

PRE-FLIGHT OBSERVATION ACTIVITY (FLIGHT PLAN CALCULATIONS)

Name: _____ Class: _____ Date: _____

Open Saved Flight, "A-Statue of Liberty", change the view to outside the plane and pause the flight. Use the NYC T.A.C. provided to you, along with the information on the Cessna 172 Aircraft Spec Sheet (in your curriculum book) to answer the following questions and solve any of the corresponding equations below. (show your work)

1) Where are we now and where will we be going?

- Locate the statue of liberty on the chart ☐
- Locate LaGuardia (**KLGA**) on the chart ☐
- Look at the screen on the simulator. Using your observation skills, can you guess what runway we are currently on? _____
- If adding a zero to the end of the runway number indicates our heading that would mean our heading is _____ **degrees**
- Look again at LaGuardia on the chart. Now that we know our heading;
 - that would place us where on the runway? _____
 - Where would we be taking off from? _____

2) How far is our flight?

- Line the ruler up on the chart and measure the distance from the statue of liberty to the end of the runway you are taking off from, then line it up on the scale. (bottom of the chart) _____

3) What direction will we need to fly in to reach the Statue of liberty?

- Line the ruler up on the chart again between the statue of liberty and the end of the runway you are taking off from. Without changing the angle of the ruler, bring it down to one of the compass roses on the chart and read the number. _____
- That was your True Course, we want to follow the Magnetic Course. To calculate our magnetic course, we have to use the rules for magnetic variation. Magnetic Variation is +/- 14 deg. If you are going west you add the 14 to the true heading, if you are going east you subtract it. What is our Magnetic Course? _____

4) How long will the flight take?

- Flight Distance / Cruise speed = ____ . ____ or ____% of capable flight planned

- Based on that equation we know that the miles flown is equal to ____% of what the plane can fly in an hour. This also means that the time the flight will take should equal that same percentage out of 1 hour. There are 2 ways you can choose to calculate this:
 - (# of hours x % of capable flight planned) x # of Minutes in an hour = ____ **minutes flown**
 - # of minutes in an hour x % of capable flight planned = ____ **minutes flown**

5) How much fuel will be used?

- Fuel burn rate (GPH) x % of capable flight planned = _____ **Gal. of fuel burned**

6) How much lighter will the plane be at the end of the flight?

- Fuel weight per gal. x gal. of fuel burned in flight = _____ **lbs. lighter**



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1) Where are we now and where will we be going?

- Locate the statue of liberty on the chart ✓
- Locate LaGuardia (KLGA) on the chart ✓
- Look at the screen on the simulator. Using your observation skills, can you guess what runway we are currently on? 4
- If adding a zero to the end of the runway number indicates our heading that would mean our heading is 40 degrees
- Look again at LaGuardia on the chart. Now that we know our heading;
 - that would place us where on the runway? Start of runway 4 (face full runway at 40 deg.)
 - Where would we be taking off from? End of runway 4 (also start of runway 22)

2) How far is our flight?

- Line the ruler up on the chart and measure the distance from the statue of liberty to the end of the runway you are taking off from, then line it up on the scale. (bottom of the chart) 10 N.M.
(Nautical Miles)

3) What direction will we need to fly in to reach the Statue of liberty?

- Line the ruler up on the chart again between the statue of liberty and the end of the runway you are taking off from. Without changing the angle of the ruler, bring it down to one of the compass roses on the chart and read the number. 240 deg.
- That was your True Course, we want to follow the Magnetic Course. To calculate our magnetic course, we have to use the rules for magnetic variation. Magnetic Variation is +/- 14 deg. If you are going west you add the 14 to the true heading, if you are going east you subtract it. What is our Magnetic Course? 254 deg.

$$240 \text{ deg.} + 14 \text{ deg. MVAR} = 254 \text{ deg.}$$

4) How long will the flight take?

- Flight Distance / Cruise speed = 0 . 1 or 10 % of capable flight planned

$$10 \text{ n.m.} / 100 \text{ k/h} = .1 \text{ or } 10\%$$

- Based on that equation we know that the miles flown is equal to 10 % of what the plane can fly in an hour. This also means that the time the flight will take should equal that same percentage out of 1 hour. There are 2 ways you can choose to calculate this:
 - (# of hours x % of capable flight planned) x # of Minutes in an hour = 6 minutes flown
 - # of minutes in an hour x % of capable flight planned = 6 minutes flown

$$1 \text{ hr} \times 10\% (.1) \times 60 \text{ min} = 6 \text{ min.} \quad \text{or} \quad 60 \text{ min} \times 10\% (.1) = 6 \text{ min.}$$

5) How much fuel will be used?

- Fuel burn rate (GPH) x % of capable flight planned = .7 Gal. of fuel burned

$$7 \text{ GPH} \times 10\% (.1) = .7$$

6) How much lighter will the plane be at the end of the flight?

- Fuel weight per gal. x gal. of fuel burned in flight = 4.2 lbs. lighter

$$6 \text{ lbs (1 gal.)} \times .7 \text{ gal.} = 4.2 \text{ lbs}$$

