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Lesson 7 - A Market in Wheat

INTRODUCTION

Economics

The most important economic institution in a market economy is, not surprisingly, the *market*. In a market economy, *prices* allocate goods and services to the uses that individual buyers value most, according to what they are willing and able to pay for these goods and services. Prices are established through the interaction of buyers and sellers in the marketplace. Despite the importance of markets in a market economy, many people do not understand how they operate. Although most markets for goods and services are not as competitive as the wheat market in this activity, by playing “A Market in Wheat,” the students gain a better understanding of how prices are determined in any market.

Reasoning

A fundamental assumption of economics is that people behave rationally. Therefore, buyers and sellers enter into exchange situations they believe will be beneficial to them. By participating in this simulation, the students will experience how markets work and how the forces of supply and demand establish prices.

CONCEPTS

Demand
Market
Market-clearing price, equilibrium price
Shortage
Supply
Surplus

CONTENT STANDARDS

7. Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.
8. Prices send signals and provide incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives.

OBJECTIVES

Students will

1. Participate in a simulation that demonstrates how the forces of supply and demand determine price and how changes in the price of a good or service affect the quantities demanded and supplied.
2. Define market-clearing price as the one price at which quantity demanded equals quantity supplied.
3. Graph data points for a demand curve and a supply curve and interpret the relationships demonstrated on the graph.

LESSON DESCRIPTION

Students participate as buyers or sellers in a simulation that shows how a competitive market works. They determine individual profits or losses from market transactions. They use data from the simulation to plot and interpret a graph showing supply and demand.

Note: This activity requires a class of at least 20 students to be effective. Up to 50 students can participate if your room is large enough.

TIME REQUIRED

75 minutes (60 minutes for three rounds of the simulation and discussion, and approximately 15 minutes for the follow-up activity described in “Closure”)

MATERIALS

1. Visuals 7.1, 7.2 and 7.3
(Optional) Make a Visual of Activity 7.4
2. One copy each of Activities 7.1 and 7.2, which contain 26 buy cards and 26 sell cards in the amounts shown below. Use different colors for the buy and sell cards. You may want to laminate the cards or glue them onto heavy card stock so you can use them multiple times.

SELL CARDS		BUY CARDS	
Price	Number	Price	Number
\$1	0	\$1	4
\$2	2	\$2	4
\$3	2	\$3	4
\$4	2	\$4	2
\$5	2	\$5	2
\$6	2	\$6	2
\$7	4	\$7	2
\$8	4	\$8	2
\$9	4	\$9	2
\$10	4	\$10	2

3. A copy of Activities 7.3, 7.4 and 7.5 for each student in the class

PROCEDURE

1. Distribute Activity 7.3, “How to Play a Market in Wheat,” and read it aloud with the students.
2. Clear a large area in the classroom and designate it as the marketplace.
3. Have buy and sell cards ready; they should be kept in separate piles and shuffled between each round of play.
Note: It is wise to appoint one or two students to handle the distribution and collection of the buy and sell cards during the game and another student to record

each transaction on the classroom tally sheet, which is Visual 7.1.

4. Divide the class in half and have each group line up on opposite sides of the room. Tell the students that one group will be buyers and the other group will be sellers. Suggest that the students take note of those standing across the room from them, as these will be the students with whom they will be able to negotiate.
5. Distribute a score sheet to each student (Activity 7.4) and explain that they should use it to record every transaction they make. (If they need more space, tell them to use the back of the sheet or an additional piece of paper.) Review the details of the score sheet.
6. Make sure all the students understand that they will determine the profit or loss for each transaction by calculating the difference between the dollar amount on their card and the dollar amount of the deal they made.
(Optional) Use a transparency of Activity 7.4 to discuss the score sheet.
7. Explain that you will conduct three rounds of trading, each lasting five minutes. After the first round, tell the students it was a practice round, but the next two rounds will count toward their final score for the day. As each round is conducted, announce how much time remains in one-minute intervals. Tell the students there will be a winner from each side: the buyer who makes the largest profit and the seller who makes the largest profit.
(Optional) You may want to run only one or two rounds if time is short and the students understand the concept.
8. Use Visual 7.1 to record transactions. As described in Activity 7.3, buyers should report transactions to the recorder before getting a new card. Make sure the overhead remains on as tallies are made.

