

Intro to Flight Terminology

Reference Source

- Flight Terminology (included)

Study Questions

1. A pilot could have various different pilot certificates (licenses) depending on the nature of the pilot's experience, skills, and job responsibilities. Draw lines to connect each type of pilot certificate with the appropriate description.

Student Pilot ▶

◀ Able to be paid to fly passengers and cargo

Private Pilot ▶

◀ Able to act as pilot in command under their own authority, carry passengers, and fly during day or night

Commercial Pilot ▶

◀ Able to instruct others in the safe operation of an aircraft and authorize student pilots to fly solo

Air Transport Pilot ▶

◀ Able to solo an airplane without passengers under the direct supervision and authority of a certified flight instructor

Flight Instructor ▶

◀ Able to fly large airplanes carrying a large number of passengers for scheduled air carrier operations

2. When most people begin flight training, their goal is to become a
 - a. student pilot.
 - b. private pilot.
 - c. air transport pilot.
3. Visual Flight Rules are based on the pilot's ability to safely operate the aircraft and navigate using
 - a. the ground and natural horizon as a reference.
 - b. generally accepted instrument climbing, turning, and descent procedures.
 - c. the radio VFR navigation system.
4. Flight in which the pilot navigates purely by reference to the flight instruments is called _____, and requires special training and certification. This is the only way a pilot can legally fly through _____.
5. What bases of direction are located where the Earth spins on its axis?
 - a. Magnetic North and South
 - b. True North and South
 - c. The Tropic of Capricorn

6. Which base for direction do pilots mostly use while in flight?
 - a. True direction
 - b. Angular direction
 - c. Magnetic direction

7. Which of the following numbers is NOT in a form used by pilots or air traffic controllers when transmitting over the radio?
 - a. Two thousand four hundred
 - b. Two zero thousand
 - c. Twenty-eight hundred

8. Why is “9” pronounced as the two-syllable word “niner” when spoken over the radio?
 - a. For clarity, to avoid confusion with “5” or “nein”
 - b. To honor the San Francisco Forty-Niners
 - c. To give the number a second syllable for smoother rhythm

9. What does the sound “oh” mean when used by pilots over the radio?
 - a. The number 0
 - b. The letter O
 - c. It has no defined meaning and should not be used to mean zero or the letter O.

10. The correct way to indicate the letter O over the radio is

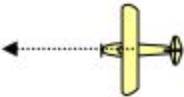
11. Bearings (and all other directions in aviation) are measured in degrees, and can be represented as three-digit numbers between ____ and ____.

12. Determine the numerical direction indicated by the following terms:

west	_____
east	_____
south	_____
north	_____
northwest	_____
southwest	_____
southeast	_____
northeast	_____
north northeast	_____

13. In the spaces provided, draw an airplane flying in each of the directions indicated. (The first is provided as an example.)

west



A yellow airplane is shown in profile, facing left. A dashed arrow extends from the tail of the airplane to the left, indicating the direction of flight.

