For Problems 1-3, please draw both a supply and demand curve in each graph below. Show the shift or shifts in supply and demand that would occur. **LABEL ALL CURVES.** Indicate in the blank spaces provided below what will happen to supply, demand, price and quantity. (8 points each)

1. Crude oil is used to make gasoline. From mid July until early September, the price of crude oil fell by about 20%. Show the effect on the market for gasoline.

   \[
   \text{Supply } \uparrow \quad \text{Price } \downarrow \\
   \text{Demand } \downarrow \quad \text{Quantity } \uparrow
   \]

2. Instant noodles such as Raman noodles are an inferior good. If incomes decline in the United States, show the effect on the market for instant noodles.

   \[
   \text{Supply } \downarrow \quad \text{Price } \uparrow \\
   \text{Demand } \uparrow \quad \text{Quantity } \uparrow
   \]

3. People like to stay dry in the rain by using either raincoats or umbrellas. Show the effect of an increase in the price of umbrellas on the market for raincoats.

   \[
   \text{Supply } \downarrow \quad \text{Price } \uparrow \\
   \text{Demand } \uparrow \quad \text{Quantity } \uparrow
   \]
4. (14 points.) Suppose we run an experiment to see what happens when we alter the price of milk when we reduce the price from $3 per gallon down to $2.50. We find:

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3.00</td>
<td>200</td>
</tr>
<tr>
<td>$2.50</td>
<td>220</td>
</tr>
</tbody>
</table>

\[
\frac{\text{AQD}}{\text{AQD}_0} = \frac{\Delta Q}{\Delta P} = \frac{\frac{20}{1.210}}{\frac{1.50}{2.75}} = \frac{9.5\%}{18.2\%} = -0.52
\]

a. Please calculate the elasticity (responsiveness) of demand when the price falls from $3.00 to $2.50. (You may use either formula.)

b. Is the demand for milk elastic or inelastic? Explain how you can tell.

\[\begin{align*}
\text{Inelastic} & \quad < 1.0
\end{align*}\]

c. We cited four factors that determine whether or not the elasticity of demand for a product. (Actually, Mankiw cited a fifth.) List any two of these.

\[\begin{align*}
\text{Inelastic} & \quad \text{no substitute} & \quad \text{few substitutes} \\
\text{if} & \quad \text{essential} & \quad \text{budget} \\
\text{short} & \quad \text{rather} & \quad \text{market is} \\
\text{time} & \quad \text{rather} & \quad \text{broadly} \\
\text{long} & \quad \text{than} & \quad \text{defined}
\end{align*}\]

d. Take one on the factors you cited in part c. Does that help explain your answer in part b? Explain why or why not in terms of the factor itself, i.e., don't just cite a number.

e. Suppose we look at a good called gizmos. We find:

<table>
<thead>
<tr>
<th>Price of Milk</th>
<th>Quantity of Milk</th>
<th>Quantity of Gizmos</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3.00</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>$2.50</td>
<td>220</td>
<td>42</td>
</tr>
</tbody>
</table>

Calculate the cross-elasticity (responsiveness) of gizmos.

\[
\frac{\Delta Q}{\Delta Q_0} = \frac{(Q_1 + Q_2)/2}{(Q_0 + Q_2)/2} = \frac{4.2}{5.0} = 0.84 \quad \frac{\Delta Q_0}{\Delta P} = \frac{5.7}{16.72} = 0.34
\]

f. Are milk and gizmos complements, substitutes or neither? How can you tell?

\[\text{Complements Cross - elasticity (responsiveness) } < 0\]
5. (11 points). Farmer Jones has three fields of land. Each can be used to grow either corn or soybeans. (Uhhhhmmmmm. Soybeans.)

<table>
<thead>
<tr>
<th>Field</th>
<th>Corn</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>125</td>
<td>50</td>
</tr>
<tr>
<td>B</td>
<td>25</td>
<td>100</td>
</tr>
<tr>
<td>C</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

\begin{tabular}{c|c|c}
<table>
<thead>
<tr>
<th>Corn</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>300</td>
</tr>
<tr>
<td>50</td>
<td>250</td>
</tr>
<tr>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>250</td>
<td>0</td>
</tr>
</tbody>
</table>
\end{tabular}

a. In the graph above, please draw the Production Possibility Frontier for Farmer Jones.

b. If Farmer Jones is producing only corn, what would be the opportunity cost of 100 soybeans? 25 \text{ Corn}

c. Is a combination of 75 corn and 75 soybeans possible? Yes, just use C.

d. Is a combination of 75 corn and 75 soybeans efficient? No.
Multiple Choice Three points each
Identify the letter of the choice that best completes the statement or answers the question.

