

Mini-Literature Unit

Thrilling a Nation

Ruth Law Thrills a Nation

story and pictures by Don Brown
Houghton Mifflin Company
Boston, 1993

ISBN 0-395-66404-7 (hardcover)
ISBN 0-395-73517-3 (paperback)

Teacher Introduction



Using literature to integrate subjects through thematic instruction has become an effective methodology in the classroom. This sub-section contains a mini-literature unit using the picture book Ruth Law Thrills a Nation by Don Brown (Houghton Mifflin Company, Boston, 1993, ISBN 0-395-73517-3 or 0-395-66404-7). The book was selected because of the brief, yet well written, historically-based text and the engaging, colorful illustrations. A picture book was selected so that the teacher need only purchase one copy. The story traces the flight female aviator Ruth Law took as she attempted to be the first pilot to fly in one day from Chicago to New York. She did not make that goal, however she did become the first American pilot to fly non-stop for 590 miles.

This mini-literature unit follows the “Into, Through and Beyond” format. The “Into” section contains a comparison of women in the different decades, vocabulary exercises, introductory aviation activities and discussion topics. The “Through” section contains comprehension questions about the story (with answers!) and a discussion topic. The “Beyond” section includes an aircraft comparison chart, a collaborative creative writing activity, and an artistic project.

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"Into" Activities



- **Comparing Women of Different Decades**

Using the Woman's Work chronology chart from the Web site: <http://quest.arc.nasa.gov/space/frontiers/activities/womanswork/chart.html> and supplementing with pictures of women's dress from the 1910s and today, have the students complete the comparison chart and discuss their impressions.

- **Female Aviators**

As a class have students list the names and feats of any female aviator they have heard about. Then display the timeline that chronologically displays who some of these female aviators were and what their contributions to aviation were.

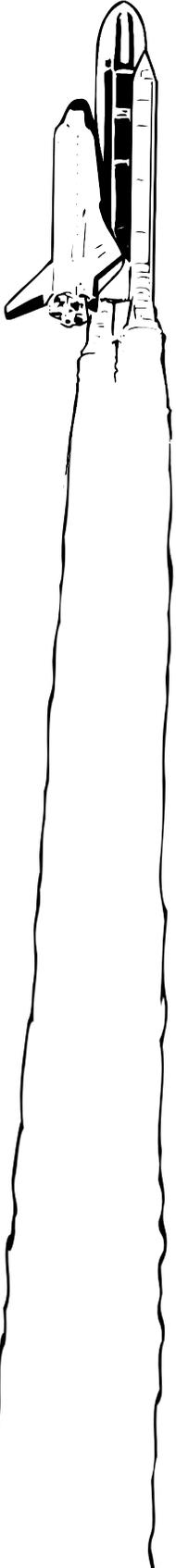
- **Chicago to New York, Now Boarding!**

On a map of the United States, pinpoint Chicago, Illinois, and New York City, New York. Measure the distance (as the crow flies!) and post. Point out that by 1916 no one had flown that distance (that far) non-stop. Discuss the importance with your class.

- **That Daring Woman in Her Flying Machine**

Show students a drawing of the airplane that Ruth Law flew and discuss its structure.

Comparing Women of Different Decades



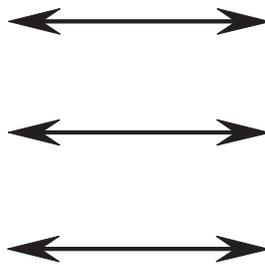
Women of the 1910s

Women of Today

Name 3 ways they are similar.

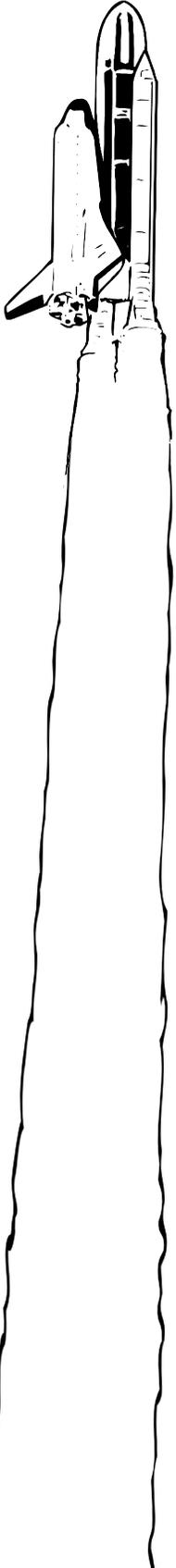
Name 3 ways they are different.

In what way?



Comparing Women of Different Decades

Key of Possible Answers



Women of the 1910s

Women of Today

Name 3 ways they are similar.

Wear dresses.
Still do most of the housework.
Raise families.
Still work as teachers, nurses, and domestics.

Name 3 ways they are different.

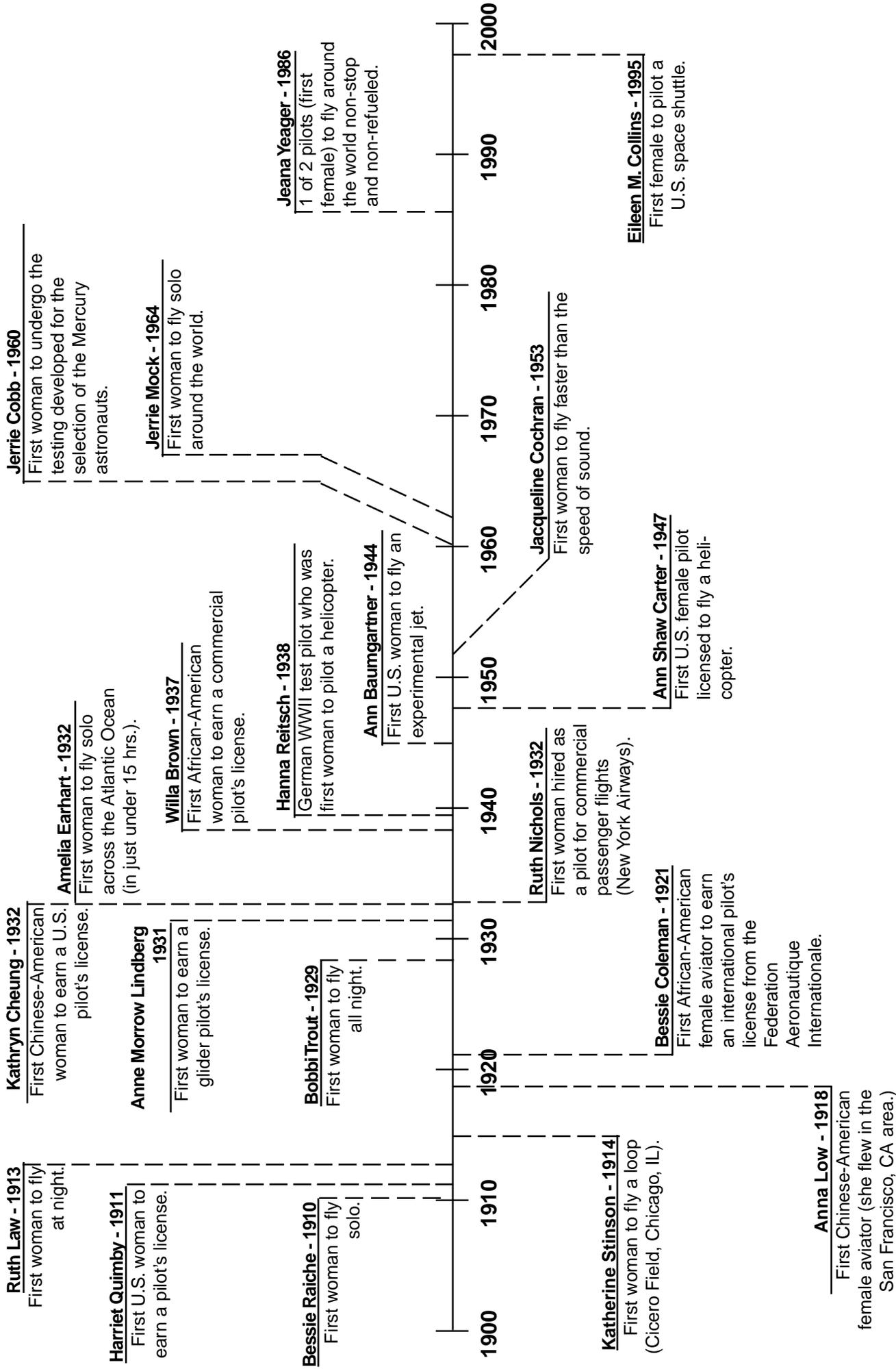
In what way?