9. After each trading round, including the practice round, allow the students time to calculate their profits or losses. After all three rounds have been completed, have the students calculate their total profit or loss for Rounds 2 and 3 combined.
10. During the time between trading rounds, you may want to discuss the following strategies with the students.
- A. To make a large profit, should you be making many or few transactions? *Often the students who make the most transactions also make the largest profit.*
- B. Should you let other students see the information on your card? *No, you will lose the power to negotiate if the other party knows the point at which you will drop out of the negotiating process.*
- C. Do you have to make a profit on every transaction to have a profit at the end? *No. Again, more transactions generally garner more profit. Taking a loss on a particular transaction may be wise because the player will get a new card.*
- D. Should you watch the classroom tally sheet on the overhead during the trading rounds? *Yes, it allows you to know at what prices transactions are being made as well as the prices where negotiation would be fruitless.*
11. After the students have calculated their total profit and/or loss from Rounds 2 and 3, conduct the postgame discussion. Ask some or all of the following questions:
- A. At what price was wheat most frequently sold in each round? *Have the students examine their score sheets and the classroom tally sheet on the overhead. This price, which should be around \$6, is known as the market-clearing or equilibrium price.*
- B. This price is known as the market-clearing or equilibrium price. Why would economists call it the market-clearing price? *Answers may vary but should include some mention that it repre-*

sents the price at which the number of buyers willing to buy was the same as the number of sellers willing to sell.

C. In which round did the greatest spread in prices occur? *Examine the data, but this probably occurred in the earlier rounds.*

D. Why did the prices become more clustered together in the later rounds? *Greater available information is the most likely cause. Markets tend to move toward an equilibrium price as buyers and sellers obtain information about the quantity of products available at different prices.*

E. Did buyers or sellers determine the price for wheat? *Both buyers and sellers determined the market price through their interaction in the marketplace.*

F. How did competition among the sellers and the buyers influence the price? *Because of competition within both groups, no single buyer or seller controlled the price.*

G. Remind the students that in the game they just played, there were an equal number of buyers and sellers. What would happen if there were many more buyers than sellers? *If there were more buyers, the increased competition would drive the price of wheat higher. There would be even more people competing for a product that was now more scarce than before.* Depending on the time available and your students' level of understanding, you may want to conduct another round, with two-thirds of the class as buyers and one-third as sellers. Students should see a higher market price emerge on the classroom tally sheet.

H. Why would the market-clearing price rise if there were more buyers than sellers? *If the price were to remain at the previous equilibrium, the wheat market would experience a shortage, where the quantity demanded was greater than the quantity supplied. To correct this shortage, the price would rise until the quantity demanded and supplied were again equal, thus creat-*

ing a new market-clearing price, or equilibrium.

I. What would be the effect of having more sellers than buyers? *The effect of additional sellers would be the exact opposite of the effect of having more buyers: A surplus would be created at the prior equilibrium price. The quantity supplied would be greater than the quantity demanded, forcing the market-clearing price to fall until a new equilibrium price was established.*

12. **(Optional)** Since actual consumers and producers are seldom required to buy or sell at a loss, this activity may be modified to allow students to turn in "losing" cards after attempting to obtain a trade for a specified time, e.g. two minutes. With this rule change, prices should converge sooner and show more cluster around the equilibrium price. If you use this version of the activity, cards turned in would not be recorded on the score sheet and references to losses in the materials would not be relevant.

CLOSURE

- Distribute Activity 7.5, and display Visual 7.2 (they are the same). Tell the students that it is often helpful to use graphs to visualize supply and demand relationships. The demand and supply schedules on Activity 7.5 were determined from the set of 26 buy cards and 26 sell cards used in the game. Remind the students that the numbers in the demand and supply schedules are cumulative. For example, there are two buy cards for \$10. These buyers would also be willing to buy at \$9, so there are four buyers at \$9, and so on.
- Using Visual 7.2, help the students plot first the demand curve, and then the supply curve on the grid. Tell the students to make one point for each price-quantity combination and then connect the points for each curve.
- Display Visual 7.3, showing the completed supply and demand curves for the market in wheat. Use the graph to discuss the concepts of equilibrium price, surpluses, shortages, the direct relationship between price and quantity supplied, and the inverse relationship between price and quantity demanded.

