
- ~ A consumer who wants more bread can now buy 44 loaves of bread.

*Question 1.2: Slope of Budget Line

The slope of the budget line changes, with the horizontal intercept remaining fixed, when

- A. The consumer's income increases
- B. The consumer's income decreases
- C. The price of the good on the horizontal axis changes
- D. The price of the good on the vertical axis changes
- E. The consumer's tastes change

Answer 1.2: D

The horizontal intercept is the income divided by the price of the good on the horizontal axis. If the horizontal intercept remains fixed, the price of the good on the horizontal axis remains the same (in real terms), but the price of the good on the vertical axis may have changed.

If the ratio of the prices changes, the slope of the budget line changes.

Jacob: We use relative prices in microeconomics, not dollar prices. If there are only two goods, a change in the price of one good is a change in the price of the other good.

Rachel: Landsburg uses this wording. The problem shows how the budget line is drawn.

*Question 1.3: Slope of Budget Line

A budget line has bread on the horizontal axis and wine on the vertical axis. Suppose the price of bread drops 50%, the price of wine doubles, and the consumer's income triples. Which of the following is true?

- A. The budget line becomes steeper and moves away from the origin.
- B. The budget line becomes steeper and moves toward from the origin.
- C. The budget line becomes flatter and moves away from the origin.
- D. The budget line becomes flatter and moves toward from the origin.
- E. The budget line is not affected by the items listed in this question.

Answer 1.3: C

The consumer's income increases more than the price of the goods, so the budget line moves away from the origin.

Bread is on the horizontal axis and wine is on the vertical axis.

- ~ The price of bread decreases 50%, so the horizontal intercept increases 6-fold.
- ~ The price of wine double, so the vertical intercept increases by $3/2 = 1.5$ times.

The budget line becomes flatter.

*Question 1.4: Slope of the Budget Line

Bread is on the horizontal axis and wine is on the vertical axis in the consumer-choice diagram. P_B is the price of a loaf of bread, P_W is the price of a flask of wine, and I is the consumer's income. Bread and wine are the only two goods on which income is spent.

Prices are \$1.50 for a loaf of bread and \$6.00 for a flask of wine. The slope of the budget line is

- A. -1
- B. $-\frac{1}{4}$
- C. 0
- D. $\frac{1}{4}$
- E. 1

Answer 1.4: B

The slope of the budget line is $-P_x/P_y = -\$1.50 / \$6.00 = -\frac{1}{4}$. The slope of the budget line is the marginal price of one good in terms of the other, not the marginal utility. Since the prices of the goods do not depend on how much the person consumes, the slope of the budget line is constant. In contrast, the slope of the indifference curve varies all along the curve, since the marginal utility of each good depends on how much the person consumes.

*Question 1.5: Slope of the Budget Line

Let B = a loaf of bread and W = a flask of wine. A loaf of bread (B) costs \$1.50 and a flask of wine (W) costs \$6.00. At the equilibrium point, a consumer is on the indifference curve $B \times W = 4$. How much does the consumer spend on bread and wine combined?

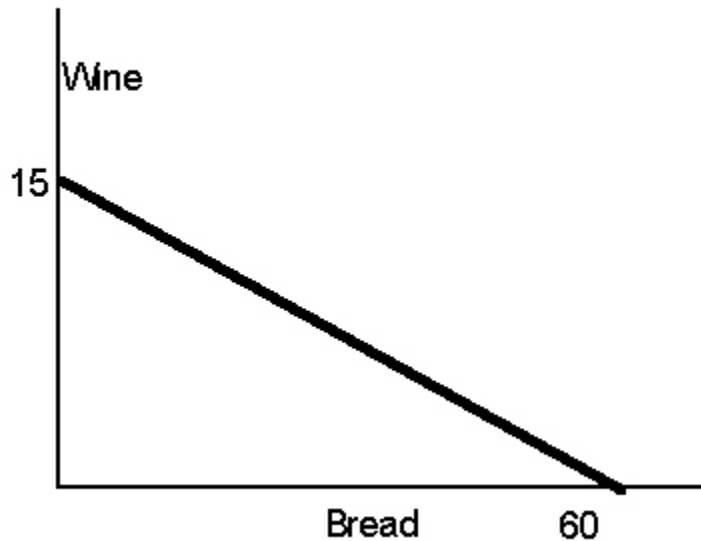
- A. \$7.50
- B. \$12.00
- C. \$15.00
- D. \$30.00
- E. \$33.00

Answer 1.5: B

The indifference curve may be written as $W = 4/B$, so $\partial W/\partial B = -4/B^2$. The slope of the indifference curve is the negative of the ratio of the prices $= -P_B/P_W$. Work out the number of units of bread and wine that the consumer buys.