southeast

300°

240°

080°

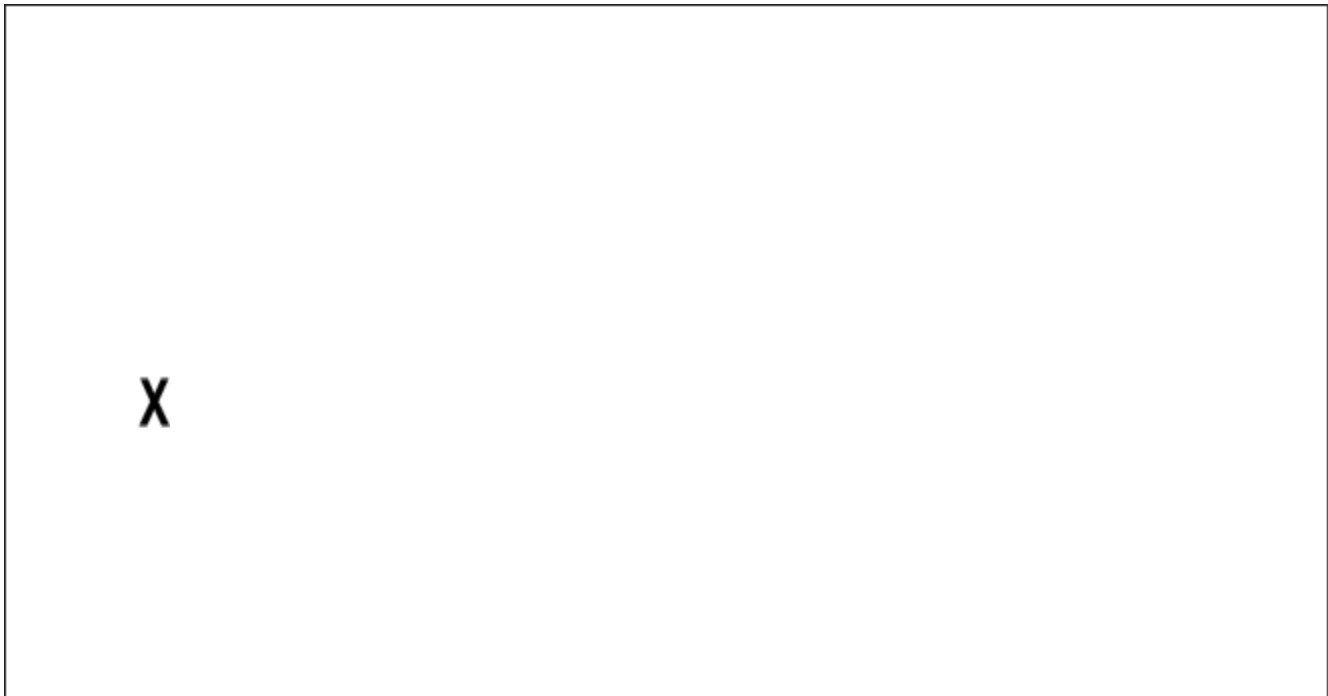
350°

150°

015°

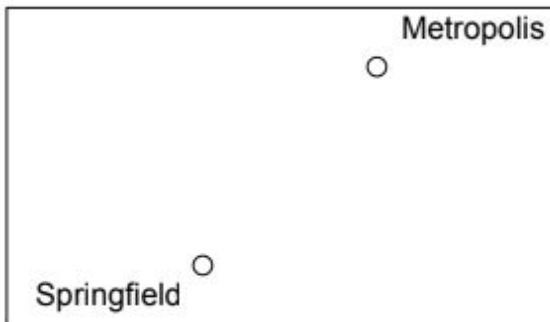
14. What does it mean when a pilot reports the direction the airplane is traveling is "070° true"?

15. An airplane starts at location X and flies on heading 090° for one hour, then turns to 135° for one hour, and finally turns to 030° for one hour. In the space below, draw the airplane's route of flight.