Students may ask why the quantity numbers on the graph are not the same as the number of trades they made at the various prices in the game they played. Remind them that the curves are drawn from the complete set of cards used once, whereas in their game they could turn in cards and go through the deck more than once. Also, the curves reflect what buyers and sellers were willing to trade for without losses, although in the game some students traded at a loss to get new cards.

- Go over the answers to the questions on Activity 7.5.
 - What is the equilibrium price? **\$6.00**
 - What prices would result in a surplus? **Any prices above \$6.00**
 - What prices would result in a shortage? **Any prices below \$6.00**

VISUAL 7.1
CLASSROOM TALLY SHEET

Price	Round 1	Round 2	Round 3
\$1			
\$2			
\$3			
\$4			
\$5			
\$6			
\$7			
\$8			
\$9			
\$10			

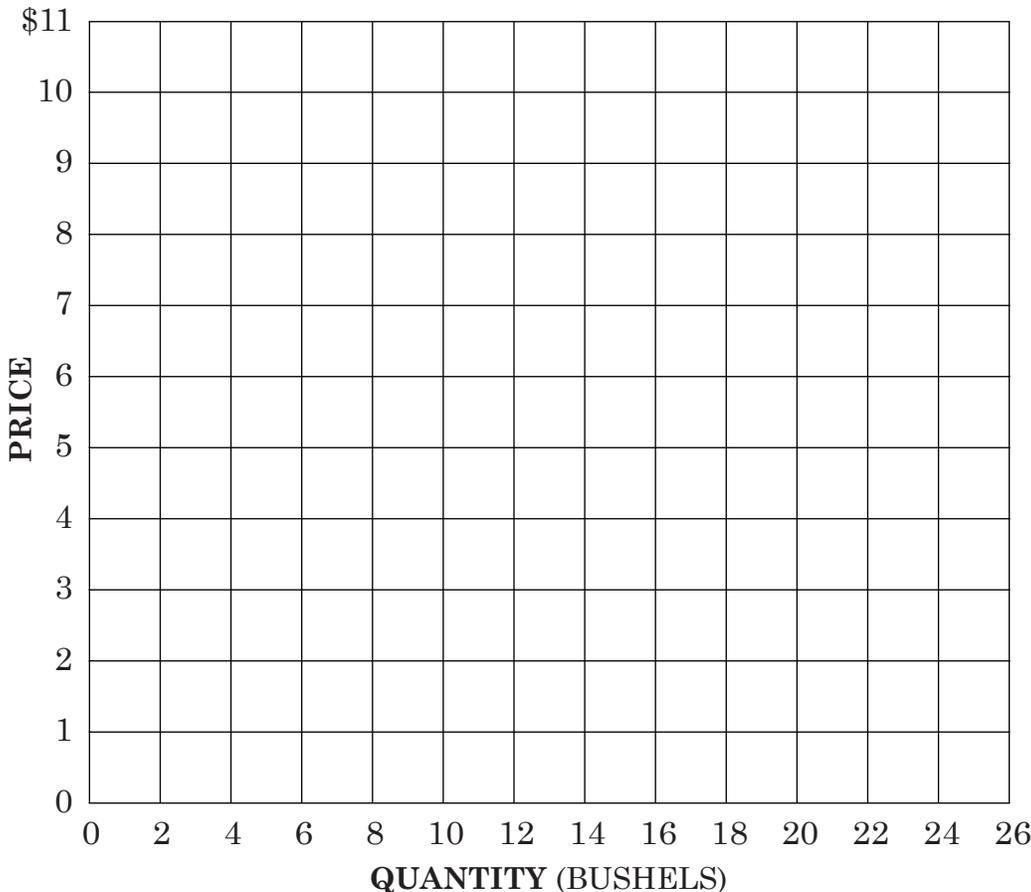
VISUAL 7.2 WHEAT SUPPLY AND DEMAND

Given the buy cards and sell cards in the Market in Wheat game, the following demand schedule and supply schedule are generated. Use this information to plot a demand curve and a supply curve on the graph below and then answer the questions.

