

Cadette Pathways to Flight Program

Section 1 9:10am – 10:00am

Aerodynamics 20 minutes

Handout: parts of a plane



Power Point presentation

- During the Power Point, the girls can reference where these parts are on their handout showing the parts of a plane:
 - Ailerons
 - Elevators/horizontal stabilizers
 - Rudder
 - Flaps
- Explain how all these surfaces move mechanically and the resulting effects in flight
- Stop at Bernoulli's Principle to do experiment

Question 1:

What are the four main forces that affect a plane's ability to fly?

Thrust, Drag, Lift, Weight/Gravity

Question 2:

Which horizontal surfaces are used for turning?

Wings & Ailerons

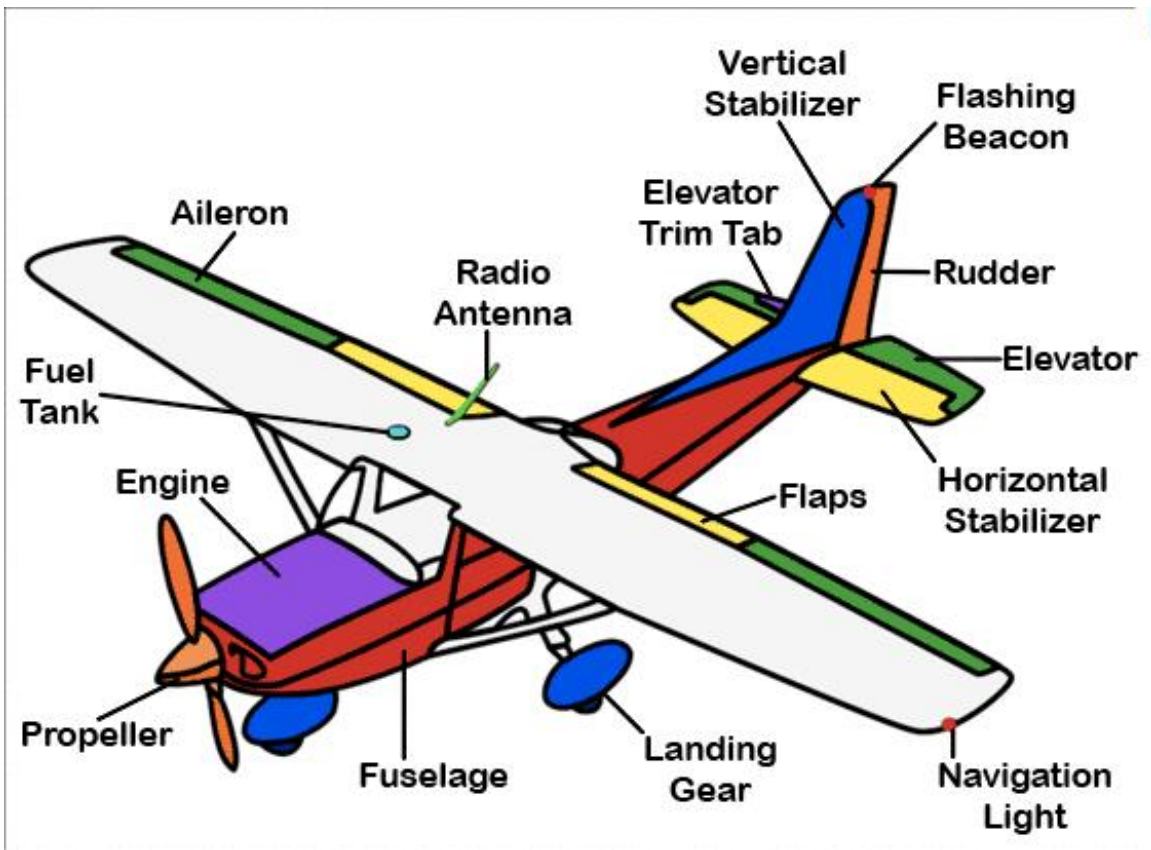
Which horizontal surfaces help control ascent and descent?

Elevators/Horizontal stabilizers

Question 3:

Which of the following correctly describes how Bernoulli's Principle helps an airplane achieve lift?