Mostly 5th grade schooling.
Always in dresses and hats.
Mainly teachers, nurses, and domestics.

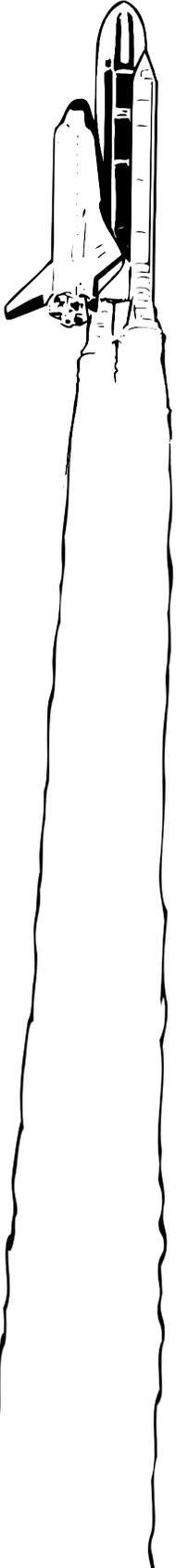
education
clothing
type of work

Mostly high school and some college.
More casual.
More different types like lawyers, doctors, scientists, researchers.

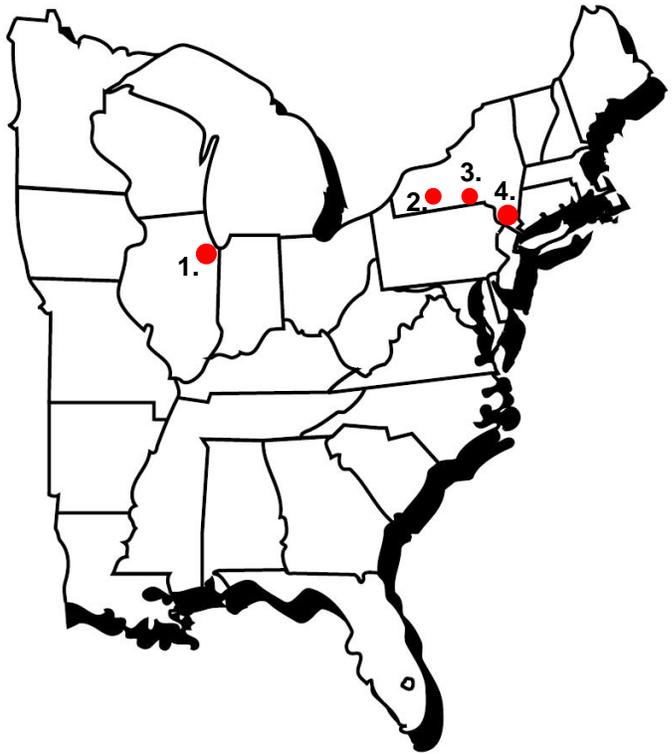
Female Aviation Firsts



Chicago to New York, Now Boarding!



1. Chicago, Illinois
2. Hornell, New York
3. Binghamton, New York
4. New York City, New York



Discussion : Point out the aforementioned cities on the map. Ruth Law begins her flight in Chicago and ends the final leg of her flight in New York City. The first leg of her flight Chicago, Illinois to Hornell, New York, is 590 miles. No pilot had ever flown that far in one flight. Discuss with your students why up until 1916 no pilot had flown that distance (590 miles).

Possible well thought out answers:

- They hadn't made airplanes that had fuel tanks big enough to hold the amount of fuel they needed to fly that far.
- They hadn't made airplanes with reliable enough engines to fly for such a long time without giving out.
- The airplanes they made back then were not as streamlined as they are now so they had too much drag. They did not fly as efficiently because of that extra amount of drag.
- Because airplanes were such a new technology, they were still learning how to make them fly better, faster, farther and more efficiently.

That Daring Woman in Her Flying Machine



Curtiss Pusher Biplane

- Length: 33.5 feet (10.3 meters)
- Total Weight: 550 pounds (249.5 kg)
- Wing Span: 29.75 feet (9.2 meters)
- Aileron dimensions: 6 x 2 feet (1.82 x .6 meters)
- Motor: 4-cylinder of 30 horsepower
- Speed: 45 mph
- Propeller: One direct drive pusher propeller 6.5 feet (2 meter) in diameter placed behind the pilot and wings near mid-ship.
- Control Surfaces: 2 Ailerons set between the wings on each side control the roll motion.

Teacher's Note: This is a later version of the model Ruth Law flew.

"Through" Activities



- **Vocabulary List**

A list of vocabulary important to the story is included along with definitions.

- **Vocabulary Crossword Puzzles**

A set of 3 crossword puzzles using 11 of the vocabulary words each is included.

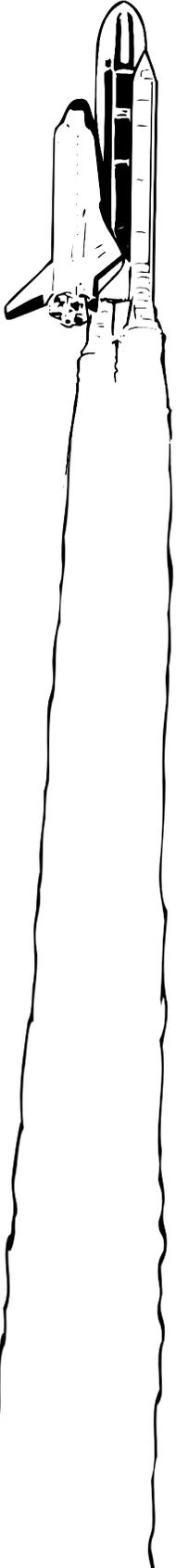
- **Comprehension Questions**

A series of 31 comprehension questions (and their answers) about the story is included.

- **Plotline**

Have the students cut the story descriptors into strips and then affix them in sequential order on the plotline.

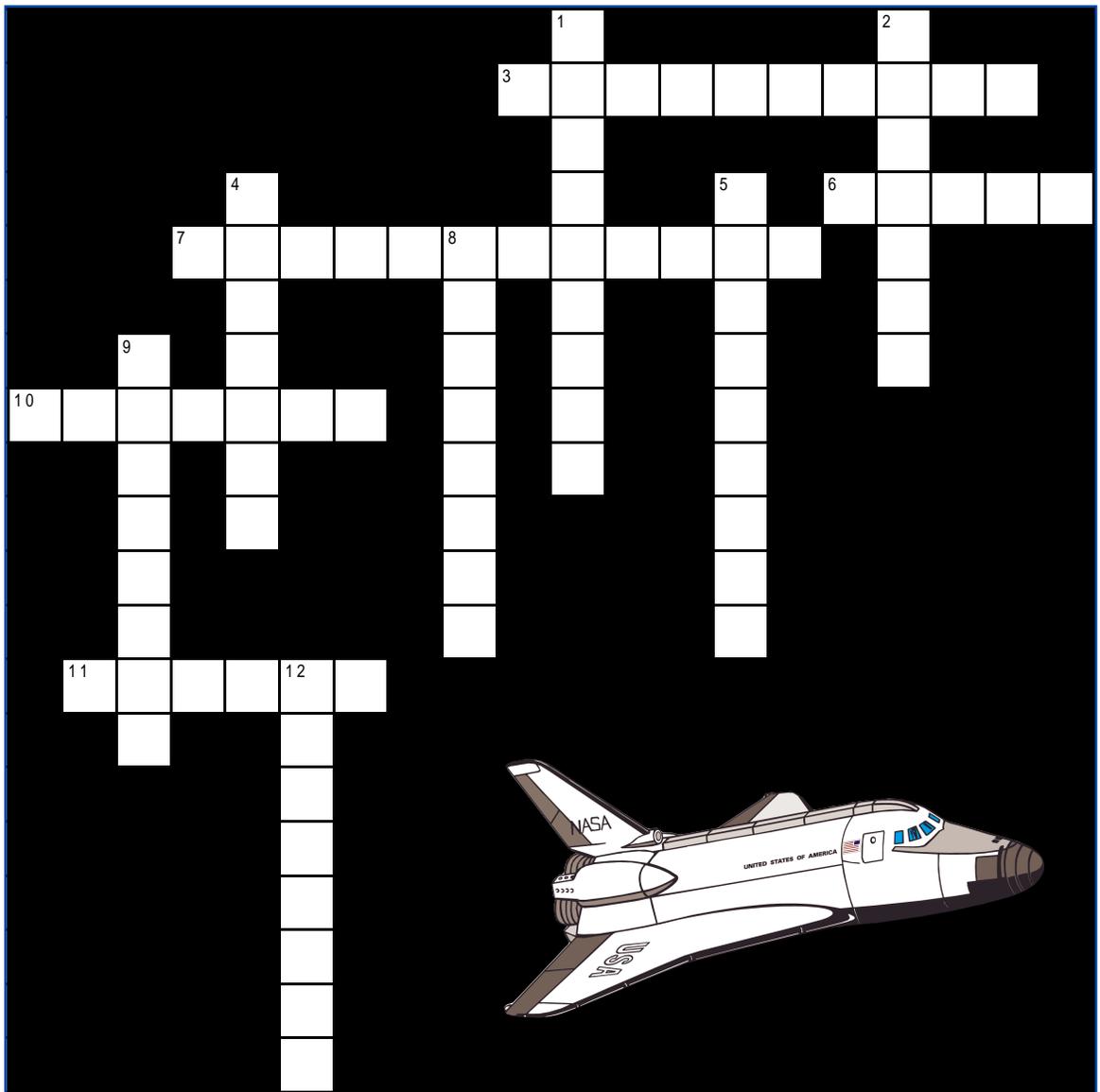
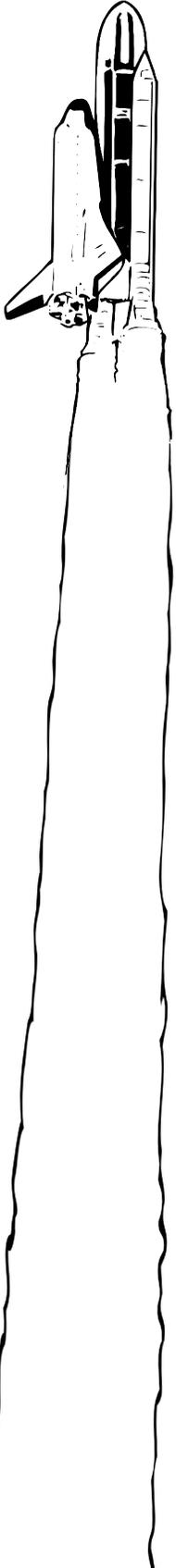
Ruth Law's Vocabulary Words