*Question 1.6: Bread and Wine Budget Line

The budget line below shows the combinations of bread and wine a consumer can buy. A loaf of bread costs \$5, a flask of wine costs \$20, and the consumer's income is \$300.



- A. The slope of the budget line is +0.250.
- B. The slope of the budget line is -0.250 .
- C. The slope of the budget line is +4.000.
- D. The slope of the budget line is -4.000 .
- E. The slope of the budget line depends on the quantity, ranging from -0.250 to -4.000 .

Answer 1.6: B

The slope is $-P_x / P_y$.

*Question 1.7: Bread and Wine Budget Line

A consumer spends all his income on bread and wine. A loaf of bread costs \$2.00, a flask of wine costs \$8.00, and the consumer's income is \$120.

Suppose the consumer's income changes to \$160 and the price of a loaf of bread changes to \$1.60. Which of the following is true? Assume that both bread and wine are normal goods when examined separately.

- A. After the change, the consumer buys more bread and less wine.
- B. After the change, the consumer buys more bread and more wine.
- C. After the change, the consumer buys less bread and more wine.
- D. After the change, the consumer buys more bread but may buy more or less wine.
- E. After the change, the consumer buys more wine but may buy more or less bread.

Answer 1.7: D

The consumer's income in real terms has increased; the relative price of bread has decreased; and the relative price of wine has increased.

Income increased and the price of a loaf of bread decreased, so the consumer buys more bread. The consumer may buy more or less wine; we cannot know from the information provided.

*Question 1.8:

Bread is an inferior good for Jacob and wine is a normal good. In 20X7, Jacob buys 4 loaves of bread and 4 flasks of wine a week. From 20X7 to 20X8, Jacob's income rises from \$1,000 a month to \$1,200 a month. Inflation from 20X7 to 20X8 is 10%. In 20X8, Jacob still buys 4 loaves of bread and 4 flasks of wine a week. Which of the following explains this scenario?

- A. The price of bread rises 5% and the price of wine rises 10%.
- B. The price of bread falls 5% and the price of wine rises 5%.
- C. The price of bread rises 15% and the price of wine stays the same.
- D. The price of bread stays the same and the price of wine rises 20%.
- E. The prices of both bread and wine rise 10%.

Answer 1.8: D

Jacob's income rises 20% and inflation is 10%, so Jacob is wealthier.

- Bread is an inferior good, so Jacob should buy less bread.
- Wine is a normal good, so Jacob should buy more wine.

Jacob's purchases of bread and wine do not change, so we infer that

- Bread has declined in price, after adjusting for inflation. That is, it declines in dollar price, or it increases less than 10%.
- Bread has increased in price, after adjusting for inflation. That is, it increases more than 10%.

*Question 1.9: Budget Line and Inflation

An economy sells only two goods, bread and wine. If all prices increase 10% because of inflation and consumer's income increases 5% in *nominal* dollars, the budget line will

- A. Shift parallel away from the origin
- B. Shift parallel towards the origin
- C. Shift upwards
- D. Shift downwards

E. Remain unchanged

Answer 1.9: B

Relative prices of good do not change, so the slope of the budget line does not change.

Real income declines by $1.10 / 1.05 = 1.048 \approx 5\%$, so the budget line shift *inward*.

*Question 1.10: Steepness of Budget Line

Bread is on the horizontal axis and wine is on the vertical axis in the consumer-choice diagram. Which of the following makes the budget line steeper? (Steeper means more vertical, or a higher absolute value of the slope.)

- A. A rise in the consumer's income.
- B. A rise in the consumer's marginal value of bread in terms of wine.
- C. A rise in the consumer's marginal value of wine in terms of bread.
- D. A rise in the relative price of bread.
- E. A rise in the relative price of wine.

Answer 1.10: D

The indifference curve deals with the marginal value of one good in terms of another. The budget line deals with relative prices.

*Question 1.11: Budget Lines

All but which of the following are true regarding budget lines?

- A. Points to the left and below the budget line are within the consumer's budget.
- B. The slope of the budget line is the negative of the relative prices of the two goods.
- C. Budget lines for two economic goods slope downward.
- D. Each consumer has an infinite number of budget lines that cover the plane.
- E. All of A, B, C, and D are true.

Answer 1.11: D

Each consumer has a single budget line.