1. What is the equilibrium price?
2. What prices would result in a surplus?
3. What prices would result in a shortage?

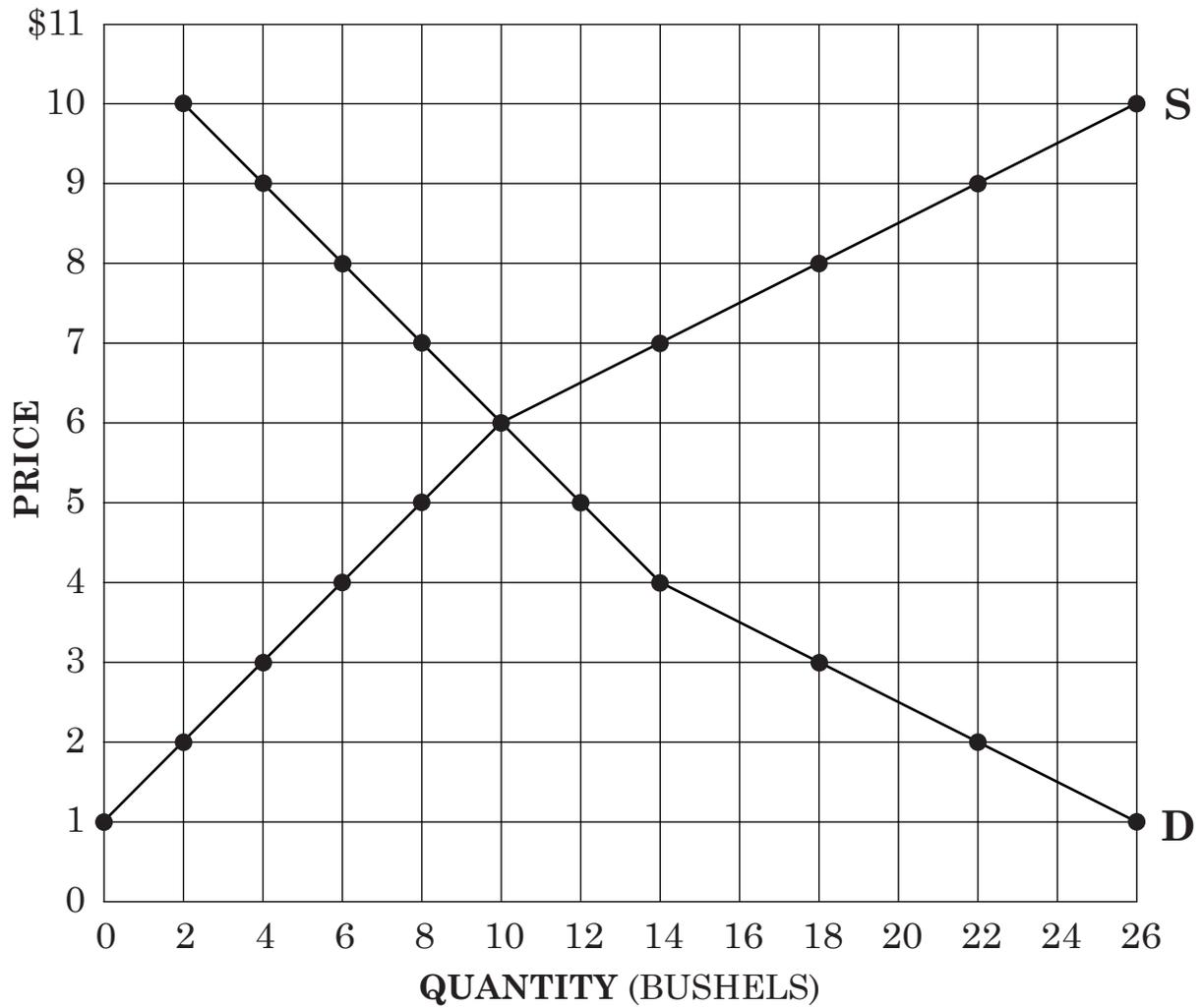
Demand Schedule (Buy)		Supply Schedule (Sell)	
Price	Quantity Demanded	Price	Quantity Supplied
\$1	26	\$1	0
\$2	22	\$2	2
\$3	18	\$3	4
\$4	14	\$4	6
\$5	12	\$5	8
\$6	10	\$6	10
\$7	8	\$7	14
\$8	6	\$8	18
\$9	4	\$9	22
\$10	2	\$10	26

Wheat Supply and Demand



VISUAL 7.3
WHEAT SUPPLY AND DEMAND COMPLETED GRAPH

Wheat Supply and Demand



ACTIVITY 7.1

SELL CARDS FOR "A MARKET IN WHEAT"