1. frosty chilly or briskly cold
2. blustery stormy wind gusts
3. bulky having great weight or volume so that it bulges
4. manufacturer a person or company that makes a product
5. refused to turn down a request, to not allow
6. mechanics people who repair or fix machines
7. attached to fasten
8. windshield a screen placed in front of occupants in a vehicle
9. gallons a unit of liquid measure
10. nightfall dusk, the end of daylight
11. throttle a lever that controls the thrust of the engine
12. hollows a small valley or depression in the land
13. awkwardly moving clumsily
14. onlookers spectator
15. narrowly barely missing an object
16. frigid extremely cold
17. consulting to refer to or make use of
18. crude something put together in a simple fashion
19. scroll paper that is rolled
20. compass an instrument that gives cardinal directions
21. speedometer an instrument that measures speed
22. propelled to move forward
23. approximately not exact
24. supporters people who give help
25. pitched to move the nose of an airplane up
26. slightly a little bit
27. steering gear an instrument that controls the direction of a vehicle
28. record an unsurpassed statistic
29. striking something that is noticed because of its unusual quality
30. cameo a brief appearance
31. slanted to slope
32. hospitality a pleasant or friendly welcome
33. banquet a meal held in recognition of a special event
34. heroine female hero
35. honor a public showing of respect
36. heralded to proclaim with enthusiasm in public
37. feat an act of great skill, endurance or ingenuity

Crossword Puzzle #1

Directions: Use the clues below to complete the crossword puzzle.



ACROSS

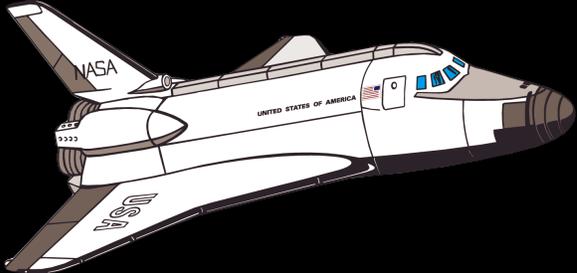
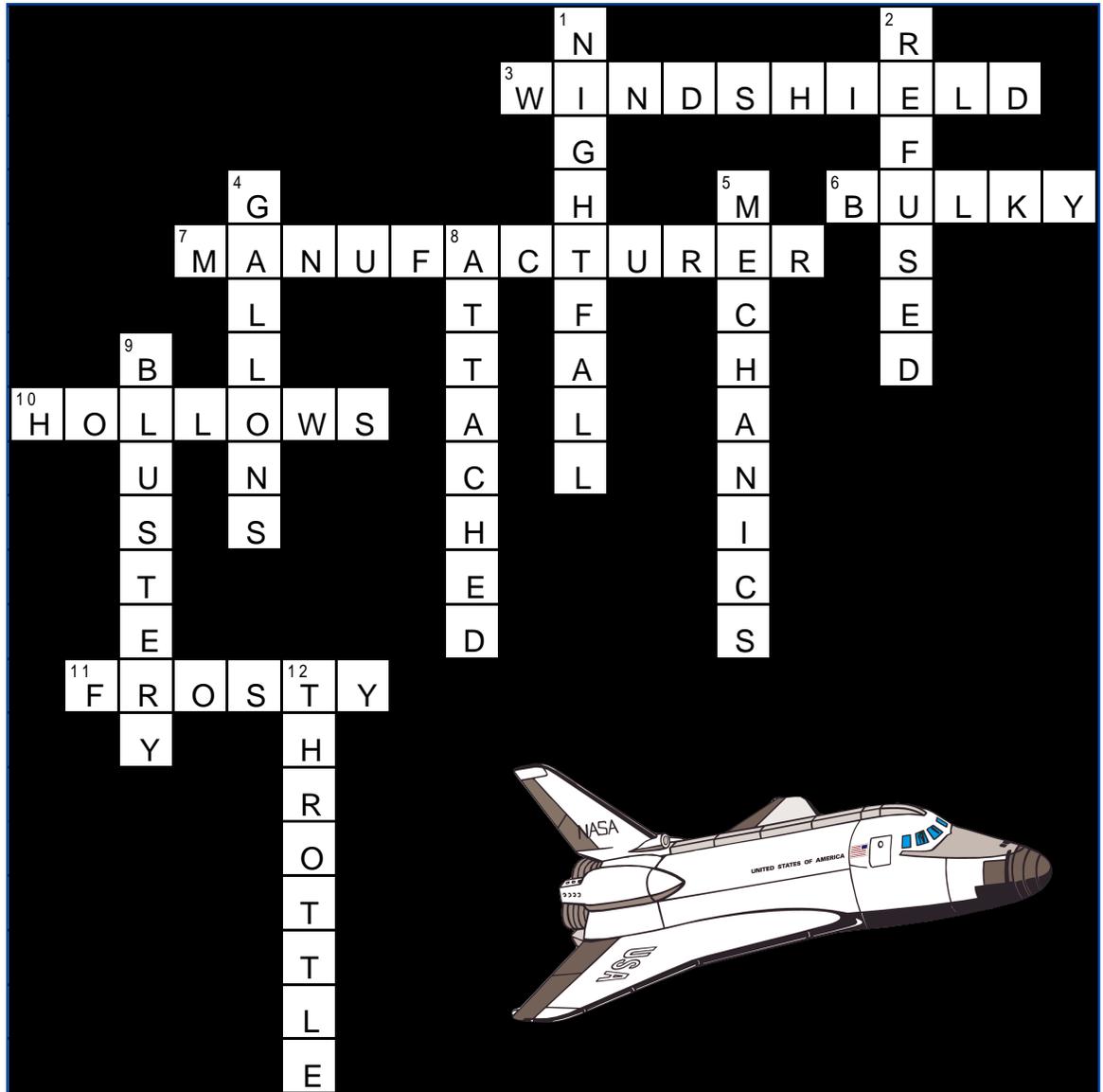
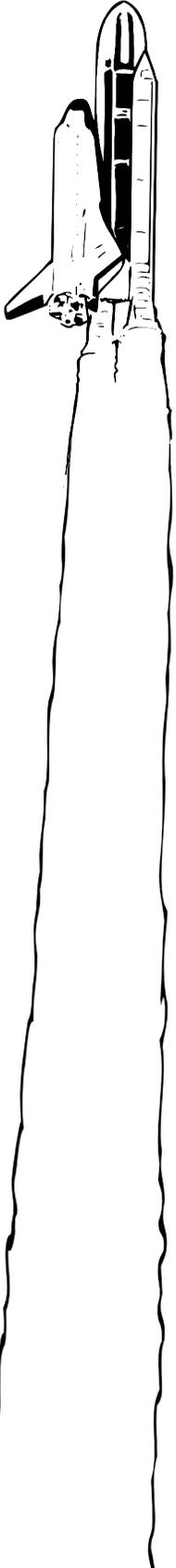
- 3 a screen on a vehicle that protects the occupants
- 6 having great weight or volume
- 7 a person or company that makes a product
- 10 a small valley
- 11 chilly or briskly cold