- a) Air moving over the wing creates higher pressure above the wing
- b) Air moving over the wing creates lower pressure above the wing





Instruments 15 minutes	Handout: Six Pack & PFD
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Review purpose of each instrument (Use Power Point if you like)

Compare Six Pack to PFD (Primary Flight Display)

- Have the girls write in the names of the instruments and draw lines connecting the Six Pack instruments to their counterparts on the PFD

Using the Six Pack—

Question 1:

What is the airplane's indicated airspeed?

About 108

Question 2:

Is the airplane in a turn? What instrument(s) tell you that?

Yes—Attitude Indicator & Turn Coordinator

Using the PFD:

Question 3:

What is the plane's altitude?

6,800 msl

Question 4:

What is the plane's heading? (What direction is it going?)

347 – NNW



Airport Environment 15 – 20 minutes	Handouts: Aviation alphabet Airport diagram
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Communications

- Aviation alphabet—why do we use this?
- How do pilots & controllers communicate? **Radio (they'll learn about the light gun when they visit the tower)**
- What information is important for pilots & controllers to share?

Question:

Girls can each spell out a word for a partner using the aviation alphabet

Weather—the role of ASOS & AWOS



- Briefly review what a METAR tells us & why these are important things to know:
Sample METAR: KTKI 012053Z 14009KT 10SM FEW 065
 - Wind speed & direction
 - Barometric pressure
 - Significant weather
 - Notices about the airport or airspace
- If we have a radio, you can listen to ASOS

Question:

Do you think today would be a good day to fly around here?



Airport Diagram

- The role of wind direction
- Pattern
 - On the airport diagram, draw the pattern in use today at KTKI
- Controlled vs. uncontrolled airports
 - Give a basic outline of airspace restrictions & equipment requirements at KTKI.
 - How does that differ from an uncontrolled airport?

Question:

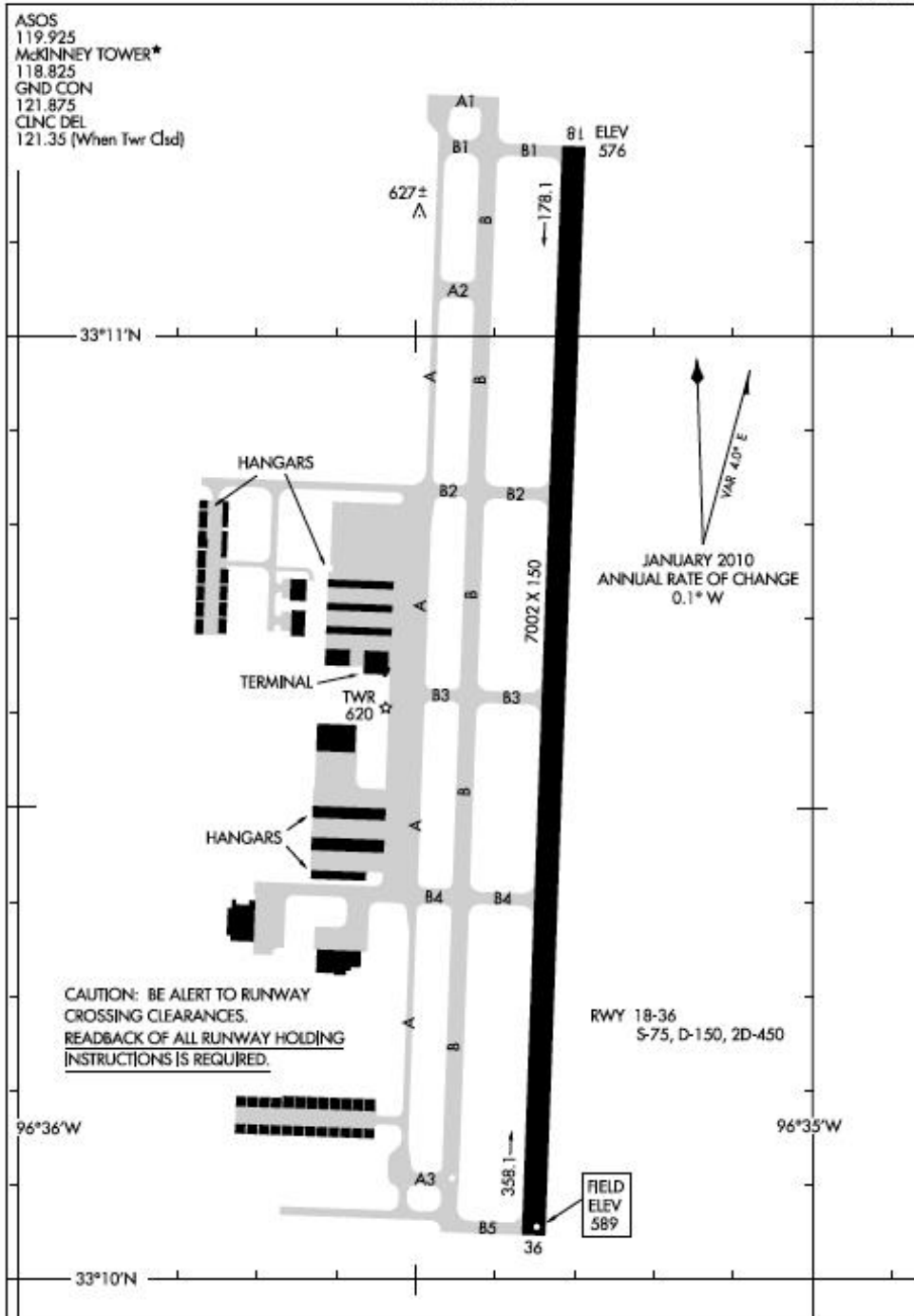
What runway are the pilots using today at KTKI? Can they point to the end at which pilots will start their takeoffs & landings?

