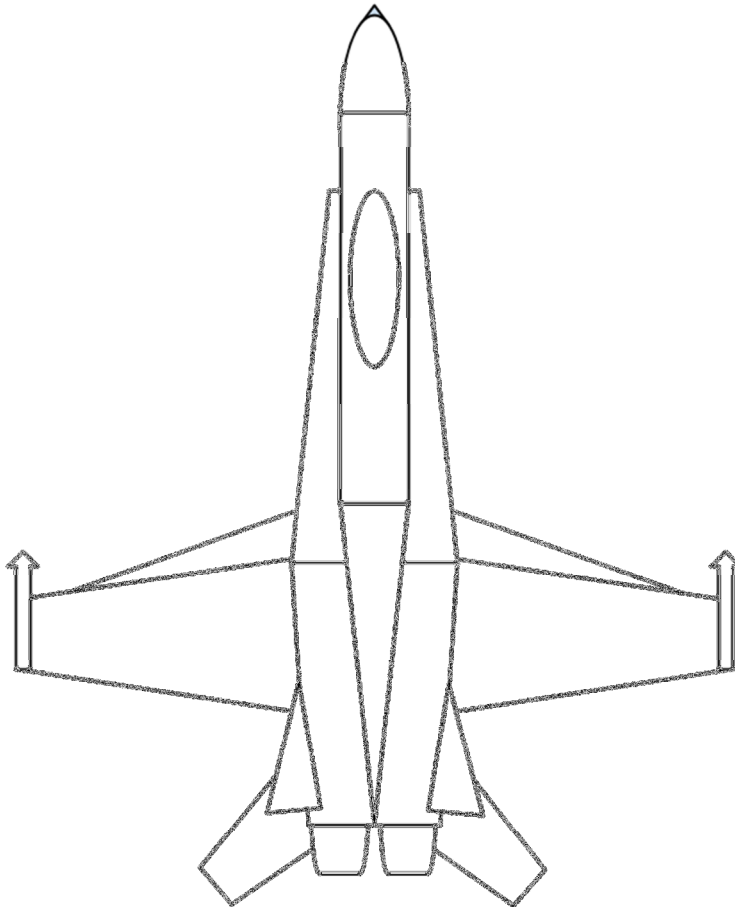


Name: _____ Date: _____

Directions: Here is a drawing to help guide you through solving this problem. Read the expectations carefully. Remember – do **not** measure the drawing. Measure only the model plane given.

Expectations/Rubric:

- Label each point you discover in consecutive order (A, B, C, etc).
- Record the measurements of all sides and angles that help you solve this problem on the diagram and in the space provided below.
- You may measure the sides of the plane with a ruler only. Sides have a beginning point and an ending point, so you may not measure the length of the model from the front tip to the back wings (since there is no guaranteed spot to measure to).
- Remember to answer all questions on your **Flight of the Blue Angel** handout as well.



Side length/width, Angle, or Part of the Model Plane	Measurement
Example: Wingspan of the model (Side AB)	3 ½ inches

Final Answer: Approximate length of an actual F/A-18 aircraft: _____

Name: _____ Date: _____



Flight of the Blue Angel

Directions

With the drawing given and this accompanying worksheet, read the problem carefully. You will use what you have just learned about similar triangles, ratios, and proportions to solve the following problem. Along the way you will answer each question to help you organize your thoughts.

Your Mission

You have before you a scale model of a real airplane, the F/A-18 Hornet, used by the U.S. Navy's iconic Blue Angels. The wingspan of the real aircraft is 40 feet. By measuring the dimensions of the model, determine the length of the actual aircraft. What is the scale of the model to the real thing?

Organizing Your Thoughts

What information is given in the problem?	<hr/> <hr/> <hr/> <hr/>
What are you looking for (the goal)?	<hr/> <hr/> <hr/>
Prediction of scale: How many times bigger do you think the actual plane will be compared to the model plane?	<hr/> <hr/>

Investigate

Use your ruler to measure the wingspan of the model plane. Have a partner check this measurement. Record it on your drawing and in the table below it (making sure to show your line and your points). Then answer the questions below.

How does having the wingspan of the model airplane help you?	<hr/> <hr/> <hr/>
What else could we possibly do to try finding the length of the model?	<hr/> <hr/> <hr/>

Work with the lengths in your diagram. Is there a clear point on the plane that might help you geometrically? _____

Explore

You should be showing a nice “geometric shape” on your diagram. How can we manipulate this shape to incorporate more of the plane’s length?

Now that we have done that, we have a new line. Label it **DE**. The length of **DE** just happens to be approximately $3\frac{3}{4}$ inches.

What assumptions can be made about lines AB and DE based on the symmetry of the aircraft?	<hr/> <hr/> <hr/>
How can we use the properties of similar triangles to help us solve for the length of DC ?	<hr/> <hr/> <hr/>

Discovery

Now that we know the lengths of our outer triangle, what can we do to find the length of the model plane?

Great thinking! Now we have a line that encompasses the total length of the model plane.

Since the **CG** is a perpendicular bisector of **DE**, what does that tell us about the length from point D to G?

Also, now that we have **DG** and **DC**, how will we obtain the length of **CG**?

Congratulations – we have the length of the model plane – let’s take that and find the length of the actual aircraft.

Set up the proportion that will solve for the unknown length of the actual plane here. Then solve for the unknown:

_____ = _____

Length of actual F/A-18 = _____ in (**x 12**) = _____ ft.

$$\frac{5.247}{3.5} = \frac{n}{40}$$

Actual length = 59.965 ft