DOWN

- 1 the end of daylight
- 2 to not allow
- 4 a liquid measurement
- 5 people who fix or repair machines
- 8 to connect or fasten
- 9 stormy wind gusts
- 12 used to control the engine's thrust

Crossword Puzzle #1 - Key

Directions: Use the clues below to complete the crossword puzzle.



ACROSS

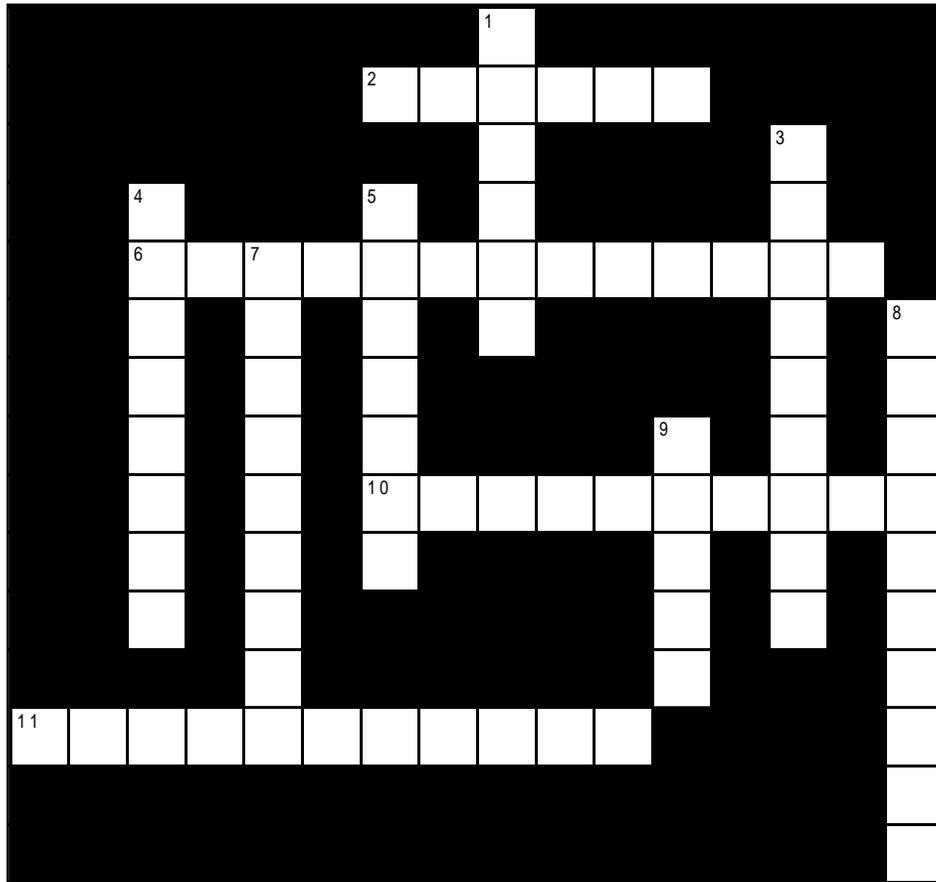
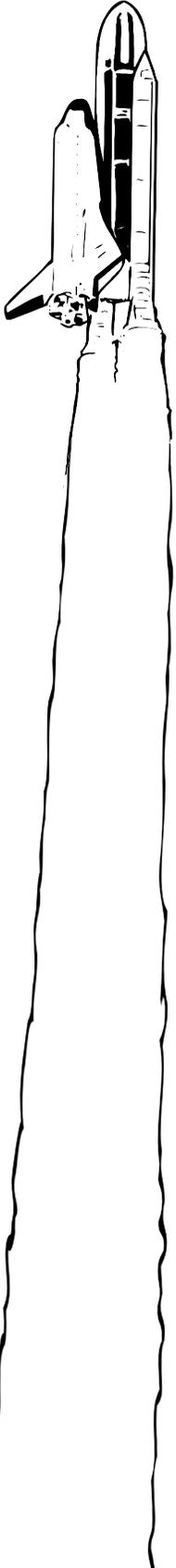
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Crossword Puzzle #2

Directions: Use the clues below to complete the crossword puzzle.



ACROSS

- 2 rolled up paper
- 6 not exact
- 10 people who give help or aid
- 11 a device that measures speed

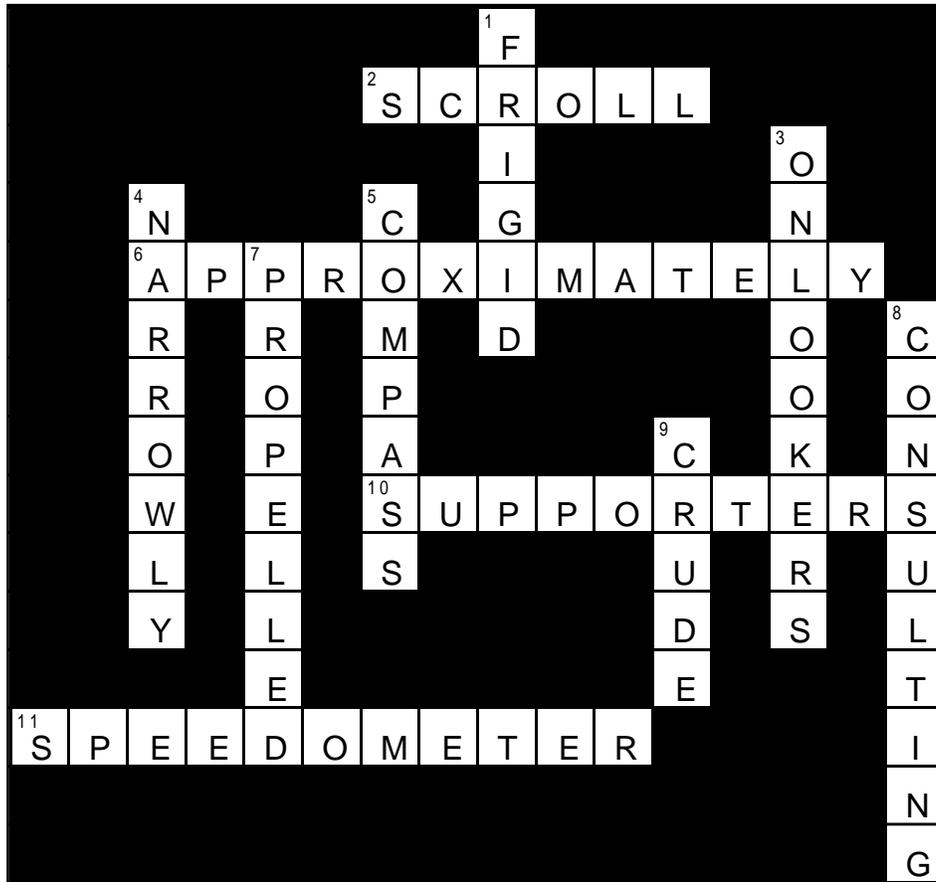
DOWN

- 1 extremely cold
- 3 spectators

- 4 barely missing an object
- 5 a device that gives the cardinal directions
- 7 to put into motion
- 8 to make use of, to refer to
- 9 something put together simply

Crossword Puzzle #2 - Key

Directions: Use the clues below to complete the crossword puzzle.



