

**MID-TERM EXAMINATION**NAME: **ANSWER KEY (FOR EXAM VERSION A)****Part I. True/False Questions** (enter T or F in each box) **(3 pts each, this page out of 120)**-- The website for this class ([www.agecon.purdue.edu/academic/agec340](http://www.agecon.purdue.edu/academic/agec340)) contains: class slides     answer keys     project guidelines     the syllabus-- The Blackboard site for this class (using your password at [blackboard.purdue.edu](http://blackboard.purdue.edu)) contains: grades     link to upload project     link to iTunes lectures     class slides

-- The literature review project for this course must be submitted:

 on paper by 4/23 at 5 pm     uploaded by 4/23 at 5 pm     emailed by 4/23 at 5 pm

-- The economics methods used so far in this course (weeks 1-8):

 explain prices     take prices as given     ignore prices     use price ratios

-- The economics methods seen so far in this course (weeks 1-8) have focused on:

 demand curves     input response curves     supply curves     Engel curves

-- The economics methods seen so far in this course (weeks 1-8) use:

 IRCs     PPFs     isoquants     iso-profit lines

-- Economists use “purchasing power parity” (PPP) prices to make comparisons:

 among countries     among outputs     among inputs     among years

-- In today’s rich countries, demographic transition and population growth was started by:

 rising birth rates     falling death rates     modern medicine     better nutrition

-- At the start of demographic transition, life expectancy rises mainly due to fewer deaths among:

 children (0-5 yrs.)     youth (6-15 yrs.)     adults (16-60)     the elderly (60+)

-- In the US today, continued economic growth and structural transformation involves:

 a steadily falling number of farms     a steadily rising number of farms     neither

**Part II. Economic Analysis**

Despite this year’s difficult job market, you’ve been hired by WalMart to help manage dairy marketing and procurement for their expansion into Latin America. Fortunately, you took AGECEC 340 and can use economics to explain and predict some big changes in the market.

**(1) Food demand (40 pts total)**

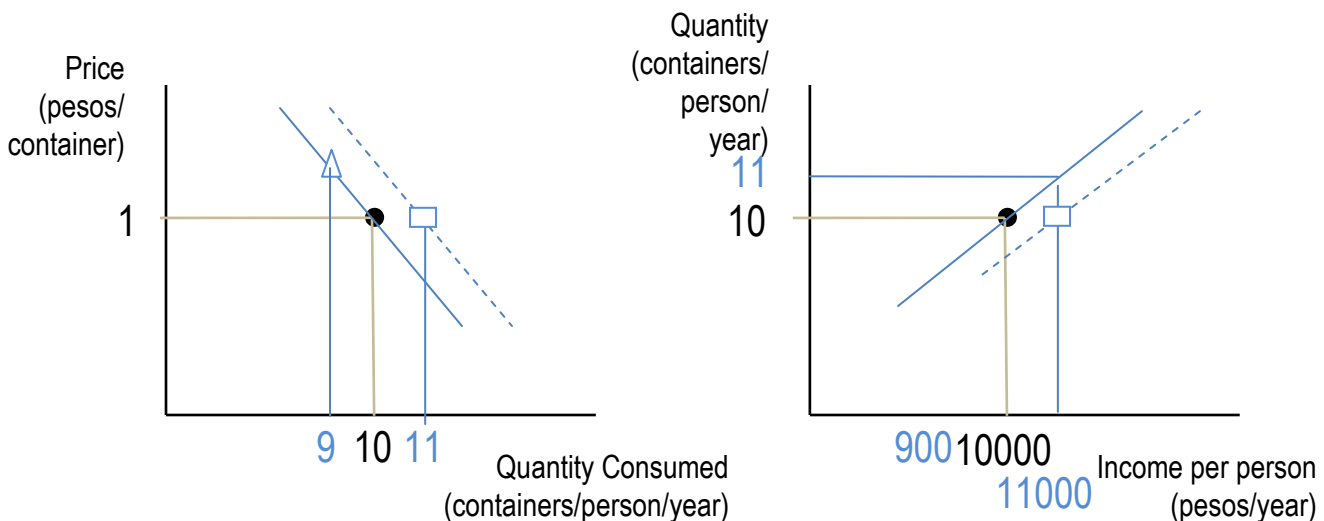
Your first challenge is to explain and predict changes in consumer demand for butter. The country to which you are first assigned just happens to consume 10 containers per person annually, at a price of 1 peso per container, when people have an average income per person of 10,000 pesos per year. This situation is already drawn on the charts below. Predicting changes is made easier because these are round numbers, and also because butter consumption accounts for a very small fraction of income so changes in price have a negligible effect on income and vice-versa.

-- From previous estimates you reckon that the **price elasticity** of demand for butter is -1. Using that information, please draw **a solid line** showing a demand curve with this elasticity, on whichever diagram is appropriate, draw **a triangle** at the point on that line when the price has risen by 10% per container, and then **write that price and quantity** to label this point appropriately on each axis.

-- Also from previous estimates, you think **the income elasticity** of demand for butter is +1. From that please draw **a solid line** showing an Engel curve with this elasticity, on whichever diagram is appropriate, draw **a triangle** at the point on that line when the income per capita per year has risen by 10%, and then **write that income and quantity** to label this point appropriately on each axis.

-- Now, use **a dashed line** to show the new demand curve that would arise if income rose by 10%, draw **a square** to show the point that corresponds to the original price (marked by a dot) and the new income level, and then **write that new quantity** to label this point on the appropriate axis.

-- Also use **a dashed line** to show the new Engel curve that would arise if prices rose by 10%, and draw **a square** to show the point that corresponds to the original income level (marked by a dot) and the new price, and then **write that new quantity** to label this point on the appropriate axis.



**(2) Food supply**

**(40 pts total)**

Your second challenge is to explain and predict changes in the production of two major kinds of cheese: cheddar and swiss, both of which are produced with milk as their main ingredient. Again, you start with an observation of the current situation, which happens to be a national total of 100 truckloads of cheddar cheese per year, which is produced using 1,000 truckloads of milk. Farmers also produce 10 truckloads of swiss cheese. As before these points are illustrated on the charts below.

(i) Are these the only possible quantities that farmers could produce? To answer, **draw a dark, solid line or curve on each chart showing the other combinations of cheddar cheese, swiss cheese and milk** that you think farmers in this country are physically capable of producing, given current weather conditions and technology. Make sure the location and shape of this line or curve corresponds to what you know about how producers are likely to use any additional inputs in the production of cheese.

(ii) Why do farmers now produce the quantities they do? To answer, **draw a lighter, solid line on each chart showing the relative prices of cheddar cheese, swiss cheese and milk**, in a way that helps explain why farmers produced what they did. Make sure the location and shape of this line or curve corresponds to what you know about how economists explain producers' choices of input use and production levels.

(iii) What determines the slopes of the lighter lines you just drew? Next to each line **please write the formula** for its slope.

(iv) What happens if a new cheese manufacturing technology is invented? Imagine that this technique raises productivity when turning milk into cheddar, but does not affect the production of swiss cheese. Using **dashed lines or curves**, redraw any and all parts of the diagrams that would change, and **draw triangles** around the new points of production with the improved technology. For simplicity, assume that **prices do not change**.