6. Which of the following is one of the 3 basic questions all economies must answer?
   a. What should be produced?  
   b. Do firms try to make the greatest profits?
   c. Is there a tradeoff between unemployment and inflation?
   d. Are price ceilings a good idea?
   A

10. The mainstream view among economists is that
   a. society faces a tradeoff between unemployment and inflation, but only in the short run.
   b. society faces a tradeoff between unemployment and inflation, but only in the long run.
   c. society faces a tradeoff between unemployment and inflation, both in the short run and in the long run.
   d. no tradeoff exists between unemployment and inflation, either in the short run or in the long run.
   B

8. In the simple circular-flow diagram, the participants in the economy are
   a. firms and government.
   b. households and firms.  
   c. households and government.
   d. elected officials and ordinary citizens.
   C

9. The amount by which firms’ sales revenue exceeds their payments to factors of production is called
   a. rent.
   b. capital.
   c. profit.
   d. interest.
   C

10. A country’s consumption possibilities frontier can be outside its production possibilities frontier if
   a. the country’s technology is superior to the technologies of other countries.
   b. the citizens of the country have a greater desire to consume goods and services than do the citizens of other countries.
   c. the country engages in trade.
   d. All of the above are correct.
   C

Figure 3-1
11. Refer to Figure 3-1 on the previous page. The opportunity cost of 1 bushel of wheat for Cliff is (Hint: Suppose that this figure shows what each person could do in one hour. Make a chart from the numbers if that helps.)
   a. 1/3 bushel of corn.
   b. 2/3 bushel of corn.
   c. 1 bushel of corn.
   d. 3/2 bushels of corn.

12. Refer to Figure 3-1. Which of the following statements is correct?
   a. Paul has a comparative advantage in both wheat and corn.
   b. Paul has a comparative advantage in wheat and Cliff has a comparative advantage in corn.
   c. Cliff has a comparative advantage in wheat and Paul has a comparative advantage in corn.
   d. Cliff has a comparative advantage in both wheat and corn.

13. The law of demand says that
   a. an increase in price causes quantity demanded to increase.
   b. an increase in price causes quantity demanded to decrease.
   c. an increase in price causes an increase in demand.
   d. an increase in quantity demanded causes price to decrease.

14. Which of the following changes would not shift the demand curve for a good or service?
   a. a change in income
   b. a change in the price of the good or service
   c. a change in expectations about the future price of the good or service
   d. a change in the price of a related good or service

15. Refer to Table 4-2. The equilibrium price and quantity, respectively, are
   a. $4 and 40.
   b. $6 and 30.
   c. $8 and 30.
   d. $10 and 35.

16. Refer to Table 4-2. If the price were $2, a
   a. shortage of 25 units would exist and price would tend to fall.
   b. surplus of 50 units would exist and price would tend to rise.
   c. surplus of 25 units would exist and price would tend to fall.
   d. shortage of 50 units would exist and price would tend to rise.

17. If the price elasticity of demand for a good is 1.65, then a 3 percent decrease in price results in a
   a. 0.55 percent increase in the quantity demanded.
   b. 1.82 percent increase in the quantity demanded.
   c. 4.95 percent increase in the quantity demanded.
   d. 5.55 percent increase in the quantity demanded.

\[
\frac{\Delta Q}{\Delta P} = -32 = 1.65
\]

\[
\frac{\Delta Q}{\Delta P} = 4.52
\]
18. When demand is inelastic, a decrease in price will cause
a. an increase in total revenue.
\[ \Box \] a decrease in total revenue.
c. no change in total revenue, but an increase in quantity demanded.
d. no change in total revenue, but a decrease in quantity demanded.

19. Which of the following is the most likely explanation for the imposition of a price floor in the market for corn?
   a. Policymakers have studied the effects of the price floor carefully and they recognize that the price floor is advantageous for society as a whole.
   b. Buyers and sellers of corn have agreed that the price floor is good for both of them and have therefore pressured policy makers into enacting the price floor.
   c. Buyers of corn, recognizing that the price floor is good for them, have pressured policy makers into enacting the price floor.
   \[ \Box \] Sellers of corn, recognizing that the price floor is good for them, have pressured policy makers into enacting the price floor.

20. When a binding price ceiling is imposed to benefit buyers, a result is that
   a. every buyer in the market benefits.
   b. every seller in the market benefits, but the overall benefit to sellers is smaller than the overall benefit to buyers.
   c. every buyer in the market benefits and every seller in the market is harmed.
   \[ \Box \] some buyers will not be able to buy any amount of the good.

21. Shannon buys a new CD player for her car for $135. She receives consumer surplus of $25 on her purchase if her willingness to pay is
   a. $25.
   b. $110.
   \[ \Box \] $135.
   c. $160.

This table refers to five possible buyers' willingness to pay for a case of Vanilla Coke.

<table>
<thead>
<tr>
<th>BUYER</th>
<th>WILLINGNESS TO PAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAVID</td>
<td>$8.50</td>
</tr>
<tr>
<td>LAURA</td>
<td>$7.00</td>
</tr>
<tr>
<td>MEGAN</td>
<td>$5.50</td>
</tr>
<tr>
<td>MALLORY</td>
<td>$4.00</td>
</tr>
<tr>
<td>AUDREY</td>
<td>$3.50</td>
</tr>
</tbody>
</table>

22. Refer to Table 7-2. If the market price is $5.50, the consumer surplus in the market will be
   a. $3.00.
   \[ \Box \] $4.50.
   c. $15.50.
   d. $21.00.

Extra Credit. Two Points. You must have no more than one absence and answer correctly.
If there are no market failures, then markets will result in the greatest total surplus. Economists say that such an outcome is called what? (I want a specific economics term. Not "good outcome.")

\[ \text{Efficient} \]