Transportation

Commodity Transport

Materials

- 10-sided die (or online die roller at **roll-dice-online.com**)
- 20-sided die (or online die roller at **roll-dice-online.com**)

Setting up your parameters

Assume that soybeans yield 50 bushels per acre and corn yields 150 bushels per acre. (It is important to note that the yields in Ohio are slightly different from these values in most cases.)

Using a ten-sided dice labeled from 1–10, roll to determine the average acres of the fields on your farm. Multiply the roll by 10. Record that number in the box to the right.

Using a twenty-sided dice labeled 1–20, roll the number of fields that you have in your farm **(number must be greater than eight).** Record that number in the box to the right.

One last roll of the ten-sided dice will tell you the percentage of your fields that are soybeans (again, multiply the number by 10). The other part will be corn. Record those value in the boxes to the right.

average field size	number of fields	soybeans	corn

GROW NEXT GEN

Harvester

300 bushels

The following are available for harvest, transportation and storage.

A harvester is used to collect the crop from the field. Advancement in technology has created the ability for harvesters to carry more crops on board. Normal ranges can be anywhere from 250 to 400+ bushels in one load.

Calculate the number of **harvester loads** it would take to carry your harvest of:

soybeans: _____ corn: _____

Semi

950 bu

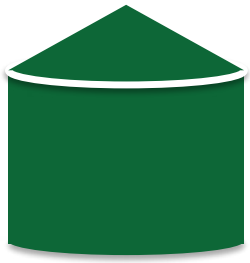
Calculate the number of **semi-trailer loads** it would take to carry your harvest of:

soybeans: _____ corn: _____

Calculate the number of **farm grain bins** it would take to store your harvest of:

soybeans: _____ corn: _____

Farm Grain Bin



2,850 bushels

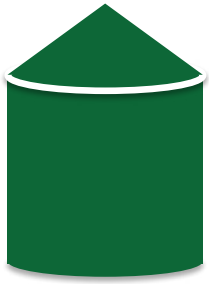
Calculate the number of **commercial grain bins** it would take to store your harvest of:

soybeans: _____ corn: _____

Calculate the number of **commercial grain bins** it would take to store the entire class' harvest of:

soybeans: _____ corn: _____

Commercial Grain Bin



750,000 bushels

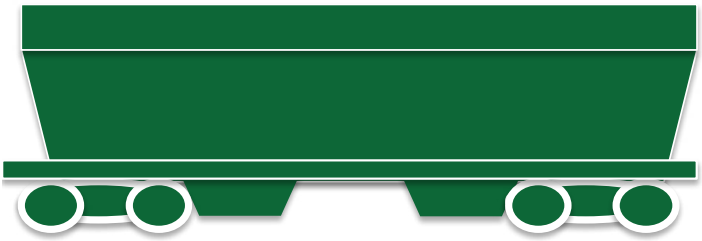
Calculate the number of **railroad cars** it would take to carry your harvest of:

soybeans: _____ corn: _____

Calculate the number of **railroad cars** it would take to carry the entire class' harvest of:

soybeans: _____ corn: _____

Railroad

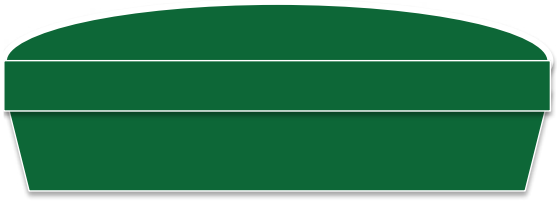


3,600 bushels

110 car unit
396,000 bushels

GROW NEXT GEN

River Barge



45,000 bushels *15 barge tow 675,000 bu*

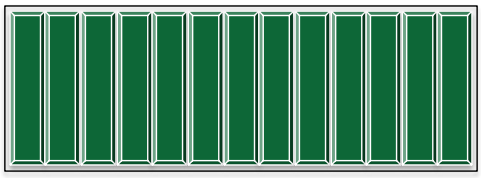
Calculate the number of **river barges** it would take to carry your harvest of:

soybeans: _____ corn: _____

Calculate the number of **river barges** it would take to carry the entire class' harvest of:

soybeans: _____ corn: _____

Cargo Container



900 bushels

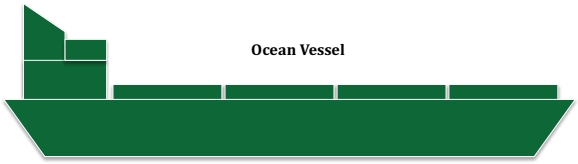
Calculate the number of **cargo containers** it would take to carry your harvest of:

soybeans: _____ corn: _____

Calculate the number of **cargo containers** it would take to carry the entire class' harvest of:

soybeans: _____ corn: _____

Ocean Vessel



2,000,000 bushels

Calculate the number of **ocean vessels** it would take to carry your harvest of:

soybeans: _____ corn: _____

Calculate the number of **ocean vessels** it would take to carry the entire class' harvest of:

soybeans: _____ corn: _____

Have students fill in the following chart to determine the weight of each crop hauled.

Equipment	**Volume (bushels)**	**lbs of corn (56 lbs/bushel)**	**lbs of soybeans (60 lbs/bushel)**
Harvester	300		
Semi-trailer	950		
Farm grain bin	2,850		
Commercial grain bin	750,000		
Railroad car	45,000		
Cargo container	900		
River barge	3,600		
Ocean vessel	2,000,000		

APPENDIX

Extension

Teachers, you may encourage further exploration of this subject by assigning these investigations to your students.

1. Based on the current commodity prices, how much money would you make if you sold your entire crop of soybeans and corn?

2. a. Use the Grain Hauling Cost Calculator at **economics.ag.utk.edu/ghcc.html** to determine the costs of hauling your grain by truck.
   - Choose the commodity you are hauling from the drop down menu.
   - Enter the distance in miles (one way to the closest waterway using your school address as your farm address).
   - Enter your total number of bushels, the price of diesel fuel/gal and
   - Enter the estimated miles per gallon a semi truck would get.

   b. Determine the distance from your farm (school address) to the closest rail line. Calculate the cost as above. The grain must be sent by truck that far, then loaded onto a train to the closest waterway. Use this calculation to determine rail costs for hauling your grain: Rail car that holds 3600 bushels = $333 per 50 miles traveled.

3. Investigate the other costs of trucking vs. railroad car by visiting this website: **http://business.tenntom.org/why-use-the-waterway/shipping-comparisons/**. Look at Safety, Energy Efficiency and Environmental Quality.

4. Determine the most environmental/economical way to move your commodities from your farm in Ohio to the closest waterway (Lake Erie or the Ohio River). Do you make any money after you factor in the economic costs of transporting your crop? How might you reduce the impact of hauling grain?