A	Alpha
B	Bravo
C	Charlie
D	Delta
E	Echo
F	Foxtrot
G	Golf
H	Hotel
I	India
J	Juliet
K	Kilo
L	Lima
M	Mike
N	November
O	Oscar
P	Papa
Q	Quebec (Keh-beck)
R	Romeo
S	Sierra
T	Tango
U	Uniform
V	Victor
W	Whiskey
X	X-ray
Y	Yankee
Z	Zulu
9	Niner

13010
AIRPORT DIAGRAM

DALLAS/ COLLIN COUNTY RGNL AT MC KINNEY (TKI)
 AL-6644 (FAA) DALLAS, TEXAS

ASOS
 119.925
 MCKINNEY TOWER*
 118.825
 GND CON
 121.875
 CLNC DEL
 121.35 (When Twr Clsd)



SC-2, 19 SEP 2013 to 17 OCT 2013

SC-2, 19 SEP 2013 to 17 OCT 2013

CAUTION: BE ALERT TO RUNWAY
 CROSSING CLEARANCES.
 READBACK OF ALL RUNWAY HOLDING
 INSTRUCTIONS IS REQUIRED.

RWY 18-36
 S-75, D-150, 2D-450

13010
AIRPORT DIAGRAM

DALLAS, TEXAS
 DALLAS/ COLLIN COUNTY RGNL AT MC KINNEY (TKI)

Cadette Pathways to Flight Program

Section 2 10:00am – 11:00am

Visits to the Tower & Airplane 50 minutes	
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Group 1: Visit Tower 10:00 – 10:25; Airplane 10:25 – 10:50

Group 2: Visit Airplane 10:00 – 10:25; Tower 10:25 – 10:50

We're splitting this activity into two 25-minute segments as follows:

Group 1 will go to the Tower at 10:00 and then will leave and walk to the plane, **arriving there by 10:25**. The 99 from the Tower will then take Group 2 to the Tower and return to the conference room at Cutter by 10:50.

Group 2 will go to the airplane. They'll split into two halves. One will go inside the plane to review the instruments & **gently** try out the yoke, rudder pedals & brakes for about 10 minutes while the other walks around the plane identifying control surfaces, talking about safety, etc. Then the two halves will switch places for the final 10+ minutes.

Group 1 will need to return to the conference room by 10:50.

