

The High Rollers Game

Standards of Learning

Science 6.2, 6.5, 6.9, LS.8, LS.12

Mathematics 6.4, 6.20, 7.14, 8.11

Civics CE.9, CE.10, CE.11, CE.12

Objective

The student will

- work through a scenario of running a farm operation for profit
- demonstrate the risk and return of an enterprise
- use probability factors

Materials

Play Money- \$360 per player (optional)

One die per player

Activity sheet

Background Knowledge

This exercise is designed to demonstrate on a limited basis the risk and return on a given enterprise. It also will give students an opportunity to learn about the basic principles of probability. Each agricultural enterprise has its own risk and return potential with a number of variables. These variables can include pests, weeds, weather, and certain market forces. Variables can be either farm specific, regional or nationwide. Each variable on its own can turn an otherwise good year into a disaster.

This lesson can also help to teach your students the concepts behind U.S. economics and a free market. The opportunity cost of renting the land or saving the money is something that your students will need to know. What is the consequence of not renting the land? What are your students giving up if they do not rent the land? What are they giving up if they do rent the land? This could also be a great time to teach your students about supply and demand and what scarcity means in terms of economics. If the supply of land is small and a lot of consumers are demanding land then the suppliers may have a problem. It might be in their best interest to buy and cultivate more land for the consumers. If demand is low, then suppliers will be hurting financially because they do not have anybody to sell to and are not making any money. Scarcity means that available resources are insufficient to satisfy all wants and needs. If land is scarce, then not every consumer is getting what they want or need so it might benefit those who do have land to rent on it since the demand is so high.

The object of this game is to end with the most money.

Procedure

1. Each student is given \$360.
2. Students are given the opportunity to rent one acre of land in Henrico County from May through September. The acre is covered with a highly productive soil- Pamunkey soil. In the best conditions, 200 bushels of corn can be produced on the acre.



3. Students can choose to not rent land and put their \$360 under their mattress for the summer.
4. Each student has two decisions to make:
 - a. Do they wish to rent an acre of land, or keep their \$360?
 - b. Do they want to grow an organic crop or a non-organic crop? An organic crop does not apply pesticides or man-made fertilizer. The yields are usually lower, but the market price is usually higher for organically grown produce. Also, the input costs (initial costs to plant a crop) are lower for an organic crop.
5. Use the production cost, yield factors, and calculations pages to determine profit or loss.

Extension

Have students change locations, acreage, or crop depending on locality.

Repeat scenario several times recalling recent weather and economic variables that have occurred in Virginia such as hurricanes, flooding, drought, and fuel cost.

Discuss the feasibility of growing organic. Is this a niche operation?





High Rollers Game Production Cost

Cost	Per Acre
Land Rent (\$50 if planting a crop)	\$ _____
Machinery (\$80 if planting a crop)	\$ _____
Fertilizer (\$72 for non organic, \$54 for organic)	\$ _____
Pest Control (\$40 for non-organic, \$0 for organic)	\$ _____
Seed (\$20 if planting a crop)	\$ _____
Labor (\$14 if planting a crop)	\$ _____
Total Cost	\$ _____
Money left over from initial \$360	\$ _____





High Roller Game Yield Factors

Follow the directions for each factor to determine the affect on your crop.

You can control whether you produce an organic or non-organic crop, but you can't control the weather. Roll your die five times and record your results. Your **Rain Yield** factor will be determined by the sum of the five rolls, as follows:

Chart I

5-6	-	0%	20-21	-	90%
7-10	-	40%	22-25	-	80%
11-13	-	80%	26-28	-	50%
14-16	-	90%	29	-	30%
17-19	-	100%	30	-	0%

If you chose to produce an organic crop, your yields will usually be lower because you didn't apply pesticide. Roll your die five times. Your **Pest Control** yield factor will be determined by the sum of the five rolls, as follows:

Chart II	Non-Organic	Organic
5-6	0%	0%
7-10	60%	30%
11-13	80%	70%
14-16	90%	80%
17-19	100%	90%
20-21	90%	80%
22-25	80%	80%
26-28	50%	30%
29	50%	0%
30	0%	0%

If you produce a non-organic crop, your **Fertilizer** yield factor will be 100%. If you produced an organic crop, roll one die. Your yield factor will be determined as follows:

Chart III

1	-	100%
2-5	-	90%
6	-	75%

After you harvest your crop, you get to sell it. Roll one die. The price per bushel you will receive for your crop will be determined by the roll as follows:

Chart IV

	Non-Organic	Organic
1	\$2.60	\$2.80
2-5	\$2.80	\$3.00
6	\$3.00	\$3.2





High Rollers Game Calculations

Roll one die five times to determine the rain levels for the five months:

May June July August September Total

Rain: ___ + ___ + ___ + ___ + ___ = ___

Roll one die five times to determine the pest levels for the five months.

Pest: ___ + ___ + ___ + ___ + ___ = ___

If you chose to produce an organic crop, roll one die to determine your fertilizer yield %.

Roll one die to determine your market price per bushel.

Next, determine your yield factors based on your rolls of the die by using the “High Roller Game Yield Factors” sheet. Plug your yield factors into the below formula to determine your final yield. If you produced a non-organic crop, your fertilizer yield % is automatically 100%.

Potential Production	x	Rain Yield % (chart I)	x	Pest Yield % (chart II)	x	Fertilizer Yield % (chart III)	=	Total Yield
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200 bushels x ___ x ___ x ___ = ___ bushels

Multiply your total bushels by the market price determined by your roll of the die to determine the total price per bushel you will receive for your crop.

Total bushels (chart IV)	x	Market Price	=	Amount you will receive
___ bushels	x	___ \$/bushel	=	___

Now, you need to determine how much money you have left. If you didn't plant a crop, you have \$360. If you planted a crop, you have the amount left over from your \$360 investment plus the amount you received for your crop.

Left over from \$360 investment	+	amount received for crop	=	Total
___	+	___	=	___

