

“Lesson Title” | OSEU 1: Lands & Environment

Compelling Question	How much water is pumped through a pivot irrigation system in one crop season?	
Standards and Practices	<p>South Dakota Common Core State Standards for Mathematics:</p> <p>Standard 1: Make sense of problems and persevere in solving them.</p> <p>Standard 2: Construct viable arguments and critique the reasoning of others.</p> <p>Standard 4: Model with mathematics.</p> <p>Standard 6: Attend to precision</p> <p>Standard 7: Look for and make use of structure.</p> <p>Standard 8: Look for and express regularity in repeated reasoning.</p>	
Staging the Question	What volume of water is pumped in one day through a 130 acre crop sprinkler water system?	
Supporting Question 1	Supporting Question 2	Supporting Question 3
What is the irrigation system water volume per minute for a typical high-pressure irrigation well? (900 gal/min)	How much water is pumped each hour of the day?	How much water is pumped in a 24-hour day?
Formative Performance Task	Formative Performance Task	Formative Performance Task
Research pivot irrigation systems to find water usage on different crops and on different soil types.	Convert gallons/min to gallons/hour. (900 gallon/min X 60 min/hour) =54,000 gallons/hour	Convert gallons/hour to gallons/day (54,000gallons/hour X 24 hours/day) =1,296,000 gallons/day
Featured Sources	Featured Sources	Featured Sources
Nebraska department of agriculture	<p><i><u>“To Combat Scarcity, Increase Water-Use Efficiency in Agriculture”</u></i> Worldwatch Institute, March 1, 2013, By Sophie Wenzlau</p>	
Summative Performance Task	Argument	80% of the fresh water withdrawn from rivers and groundwater is used for food and agricultural products. Agricultural sprinkler irrigation systems use 4 times as much water per day as drip systems. According to the UN Food and Agriculture Organization (FOA) 60% of the water diverted or pumped for irrigation is wasted via runoff into waterways or evapotranspiration.
	Extension	Contact state extension agents for more information on improving irrigation system water usage efficiency.

**Taking Informed
Action**

Investigate drip irrigation systems for gardens and trees and present to class.