Snack 5-10 minutes	
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Cadette Pathways to Flight Program

Section 3 11:00am – 12:00pm

Trip Planning 30 minutes	Handouts: Navigation Map Worksheet
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Decisions

- Weather
- Equipment
 - On board
 - In air
 - At airports
- Safety
 - Weight & Balance
 - Center of gravity exercise with ruler & Play doh
- Personal

Question:

Would this be a good day for you to fly?

Trip Planning

- Draw course
 - KTKI to KSLR to KPRX to KTKI
- Complete Worksheet

Question 1:

What effect would a strong wind from the south have on your flight times & headings?

Would speed up leg KSLR to KPRX and slow leg KPRX to KTKI

Question 2:

If you started with 10 gallons of fuel, how far could you go on this itinerary before refueling?

KPRX (You could fly beyond KPRX, but GA planes can't refuel in midair.)



NAVIGATION

PILOTAGE

Plot and fly a magnetic course using landmarks to be sure you're on course. Don't forget to factor in magnetic variation (the difference between the heading to True North and the heading to Magnetic North) and the wind correction angle (the adjustment in heading necessary to keep the wind from blowing you off course).

This only works in visual conditions when you can see the ground.

RADIO SIGNALS: VOR (VERY HIGH FREQUENCY OMNI DIRECTIONAL RANGE)

Use VOR radio signals to follow "highways in the sky" between VORs. Are the VORs and the VOR receiving equipment in your plane are working correctly? Identify a VOR by its Morse Code signal to be sure you're following the right one. Stay on a radial and you're automatically adjusting for magnetic variation and the effects of wind.

This is usually not the fastest route between two places, but you can fly in both visual and instrument conditions.

GPS (GLOBAL POSITIONING SYSTEM)

Pick your own route through the sky and let satellites guide you. Your GPS equipment must be able to access signals from at least 5 working satellites at any one time. "Fly the line" and GPS will automatically adjust for magnetic variation and the effects of wind.

GPS enables you to choose your course and fly it in either visual or instrument conditions. Many pilots now prefer to use this system.

THINGS TO CONSIDER IN PLANNING & MAKING A FLIGHT

WEATHER

What's the forecast along your route of flight? Is your plane equipped for that weather? Are you comfortable and qualified to fly in that weather?

TERRAIN & OBSTACLES

How high and where do you need to fly to avoid hitting mountains, buildings and such? Can your plane fly that high? Will you and your passengers need oxygen?

FUEL

How much do you need? How much can you carry? If you need to stop for fuel, where can you?

EQUIPMENT ON BOARD

Is everything working that needs to be working? If your plane uses computer equipment, do the databases have current information?

AIRSPACE RESTRICTIONS

Are there areas along your route where you shouldn't fly or can't fly?

JUST IN CASE

Sometimes things happen while you're flying. Weather might change, an airport you're flying to might have to close, your equipment might malfunction. Are you prepared to navigate to a new place if necessary?

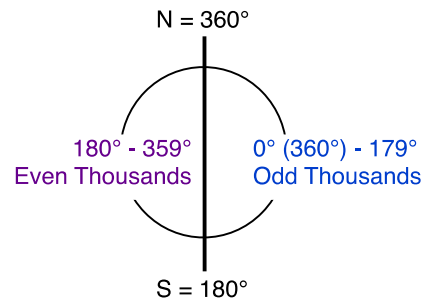
Trip Planning Worksheet

Assume:

Airspeed = 100 miles/hour

Fuel burn = 10 gallons/hour

Fuel cost = \$5/gallon



Collin County (KTKI) to Sulphur Springs (KSLR)

Mileage	
Heading	
Flight time	
Fuel needed & cost	
Flight at odd or even thousands?	

Sulphur Springs (KSLR) to Paris (KPRX)

Mileage	
Heading	
Flight time	
Fuel needed & cost	
Flight at odd or even thousands?	

Paris (KPRX) to Collin County (KTKI)

Mileage	
Heading	
Flight time	
Fuel needed & cost	
Flight at odd or even thousands?	

Powder Puff 15 minutes	
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Power Point presentation

Careers 15 minutes	
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Power Point presentation
Short Q&A with one of our professional pilots

Question

What percentage of pilots in the US are women?

About 6%

Is there room for more women in the aviation industry?

Definitely!

Evaluations & Certificates	
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