<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$2.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$2.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$3.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$3.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$4.00 you will lose money.</p>
<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$4.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$5.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$5.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$6.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$6.00 you will lose money.</p>
<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$7.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$7.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$7.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$7.00 you will lose money.</p>	

ACTIVITY 7.1, continued

SELL CARDS FOR “A MARKET IN WHEAT”

<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$8.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$8.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$8.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$8.00 you will lose money.</p>
<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$9.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$9.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$9.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$9.00 you will lose money.</p>
<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$10.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$10.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$10.00 you will lose money.</p>	<p>You are authorized to SELL one bushel of wheat for as much as possible.</p> <p>If you sell for less than \$10.00 you will lose money.</p>

ACTIVITY 7.2

BUY CARDS FOR “A MARKET IN WHEAT”

<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$1.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$1.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$1.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$1.00 you will lose money.</p>
<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$2.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$2.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$2.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$2.00 you will lose money.</p>
<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$3.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$3.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$3.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$3.00 you will lose money.</p>

ACTIVITY 7.2, continued

BUY CARDS FOR "A MARKET IN WHEAT"

<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$4.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$4.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$5.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$5.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$6.00 you will lose money.</p>
<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$6.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$7.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$7.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$8.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$8.00 you will lose money.</p>
<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$9.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$9.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$10.00 you will lose money.</p>	<p>You are authorized to BUY one bushel of wheat, paying as little as possible.</p> <p>If you spend more than \$10.00 you will lose money.</p>	

ACTIVITY 7.3

HOW TO PLAY “A MARKET IN WHEAT”

Read the following instructions carefully as your teacher reads them aloud. Note that buyers remain buyers throughout the game. Sellers remain sellers throughout the game.

1. Buyers will start the game with one buy-order card and one score sheet. The buy card will say, “You are authorized to BUY one bushel of wheat, paying as little as possible. If you spend more than _____, you will lose money.” The exact price will be written on the buy card. Record the price of your buy order on your score sheet. When the round starts, try to buy at the lowest price you can. If you pay exactly the price written on your card, you will break even for that transaction. If you pay less than the price on your card, the difference is a profit. If you pay more than the price on your card, the difference is a loss. You may buy wheat at whatever dollar price you are able to negotiate in the marketplace. As soon as you have bought wheat, record the transaction on your score sheet. Then report the price you have negotiated to the recorder, who will keep a tally on the Classroom Tally Sheet. Turn in your buy card, receive a new card and begin the negotiation process anew. If you do not buy wheat during a round, you may return your buy card for a new card only after the round is finished.
2. Sellers will start with one sell-order card and one score sheet. The sell card will say, “You are authorized to SELL one bushel of wheat for as much as possible. If you sell for less than _____, you will lose money.” The exact price will be written on the card. Record the price of your sell order on your score sheet. When the round starts, try to sell at the highest price you can. If you get exactly the price written on your card, you will break even for that transaction. If you get more than the price on your card, the difference is a profit. If you get less, the difference is a loss. You may sell wheat at whatever dollar price you are able to negotiate in the marketplace. As soon as you have sold wheat, record the transaction on your score sheet. Then turn in your sell card, receive a new card and begin the negotiation process anew. If you do not sell wheat during a round, you may return your sell card for a new card only after the round is finished.
3. When the teacher says, “The market is open,” buyers and sellers should meet in the designated area and try to agree on a price for a bushel of wheat. Make all transactions in even dollar amounts for one bushel. Any buyer may talk with any seller.
4. The goal of buyers and sellers is to make as much money as they can. Buyers will do this by purchasing wheat for a lower price than the price shown on their card. Sellers make money by selling for a higher price than the price shown on their card.
5. Every time a price is agreed on and a sale is made, the buyer must report the price to the recorder, who will enter it on the Classroom Tally Sheet.
6. As soon as buyers and sellers receive new cards during a round, they should return to the marketplace and try to make another deal.
7. All students are free to make as many transactions in a round as time permits. Once the teacher says, “The market is closed,” no further transactions will count.

ACTIVITY 7.4 SCORE SHEET FOR "A MARKET IN WHEAT"

Use this score sheet to keep track of your progress during the game. If you need more space for trades, use an additional piece of paper.

