



# Principles of Flight



## Lesson Plan: A Plane Old Time

**Grade Level:** 4

**Subject Area:** Math

**Time Required:** *Preparation:* 5 minutes  
*Activity:* 45 minutes

**National Standards  
Correlation:**

**Mathematics (grades K-4)**

- Problem Solving Standard: Build new mathematical knowledge through problem solving.
- Problem Solving Standard: Solve problems that arise in mathematics and other contexts.
- Problem Solving Standard: Apply and adapt a variety of appropriate strategies to solve problems.
- Problem Solving Standard: Monitor and reflect on the processes of mathematical problem solving.
- Data Analysis and Probability Standard: Formulate questions that can be addressed with data, and collect, organize, and display relevant data to answer them.
- Data Analysis and Probability Standard: Develop and evaluate inferences and predictions that are based on data.

**Summary:** Students will preview the supplied chart and answer questions pertaining to chart information.

**Objectives:** Students will:

- Interpret information from a chart
- Compose a flight plan with the supplied information
- Compare information from various airports

**Background:** Pilots and Air Traffic Controllers learn numerous concepts as they apply to moving an aircraft from one airport to another. Important is the fact that an aircraft can only hold so much fuel. Making the fuel stretch is very important, as well as knowing how much fuel to put on the airplane to begin with. Mileage and elapsed time are also very important, since running out of fuel is not a very good way to end a flight.

**Materials:** Worksheet

**Procedure:**

**A. Warm-up**

1. Review the operations of math, especially the difference (subtraction).
2. Explain how aircraft move from airport to airport, comparing it to an interstate highway.
3. Explain that a pilot wants to go the most direct way he can to another airport and the consequences if he doesn't.

**B. Activity**

1. Have a student read the brief story at the beginning of the worksheet.



2. Demonstrate the way a pilot or air traffic controller would plan a short trip on an IFR Enroute Chart.
3. Students will use the supplied chart and, by reading the questions, provide the correct information to answer the questions.

**Assessment/  
Evaluation:**

Check worksheet for correct answers. Have students share their flight plans and compare results.

**Resources/  
References:**

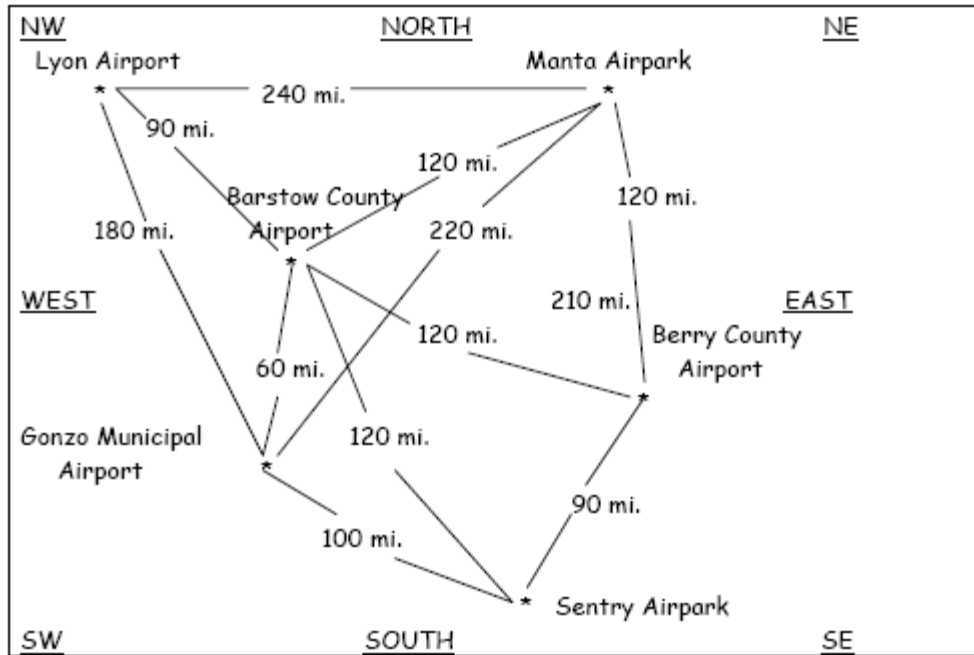
Map worksheet

IFR Enroute Charts, FAA, Washington D.C.



***A Plane Old Time***

Leah's family owns a small airport in the country named Berry County Airport. They all like to fly and they often make many trips to visit their friends at the neighboring airports. The airplane they fly goes 120 miles per hour and they estimate the length of their trips with this speed.



Use the map above to answer the following questions.

- Which airport(s) is/are 120 miles from Berry County Airport?
  - Sentry Airpark only
  - Barstow County Airport only
  - Manta Airpark and Barstow County Airport
  - Sentry Airpark and Barstow County Airport
- How long is the trip from Berry County Airport to Manta Airpark?
  - one hour
  - two hours
  - three hours
  - one half hour
- What are the total number of miles between Berry County, Manta Airpark, and Lyon Airport?
  - 380 miles
  - 290 miles
  - 360 miles
  - 120 miles



4. What are the total number of miles between Berry County, Sentry Airpark, Gonzo Municipal Airport, Manta Airpark, and back to Berry County?
  - a. 460 miles
  - b. 530 miles
  - c. 430 miles
  - d. 550 miles
  
5. Which airport is located east of Berry County Airport?
  - a. Sentry Airpark
  - b. Manta Airpark
  - c. Gonzo Municipal Airport
  - d. No airport is east of Berry
  
6. Name the airport located in the northwest corner of the map. \_\_\_\_\_
  
7. What is the difference in mileage between Sentry Airpark and Gonzo Municipal Airport, and Barstow County Airport and Manta Airpark?
  - a. 240 miles
  - b. 20 miles
  - c. 220 miles
  - d. no difference
  
8. Which airport is exactly 220 miles from Manta Airpark? \_\_\_\_\_
  
9. Design a flight plan that will take you from Berry County Airport and fly exactly 490 miles.

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