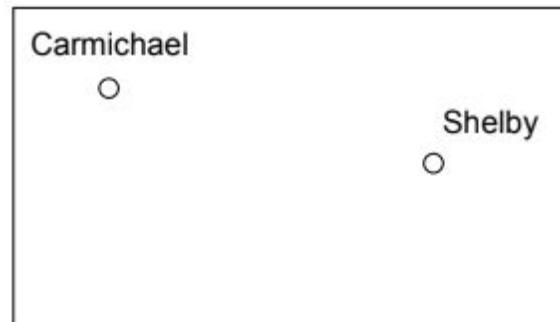


16. In each of the spaces provided, draw an X at the indicated location.

north of Springfield AND
west of Metropolis



150° from Carmichael AND
270° from Shelby



17. For clarity and precision, when pilots or air traffic controllers say directions over the radio, they use
- cardinal compass headings (e.g., northwest, northeast, southwest).
 - angular direction from the Equator given in degrees.
 - three digit directions indicating degrees from North.
18. How long is one nautical mile?
- 1/5th of a statute mile
 - 1/60th of the distance between 1° of latitude
 - 5,280 feet
19. What ratio is represented by a “knot?”
- 1 nautical mile per hour
 - 115 miles per hour
 - 10 statute miles in 10 minutes
20. The goal of flight training is to develop
- eye-hand coordination skills.
 - knowledge of flight regulations.
 - all of the skills, knowledge, and capabilities expected of the pilot-in-command of an aircraft.

Assignment Answers

Answers

1. Pilot certificates and their appropriate descriptions:

Student Pilot ▶	▶	Able to be paid to fly passengers and cargo
Private Pilot ▶	▶	Able to act as pilot in command under their own authority, carry passengers, and fly during day or night
Commercial Pilot ▶	▶	Able to instruct others in the safe operation of an aircraft and authorize student pilots to fly solo
Air Transport Pilot ▶	▶	Able to solo an airplane without passengers under the direct supervision and authority of a certified flight instructor
Flight Instructor ▶	▶	Able to fly large airplanes carrying a large number of passengers for schedule air carrier operations

2. b

3. a

4. Instrument Flight Rules (IFR); clouds

5. b

6. c

7. c

8. a

9. c

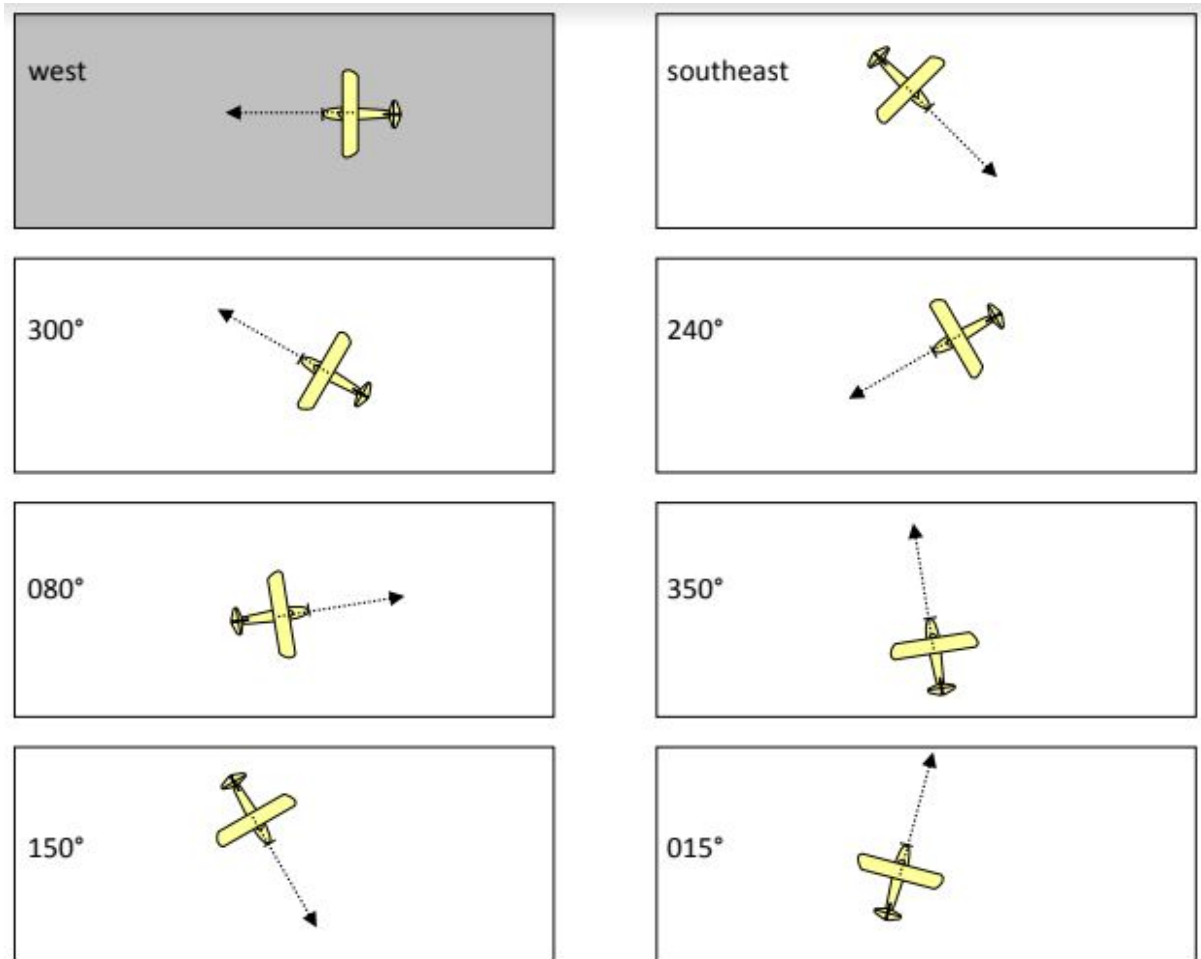
10. Oscar.