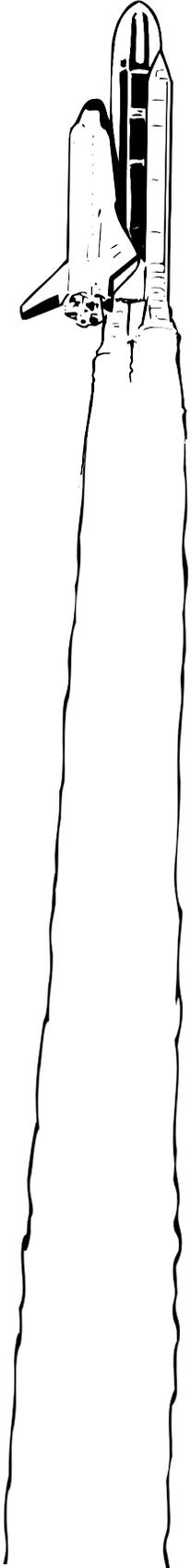
ACROSS

- 2 rolled up paper
- 6 not exact
- 10 people who give help or aid
- 11 a device that measures speed

DOWN

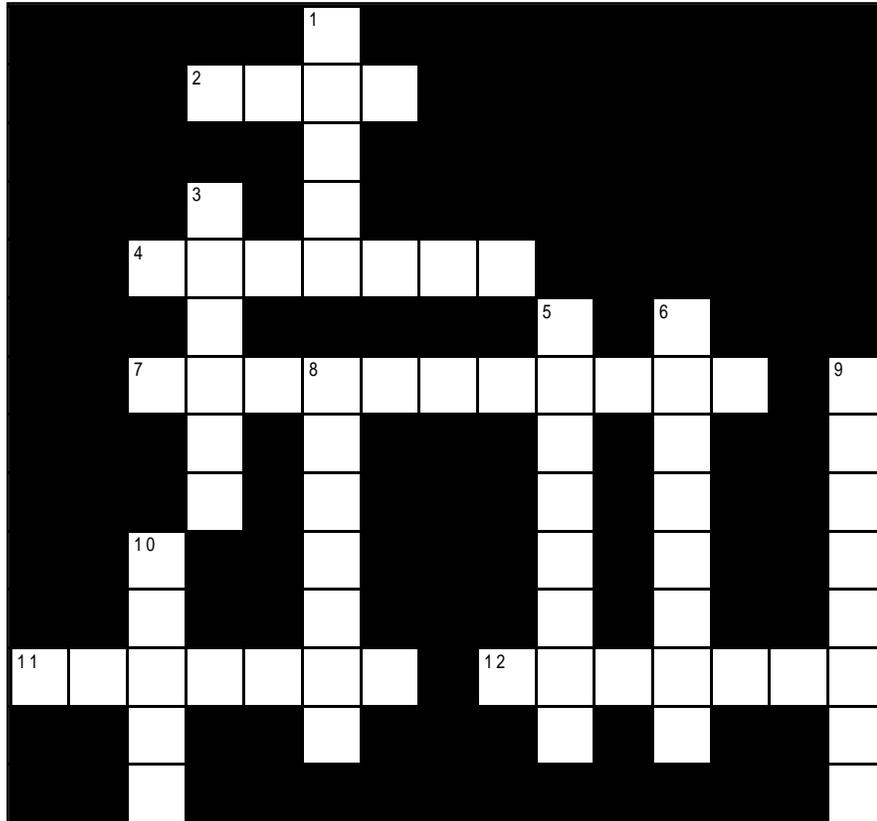
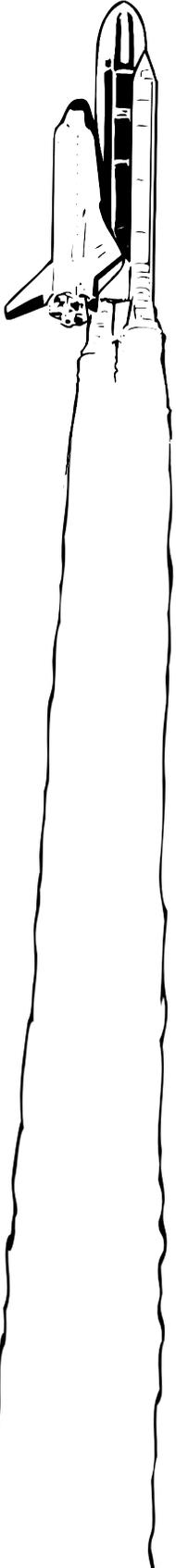
- 1 extremely cold
- 3 spectators

- 4 barely missing an object
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- 7 to put into motion
- 8 to make use of, to refer to
- 9 something put together simply



Crossword Puzzle #3

Directions: Use the clues below to complete the crossword puzzle.



ACROSS

- 2 an act of great skill or endurance
- 4 female hero
- 7 a friendly welcome
- 11 a meal held in recognition of a special event
- 12 to slope

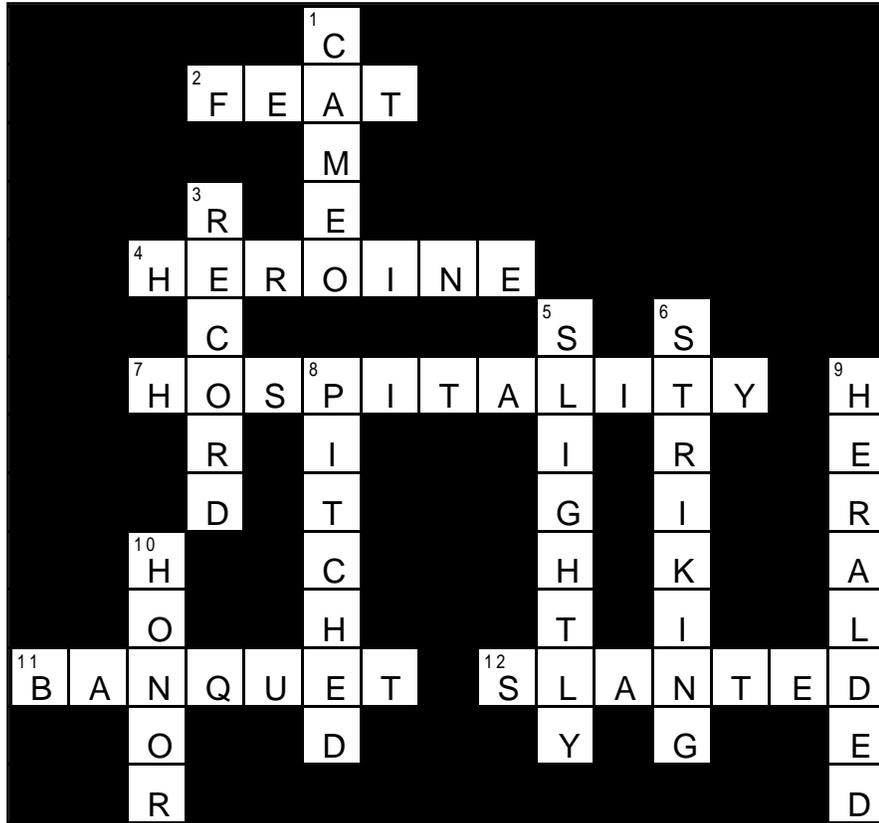
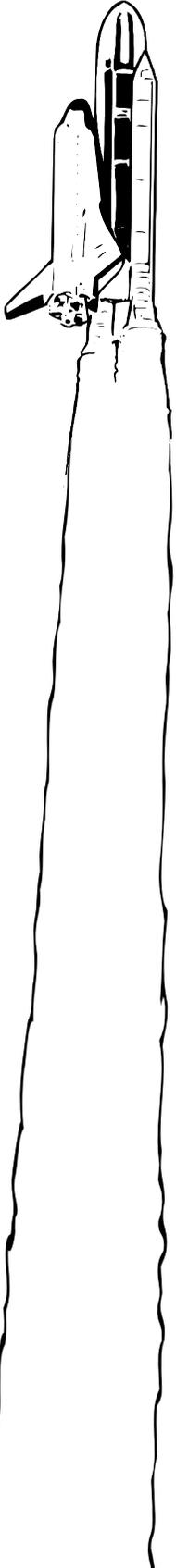
DOWN

- 1 a brief appearance
- 3 an unsurpassed statistic

- 5 a little bit
- 6 something that is noticed because of its unusual
- 8 to move the nose of an airplane up
- 9 to say in public with great enthusiasm
- 10 a public showing of great respect

Crossword Puzzle #3 - Key

Directions: Use the clues below to complete the crossword puzzle.



