Charting Flight Ceiling and Range

Go to http://lonestarflight.org/explore/aircraft. Each plane in the museum’s collection has an information page on the web site. Click on each plane listed, find and record the **ceiling** and **range** numbers from the Quick Facts section, then graph them on the chart below. Label each line with the name in parentheses. After graphing, answer the questions.

- Flying Fortress (B-17)
- Steerman (PT-17)
- Soviet MiG-17 (MiG)
- Piper Cub (Cub)
- B25 Mitchell (B-25)
- Bell TAH Cobra Helicopter (Cobra)
- Chance Vought Corsair (F4U)
- Shooting Star (T-33A)

Example: The T6 Texan has a ceiling of 21,500 feet and can fly a range of 750 miles. A line is drawn in the graph just above the 20,000 feet ceiling showing a distance of 750 miles.

<table>
<thead>
<tr>
<th></th>
<th>T6</th>
<th>B-17</th>
<th>B-25</th>
<th>PT-17</th>
<th>Cobra</th>
<th>MiG</th>
<th>F4U</th>
<th>Cub</th>
<th>T-33A</th>
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</thead>
<tbody>
<tr>
<td>Ceiling</td>
<td>21,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Range</td>
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<td></td>
<td></td>
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**Vocabulary**

Specification – a list of data such as size, power, and weight.

Ceiling- the maximum altitude an aircraft can fly.

Range – the maximum distance a plane can fly before running out of fuel.
Which plane has the greatest range?

How does the range help with the job it was designed to do?

Which plane can reach the highest altitude?

Why can this plane reach higher altitudes than the others on the graph?

If you were flying the T6 Texan and a Cobra Helicopter was chasing you, how could you get away from it? Explain your answer using data from the graph.

Could you use the same strategy if you were flying a Piper Cub?  ☐ Yes  ☐ No  Why, or why not?

What is something that you learned by looking at the graph that is difficult to determine without the graph?

What are the limitations of the graph? (What do you NOT know about the aircraft by looking at the graph?)

Did you use anything from this list in your previous answers?  ☐ Yes  ☐ No
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**Flying Fortress (B-17)**
**B25 Mitchell (B-25)**
**Steerman (PT-17)**
**Bell TAH Cobra Helicopter (Cobra)**
**Soviet MiG-17 (MiG)**
**Chance Vought Corsair (F4U)**
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**Shooting Star (T-33A)**

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<tr>
<td>Ceiling</td>
<td>21,500</td>
<td>35,600</td>
<td>24,400</td>
<td>14,000</td>
<td>11,400</td>
<td>54,460</td>
<td>41,500</td>
<td>12,000</td>
<td>48,000</td>
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<td>Range</td>
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<td>3,400</td>
<td>1,350</td>
<td>350</td>
<td>315</td>
<td>1,230</td>
<td>1,120</td>
<td>250</td>
<td>1,275</td>
</tr>
</tbody>
</table>

**Vocabulary**

**Specification** – a list of data such as size, power, and weight.

**Ceiling** - the maximum altitude an aircraft can fly.

**Range** – the maximum distance a plane can fly before running out of fuel.
Charting Flight Ceiling and Range Questions

Which plane has the greatest range? **B-17 Flying Fortress**

How does the range help with the job it was designed to do? **It can fly a long distance to drop bombs on targets further away.**

Which plane can reach the highest altitude? **Soviet MiG-17**

Why can this plane reach higher altitudes than the others on the graph? **Jets can fly through high altitude thin air, but a propeller plane cannot. The second highest flyer is also a jet.**

If you were flying the T6 Texan and a Cobra Helicopter was chasing you, how could you get away from it? Explain your answer using data from the graph. **Increase altitude. The T6 Texan can go up to 21,500 feet, but a Cobra can only go up to 12,000 feet.**

Could you use the same strategy if you were flying a Piper Cub? **No** Why, or why not? **The Cub and the Cobra go up to 12,000 feet, so the Cobra could follow the Cub up to the same altitude.**

What is something that you learned by looking at the graph that is difficult to determine without the graph? **Many fighter planes have about the same range, but can go up to different altitudes.**

What are the limitations of the graph? (What do you NOT know about the aircraft by looking at the graph?) **There is no information about speed, size, weight, color, engine power, etc. (Without knowing speed, outrunning a cobra helicopter is a bad idea.)**

Did you use anything from this list in your previous answers? **No**