11. 0°; 360°

12. Numerical directions:

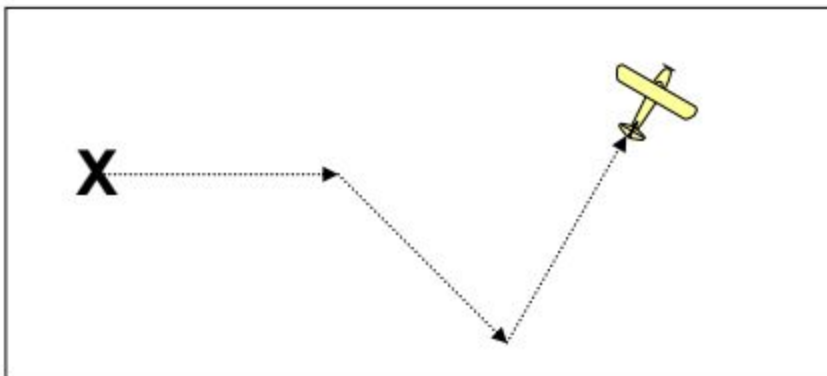
west	270°
east	090°
south	180°
north	360° or 0°
northwest	315°
southwest	225°
southeast	135°
northeast	045°
north northeast	022 1/2°

13.



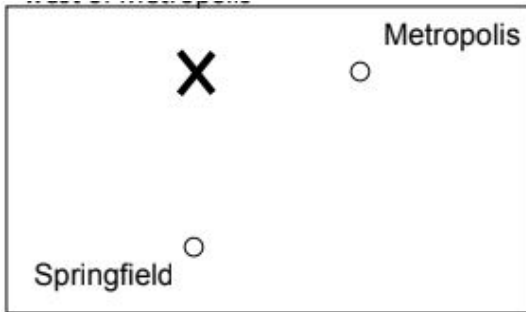
14. The airplane is traveling in a direction 70° to the right of true north.

15.

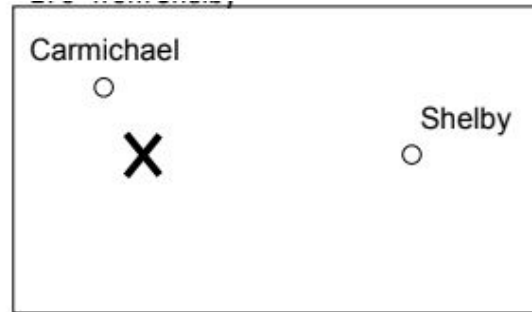


16.

north of Springfield **AND**
west of Metropolis



150° from Carmichael **AND**
270° from Shelby



17. c

18. b

19. a

20. c

Flight Terminology

Pilot Certificates

- There are various levels of pilot certificates: Student Pilot, Private Pilot, Commercial Pilot, Air Transport Pilot. Each level has different privileges and limitations.
- Most student pilots are working toward their **Private Pilot** certificate.