ACROSS

- 2 an act of great skill or endurance
- 4 female hero
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- 11 a meal held in recognition of a special event
- 12 to slope

DOWN

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- 3 an unsurpassed statistic

- 5 a little bit
- 6 something that is noticed because of its unusual
- 8 to move the nose of an airplane up
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- 10 a public showing of great respect

Comprehension Questions



1. What was Ruth Law going to try to accomplish on November 19, 1916?

Fly from Chicago, Illinois to New York City, New York, in one day.

2. Why did Ruth Law sleep in a tent on the roof of a Chicago hotel?

She needed to get used to the cold because on her flight she would be exposed to very cold air (cooler autumnal weather and cold air from a higher altitude). The airplane she would fly had an open cockpit.

3. Describe how Ruth dressed for warmth.

2 woolen long johns, 2 leather suits, a skirt over her pants

4. Why do you think Ruth Law wore a skirt?

In 1916 proper ladies had to wear dresses or skirts. They were really “looked down upon” for wearing pants.

5. From where exactly did Ruth Law take off?

Grant Park on the shore of Lake Michigan.

6. What did Ruth Law call her airplane? Explain why.

“Baby Machine” because it was an older and smaller airplane that was good for flying stunts in an air show, but not very good for long distance flights.

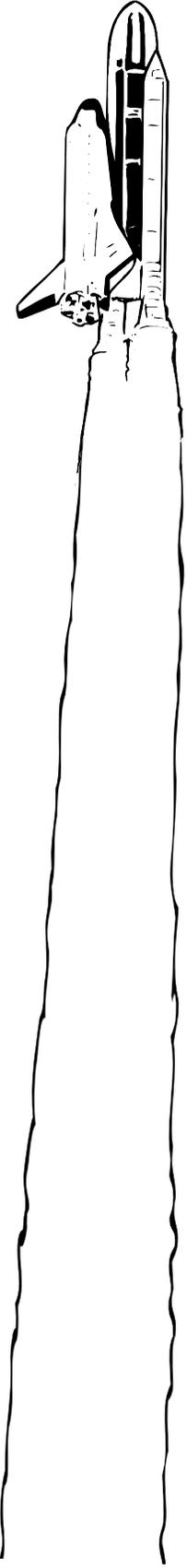
7. Why didn't Ruth Law get a bigger, newer and better airplane?

Ruth Law tried, but a leading airplane manufacturer of the time would not sell her an airplane.

8. Why did Mr. Curtiss refuse to sell Ruth Law a larger airplane?

Mr. Curtiss believed that a woman could not pilot a large airplane. He also thought that flying was dangerous, perhaps too dangerous for women.

Comprehension Questions (continued)



9. What changes did Ruth Law have made to her little airplane to make it fly better for the trip?

She had the mechanics attach a windshield to protect the pilot from the constant rush of cold air. The mechanics also added another fuel tank so she wouldn't have to stop and refuel more than one time.

10. How much fuel did both fuel tanks hold?

53 gallons

11. What did adding another fuel tank to the airplane do to the airplane itself?

It made the airplane heavier.

12. How would this affect the airplane's ability to fly?

If you increase the weight of the airplane then it might make the plane too heavy for the engines to move fast enough across the runway to gain lift. A heavier airplane would then need a greater wingspan (or aspect ratio) and more engine power.

13. How did the mechanics solve the heavier weight problem?

They took the lights off the airplane to make the airplane lighter.

14. Without lights on the airplane, did this change Ruth Law's flight plans?

Without lights, she would not be able to navigate very well after sunset. She would have to get to New York City before it got dark.

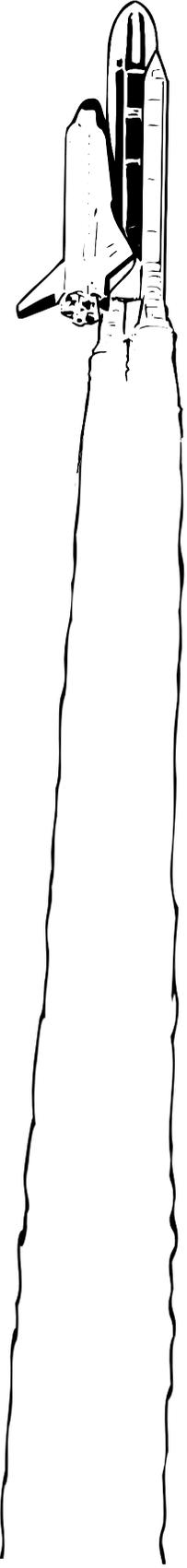
15. What gave her a late start on her flight?

The freezing weather made it hard to get the engine started.

16. Why do you think she took her skirt off?

So it wouldn't get in the way, flap in the wind, or maybe get caught on something and cause her to injure herself.

Comprehension Questions (continued)



17. Why do you think the crowd watched with fear as her airplane took off?

It was very windy and the airplane appeared to be hard to control during take off. They probably worried that she might lose control of the airplane.

18. How fast and how high was Ruth Law flying her airplane?

Ruth Law was flying 100 miles per hour, one mile above the earth.

19. How did she stay on course?

She used maps she taped to her leg, a compass, a clock and a speedometer to track her flight path.

20. What two things did Ruth Law depend upon to help move her airplane along?

She depended upon gasoline for engine fuel and the wind, but the wind was not as strong as she had hoped it would be.

21. Where did Ruth Law have to land at 2:00 P.M. and why?

She had to land in Hornell, New York, because her airplane was out of fuel.

22. In those six hours of flight, how far had she flown non-stop?

She had flown 590 miles non-stop. It was a new record.

23. Did she quit after she landed short of New York City?

No. She ate lunch, refueled the airplane and continued on to New York City.

24. How did people know about her flight while it was happening that same day?

The newspapers followed her flight and wrote about it. (Point out to students that some newspapers during those days published more than one, sometimes three, editions each day. The telegraph was also used to relay information.)

Comprehension Questions (continued)



25. What did the crowd of onlookers think when they saw Ruth Law's airplane head down towards the ground and disappear behind a grove of trees?

The crowd thought that she had crashed perhaps because something was not working properly on her airplane.

26. Ruth Law was only 2 hours away from New York City, why did she stop flying?

She decided to land because it was getting dark and she would not be able to read her map or her instruments. It would have been too dangerous to fly in the dark.

27. Did she fly all the way to New York City? What happened when she got there?

Yes, she made it. An army general and a musical band greeted her. Newspapers said she was a heroine who had accomplished an incredible feat. The President of the United States, Woodrow Wilson, said she was great, and a special dinner was held to honor her and her accomplishment.

28. Did Ruth Law accomplish her goal of flying from Chicago to New York City in one day?

No, she did not because she had to stop in Hornell, two hours short of New York City.

29. Do you consider her a failure because she did not accomplish that goal? Explain your answer.

See if the idea can be imparted that even though she did not accomplish that specific goal, she did accomplish a goal of perhaps equal importance.

30. Who broke Ruth Law's record a year later?

Katherine Stinson in 1917.

31. List some factors that if each were changed, the outcome might have been different. Give the different outcome also.

- *Bigger fuel tank: She would not have run out of fuel short of New York City.*
- *Not having engine trouble and leaving earlier: She would have had more daylight hours in which to fly.*
- *Fly during the spring or summer: More daylight hours in which to fly and warmer weather would have made the engine easier to start.*

