

Machines Logic Puzzle

Grade Level: 4-8

Lesson Overview

A logic puzzle is a problem that can be solved using deductive reasoning. A deduction is a logical conclusion drawn from two or more true statements. One common type of logic puzzle involves a tool known as an elimination grid. In this activity, students will learn about machines then use an elimination grid to solve a puzzle.

Student Objectives

1. Practice logical thinking skills utilizing charts to draw conclusions based on information provided while learning about machines.

Materials

- ✓ Machines Logic Puzzle worksheet

Vocabulary

- **combine** - a large self-propelled machine that cuts, threshes, and cleans grain crops. It has different front attachments, called heads or headers, designed for use in harvesting specific crops. Corn is harvested using a corn head; wheat and soybeans are harvested using a reel-type head known as a grain platform. (The word combine is pronounced with the accent on the first syllable, which rhymes with “Tom”.)
- **cultivator** - an implement that is pulled by a tractor through a field to loosen the earth and destroy weeds, either before a growing crop is established (covers all area of the field) or between the rows of growing crops (only covers area between the rows).
- **hay baler** - a machine designed to compress hay into compact bundles or bales, usually tied with twine or wire.
- **irrigation system** - method used to water a given area.
- **spreader** - an agricultural implement used to spread fertilizer or seeds at a certain ratio of material to acreage.
- **tractor** - a motor vehicle used to pull heavy loads and to provide power to operate, carry, push, and/or pull agriculture implements.

Procedure

Allow students time to complete the Machines Logic Puzzle and then compare answers.

If you have not given your students a logic puzzle previously, you may want to help them understand the steps in finding an answer. Please keep in mind that not all of the information is given. Students should use the information available and the process of elimination to find the answers

Standard

Illinois Mathematics Standard

7.SP.8b: Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. b. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams.

The **M**ultidisciplinary **A**gricultural **I**ntegrated **C**urriculum (mAGic) was created in 2004 under the leadership of the Illinois State Board of Education (ISBE) and the Facilitating Coordination in Agricultural Education Project (FCAE). Funding was made available through the FCAE grant budget from the agricultural education line item of the ISBE budget. This revision, as printed, was developed in September 2021.



These mAGic lessons are designed to bring agriculture to life in your classroom. They address the Illinois Learning Standards in math, science, English language arts and social studies.

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Name _____

Machines Logic Puzzle

Before going on a tour of a local dairy and grain farm, Mrs. Myers asked her students to choose two different types of farm machines on which to become an expert. Then they would have to report to the class on their machines.

The chart below helps you identify what you've learned from each clue. In the square where the vertical and horizontal meet is where you mark your possible answers. Read each clue and record the information on the chart. When you find a true match, put a **YES** in the appropriate box. When you prove a combination false, put an **X** in the box. Continue until you find all the answers.

When finished, fill in the blanks at the bottom of the page to tell who was the expert on what machines.

Type	Jeff	Seth	Rick	Andrew	Colin
milking machine					
spreader					
irrigation system					
cultivator					
combine					
sprayer					
planter					
hay baler					
tractor					
bulk milk cooler					

1. Seth chose 2 machines used only on a dairy farm.
2. Colin chose a machine that has taken the place of a horse on the modern farm and a machine it pulls that is used in harvesting hay.
3. Andrew chose 2 machines beginning with the same letter. One harvests crops such as wheat and corn and the other loosens soil and digs out weeds.
4. Rick also chose 2 machines beginning with the same letter. One is used to kill weeds and insects and the other to spread fertilizer.

Seth chose _____ and _____.

Colin chose _____ and _____.

Andrew chose _____ and _____.

Rick chose _____ and _____.

Jeff chose _____ and _____.

Machines Logic Puzzle ANSWER KEY

Before going on a tour of a local dairy and grain farm, Mrs. Myers asked her students to choose two different types of farm machines on which to become an expert. Then they would have to report to the class on their machines.

The chart below helps you identify what you've learned from each clue. In the square where the vertical and horizontal meet is where you mark your possible answers. Read each clue and record the information on the chart. When you find a true match, put a **YES** in the appropriate box. When you prove a combination false, put an **X** in the box. Continue until you find all the answers.

When finished, fill in the blanks at the bottom of the page to tell who was the expert on what machines.

Type	Jeff	Seth	Rick	Andrew	Colin
milking machine	X	YES	X	X	X
spreader	X	X	YES	X	X
irrigation system	YES	X	X	X	X
cultivator	X	X	X	YES	X
combine	X	X	X	YES	X
sprayer	X	X	YES	X	X
planter	YES	X	X	X	X
hay baler	X	X	X	X	YES
tractor	X	X	X	X	YES
bulk milk cooler	X	YES	X	X	X

- Seth chose 2 machines used only on a dairy farm.
- Colin chose a machine that has taken the place of a horse on the modern farm and a machine it pulls that is used in harvesting hay.
- Andrew chose 2 machines beginning with the same letter. One harvests crops such as wheat and corn and the other loosens soil and digs out weeds.
- Rick also chose 2 machines beginning with the same letter. One is used to kill weeds and insects and the other to spread fertilizer.

Seth chose milking machine and bulk milk cooler.

Colin chose tractor and hay baler.

Andrew chose cultivator and combine.

Rick chose sprayer and spreader.

Jeff chose planter and irrigation system.