Circle one: I am a **BUYER**. I am a **SELLER**.

Transaction	Price per Bushel		Profit	Loss	
	On Card	In Transaction			
1					
2					
3					
4					
5					
6					
Subtotals for Round 1				-	=
				Total Round 1	

1					
2					
3					
4					
5					
6					
Subtotals for Round 2				-	=
				Total Round 2	

1					
2					
3					
4					
5					
6					
Subtotals for Round 3				-	=
				Total Round 3	

Total Rounds 2 & 3

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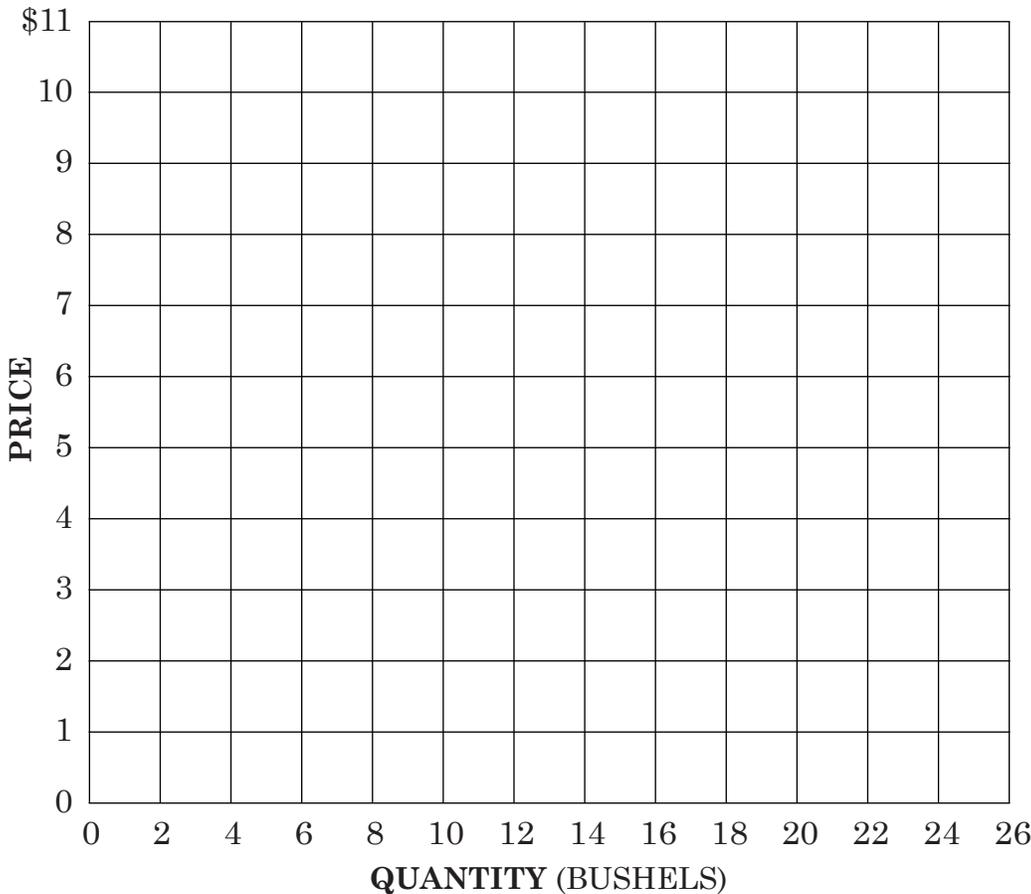
ACTIVITY 7.5 WHEAT SUPPLY AND DEMAND

Given the buy cards and sell cards in the Market in Wheat game, the following demand schedule and supply schedule are generated. Use this information to plot a demand curve and a supply curve on the graph below and then answer the questions.

1. What is the equilibrium price?
2. What prices would result in a surplus?
3. What prices would result in a shortage?

Demand Schedule (Buy)		Supply Schedule (Sell)	
Price	Quantity Demanded	Price	Quantity Supplied
\$1	26	\$1	0
\$2	22	\$2	2
\$3	18	\$3	4
\$4	14	\$4	6
\$5	12	\$5	8
\$6	10	\$6	10
\$7	8	\$7	14
\$8	6	\$8	18
\$9	4	\$9	22
\$10	2	\$10	26

Wheat Supply and Demand





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