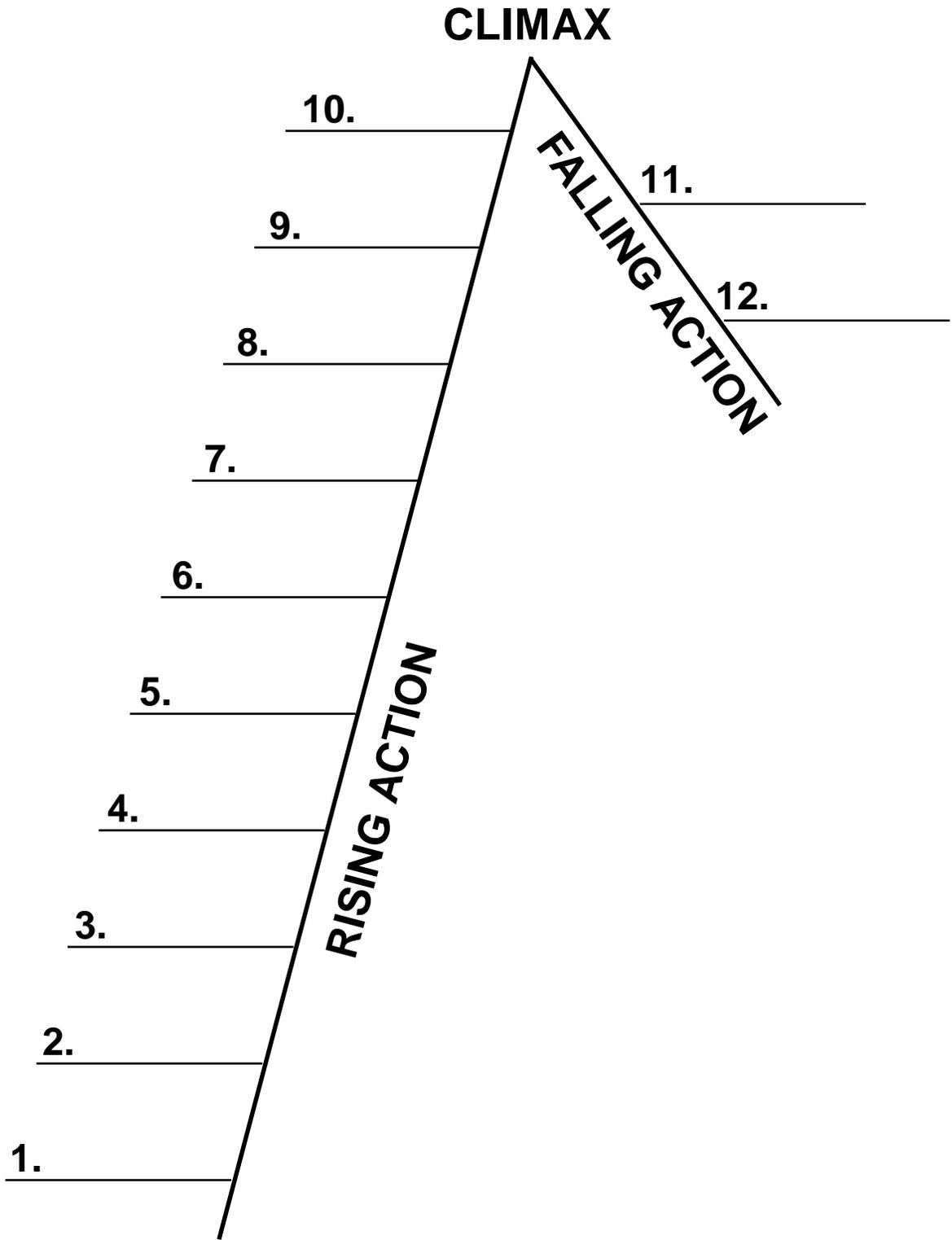
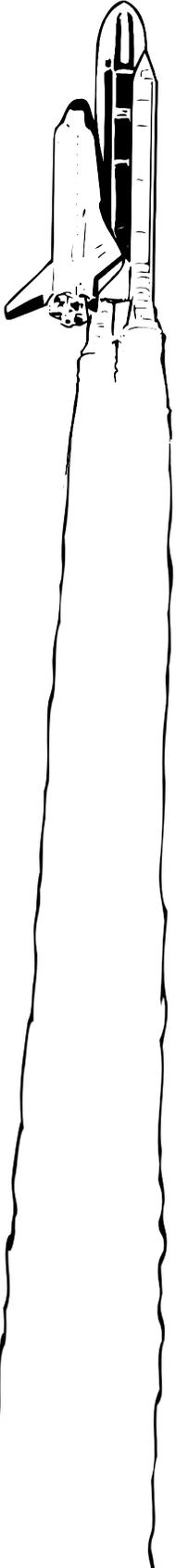
Ruth Law's Plotline

Directions: After reading the story Ruth Law Thrills a Nation, carefully read over each event from the story below. Cut out each event as a strip and place the events in their proper order of occurrence (according to the story). Tape or glue them to the plotline.

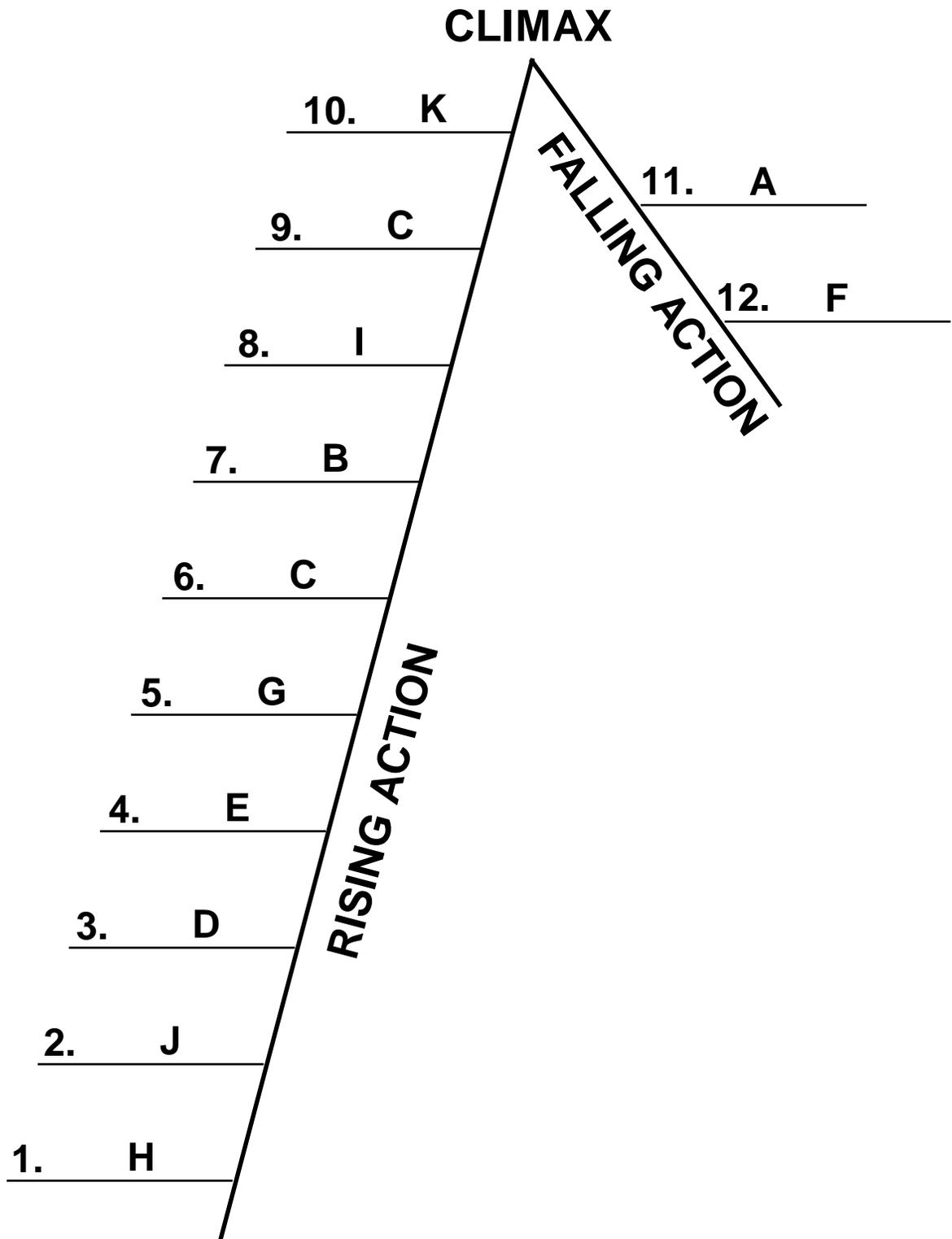
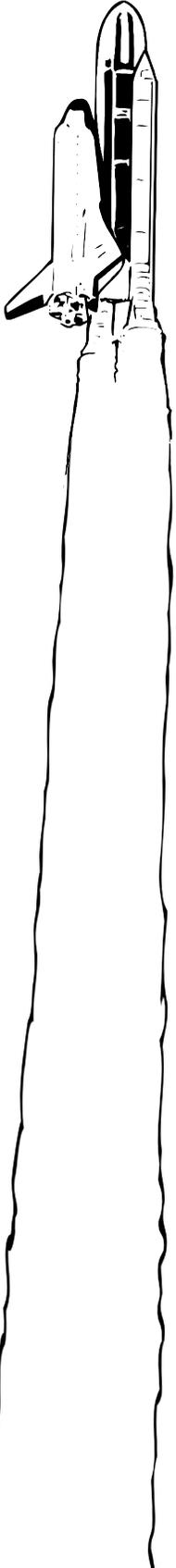


- A) Ruth Law leaves the next morning and makes it to New York City.
- B) Ruth eats lunch and refuels her airplane.
- C) She flies over a crowd of onlookers at Binghamton, New York.
- D) Very cold weather made it hard to get the airplane's engine to start.
- E) Ruth Law flies her "baby machine" one mile above the earth at 100 miles per hour.
- F) After landing in New York City, she is greeted as a heroine because she set a new flying record for the longest non-stop flight of 590 miles.
- G) Ruth flies for 6 hours and runs out of gas.
- H) Ruth Law awakens before dawn on the rooftop of a Chicago hotel.
- I) Ruth took off for New York City at 3:24 P.M. after flying nonstop for 590 miles.
- J) Ruth puts on 2 pairs of longjohns, 2 leather suits and 1 skirt.
- K) Ruth Law lands her airplane two hours away from New York City because it is getting dark.
- L) Ruth Law lands her airplane in Hornell, New York.