Flight Rules - VFR vs. IFR

- There are two basic ways to fly, depending on whether you can see the ground.
- **Visual Flight Rules (VFR)** means pilots must be able to navigate safely using the ground as reference. Pilots start out learning to fly VFR.
- **Instrument Flight Rules (IFR)** means flying by reference only to the instruments in the airplane and by talking with Air Traffic Control. IFR pilots can fly through clouds or snowstorms. This type of flying is significantly more difficult, requires additional training and instrumentation in the cockpit, and pilots must take an additional FAA checkride in order to get an Instrument Rating added to their pilot certificate.
- Most people begin flight training by training to be a VFR pilot, using Visual Flight Rules.

Magnetic North

- On maps, the top axis of the earth is called the North Pole, and pilots refer to this as “true north”. However, magnetic compasses point their needles at the “**magnetic north**” pole, a different place located a few hundred miles away from the true north pole. The location of magnetic north is based on movement of the iron-based core of the earth and the changing magnetic field of the earth. Each year the movement of magnetic north slightly changes where compass needles point.
- Pilots, who mostly use magnetic compasses to navigate, use **magnetic north**.

Talking on the Radio - Letters and Numbers

- Sometimes radios are very hard to hear, and pilot communications hard to understand. To help eliminate confusion, pilots speaking over a radio transmitter use very specific words to refer to letters and numbers.

Letters			
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu
Numbers			
1	One	6	Six
2	Two	7	Sev-en
3	Tree	8	Eight
4	Fow-er	9	Nin-er
5	Fife	0	Zero
100	Hundred	1000	Thousand

Things to Note

- Nothing is pronounced “oh”; use either “zero” or “Oscar”
- “3” is intentionally mispronounced as “tree”
- “4” is stretched into the two-syllable “fow-er”
- “5” is intentionally mispronounced as “fife”
- “9” is converted into the two-syllable “nin-er”
- These are the only numbers. There is no twelve or twenty-seven. Use “one two” or “two seven”

How Pilots Say Directions

- Most people know four directions: north, south, east, west. Additionally, these directions can be combined into northeast, southeast, northwest, and southwest. Further combinations get even more specific: north northeast, east northeast, etc.
- Instead of using words, pilots refer to directions using 360°. In this system, north = 000°, east = 090°, south = 180°, and west = 270°. Note: north can be referred to either as 000° or 360°, but is usually referred to as 360°.
- Pilots use all three digits to speak headings, so northeast (045°) is spoken as “zero four five”.

Nautical Miles & Knots

- On land, distance can be measured along the ground. Sailors and pilots have a tougher time measuring how far they have moved, because both the vehicle and the air or water are moving, at varying speeds. Early sailors started measuring distances based on lines of latitude, which they could deduce from stars and landmarks. Pilots use this method too.
- 1 nautical mile = 1 minute ($1/60^{\text{th}}$ of 1°) of latitude
- 1 nautical mile \approx 1.15 statute mile (the land-based mile that we use in the US)
- 1 knot = 1 nautical mile per hour, thus 100 knots \approx 115 miles per hour

Pilot-in-Command

- The pilot-in-command (PIC) is the final authority in operating the aircraft in a safe manner
- If you fly alone, you are PIC. If more than one pilot is in the airplane, one is always designated as PIC so that everyone knows who makes the final decisions.
- This is a great privilege and responsibility.
- Your entire training should be devoted to developing competent flight skills and learning how to make safe, responsible decisions as pilot-in-command.