Plotline



Plotline - Key



Beyond Activities



- **Comparing Aircraft**

Compare the type of airplane Ruth Law flew in 1916 to the Space Shuttle (orbiter) Commander Eileen Collins flies in 1999.

- **Historical Aviation Commemoration**

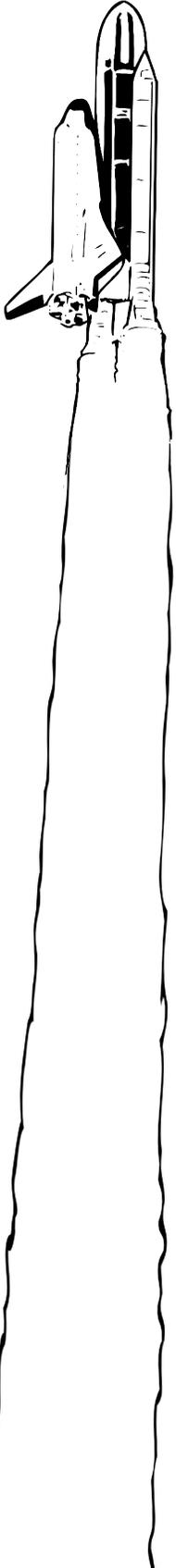
Students (in groups or individually) can commemorate Ruth Law's feat of aviation by creating and displaying one of the following:

- Postage stamp
- Poster
- Banner
- Poem
- Statue
- Flight Patch
- Song
- Dance

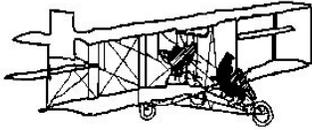
- **Commander Collins Thrills a Nation**

The class participates in re-writing the Ruth Law story so that it gives an account of the space shuttle mission STS-93 with Commander Eileen Collins as the main character.

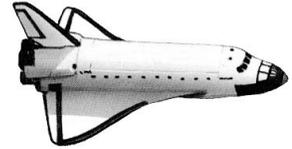
Comparing the Aircraft



Ruth Law's Airplane



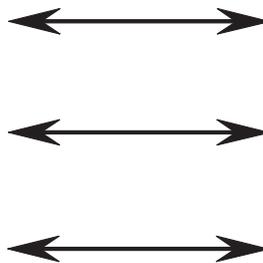
Commander Collin's Orbiter



Name 3 ways these 2 aircraft are similar.

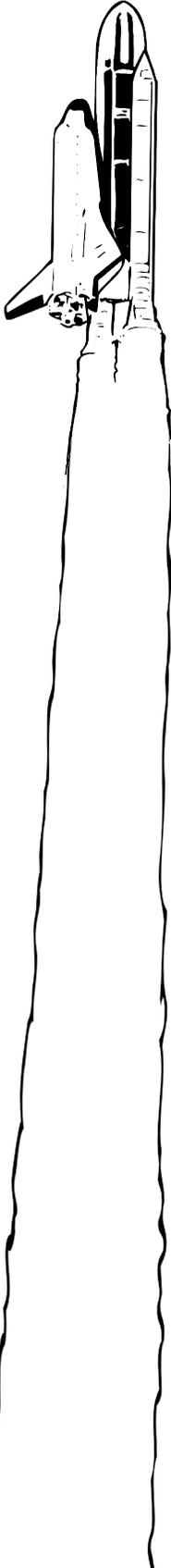
Name 3 ways these 2 aircraft are different.

In what way?

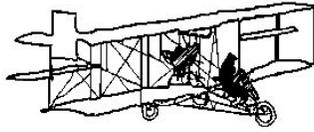


Comparing the Aircraft

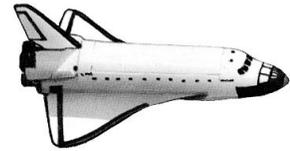
Key of Possible Answers



Ruth Law's Airplane



Commander Collin's Orbiter



Name 3 ways these 2 aircraft are similar.

*Both use the 4 forces to fly.
(Lift, Weight, Thrust, Drag).*

Both have wings.

Both have a tail section.

Both can fly at subsonic speed.

Both are piloted by a woman.

Name 3 ways these 2 aircraft are different.

In what way?

low subsonic only

one small engine

53 gallon capacity

open

in low altitude

flight speed

engines

fuel tanks

cockpit

flight elevation

hypersonic speed to subsonic

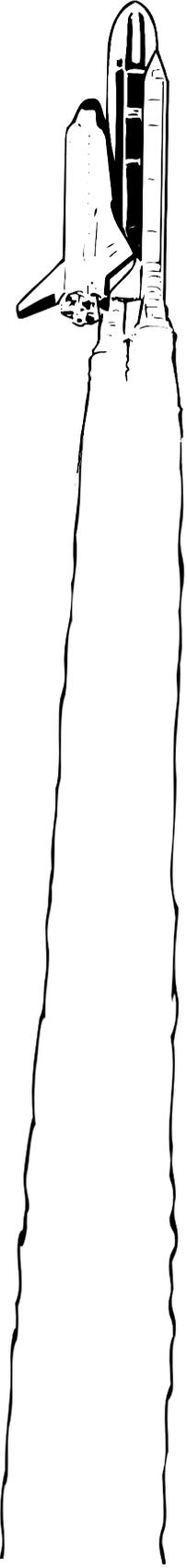
2 engine systems, plus main engine

much more than that

closed

space on down

Historical Aviation Commemoration Student Guidesheet



Directions: You are all members of the Historical Aviation Society and on November 19th of this year you will sponsor a “Ruth Law Day” to commemorate the anniversary of her historic flight. You will need some items to display that will reflect upon the accomplishment as well as honor it. In groups or individually, pick an item from the list below (or make up one of your own). Then, make a plan for how you will create it. Include in your plan a list of materials, and the steps you will take to make it happen. Finally, get to work on it!

Commemoration Displays

- Create a commemorative postage stamp that includes the following: her image, her airplane and the date.
- Create a poster announcing her feat. Include the following information: her image, her airplane, the accomplishment and the date.
- Create a commemoration banner that includes the following information: a stylistic logo that conveys her image and her airplane, the date.
- Create a poem (any style of your choosing) and draw a picture to go with it.
- Compose a song (a ballad) that tells the story of Ruth Law’s flight.
- Create a sculpture (make it from household items or recyclable materials like paper towel rolls, wire, cans, plastic cups, plastic containers, etc.) that represents Ruth Law’s accomplishment. Give it an appropriate title.
- Look at examples of flight patches used for previous shuttle missions as well as mission STS-93. Create a flight patch that depicts Ruth Law’s accomplishment.
- Find a likeness of Ruth Law and create a statue.
- Choose an instrumental piece of music and create a dance that honors Ruth Law’s flight.

Commander Collins Thrills a Nation Guidesheet

Teacher Directions

Divide the class into partners or trios so that you have 13 small groups. Assign each small group two face-to-face pages of the story. Tell the class that they will be re-writing the story about Ruth Law, turning it into a story about Commander Eileen Collins' historic flight. Instruct them to re-write the text using the same style and then illustrate the text (by drawing, painting or using a computer software program for illustrations).

Show them the example below as a guide.

On (the mission's date goes here), Eileen Collins commanded the shuttle mission STS-93 into space and back to earth.

Space shuttle missions had never been commanded before by a woman.

It was a crisp, clear morning. Commander Collins and her crew were awakened before dawn, but Eileen was not sleepy. To get used to the early mornings and the long days of hard work, she had trained for many years at NASA.

