

# Appendix A

## Clearance Shorthand










The following shorthand system is recommended by the Federal Aviation Administration (FAA). Applicants for the instrument rating may use any shorthand system, in any language, which ensures accurate compliance with air traffic control (ATC) instructions. No shorthand system is required by regulation and no knowledge of shorthand is required for the FAA Knowledge Test; however, because of the vital need for reliable communication between the pilot and controller, clearance information should be unmistakably clear.

The following symbols and contractions represent words and phrases frequently used in clearances. Most are used regularly by ATC personnel. By practicing this shorthand, omitting the parenthetical words, you will be able to copy long clearances as fast as they are read.

Example: CAF ~~M~~→ RH RV V18 ↑40 SQ 0700 DPC 120.4  
 Cleared as filed, maintain runway heading for radar vector to Victor 18, climb to 4,000, squawk 0700, departure control frequency is 120.4.

Words and Phrases	Shorthand
Above.....	ABV
Above (Altitude, Hundreds of Feet) .....	70
Adjust speed to 250 knots.....	250 K
Advise .....	ADZ
After (Passing) .....	<
Airway (Designation).....	V26
Airport.....	A
Alternate Instructions.....	( )
Altitude 6,000–17,000 .....	60-170
And.....	&
Approach.....	AP
Approach Control.....	APC
Area Navigation .....	RNAV
Arriving.....	↓
At.....	@
At or Above.....	↑
At or Below.....	↓
(ATC) Advises .....	CA
(ATC) Clears or Cleared.....	C
(ATC) Requests .....	CR

Back Course.....	BC
Bearing.....	BR
Before (Reaching, Passing).....	>
Below .....	BLO
Below (Altitude, Hundreds of Feet).....	70
Center .....	CTR
Clearance Void if Not Off By (Time).....	v<
Cleared as Filed.....	CAF
Cleared to Airport .....	A
Cleared to Climb/Descend at Pilot's Discretion .....	PD
Cleared to Cross.....	X
Cleared to Depart From the Fix .....	D
Cleared to the Fix.....	F
Cleared to Hold and Instructions Issued .....	H
Cleared to Land.....	L
Cleared to the Outer Marker .....	O
Climb to (Altitude, Hundreds of Feet).....	↑70
Contact Approach .....	CT
Contact (Denver) Approach Control.....	(den
Contact (Denver) Center .....	(DEN
Course .....	CRS
Cross .....	X
Cruise .....	→
Delay Indefinite.....	DLI
Depart (Direction, if Specified).....	T→( )
Departure Control .....	DPC
Descend To (Altitude, Hundreds of Feet).....	↓70
Direct.....	DR
Direction (Bound)	
Eastbound .....	EB
Westbound.....	WB
Northbound.....	NB
Southbound.....	SB
Inbound.....	IB
Outbound .....	OB
DME Fix (Mile) .....	21
Each.....	EA
Enter Control Area.....	△
Estimated Time of Arrival .....	ETA
Expect .....	EX
Expect-Further-Clearance .....	EFC

Fan Marker.....	FM	Reduce Speed 20 Knots .....	-20 K
Final .....	F	Remain This Frequency .....	RTF
Final Approach.....	FA	Remain Well to Left Side .....	LS
Flight Level.....	FL	Remain Well to Right Side .....	RS
Flight Planned Route.....	FPR	Report Crossing .....	RX
For Further Clearance .....	FFC	Report Departing.....	RD
For Further Headings .....	FFH	Report Leaving.....	RL
From.....	FM	Report on Course .....	R-CRS
Ground .....	GND	Report Over.....	RO
GPS Approach .....	GPS	Report Passing .....	RP
Heading .....	HDG	Report Reaching.....	RR
Hold (Direction).....	H-W	Report Starting Procedure Turn .....	RSPT
Holding Pattern .....		Reverse Course .....	RC
ILS Approach.....	ILS	Right Turn After Takeoff.....	
Increase Speed 30 Knots.....	+30 K	Runway Heading.....	RH
Initial Approach .....	I	Runway (Number) .....	RY18
Instrument Departure Procedure .....	DP	Squawk.....	SQ
Intersection.....	XN	Standby .....	STBY
Join or Intercept Airway/Jet Route/Track or Course.....		Straight-in Approach.....	SI
Left Turn After Takeoff .....		Surveillance Radar Approach .....	ASR
Locator Outer Marker .....	LOM	Takeoff (Direction) .....	T→N
Magnetic .....	M	Tower .....	Z
Maintain .....		Turn Left.....	TL
Maintain VFR Conditions On Top .....	<u>VFR</u>	Turn Right.....	TR
Middle Compass Locator .....	ML	Until .....	/
Middle Marker .....	MM	Until Advised (By).....	UA
Missed Approach .....	MA	Until Further Advised .....	UFA
Nondirectional Beacon Approach.....	NDB	VFR Conditions On Top.....	OTP
Out of (Leave) Control Area.....		Via.....	VIA
Outer Marker.....	OM	Victor (Airway Number).....	V14
Over (Station).....	<u>OKC</u>	Visual Approach .....	VA
On Course .....	OC	VOR .....	
Precision Approach Radar .....	PAR	VOR Approach .....	VR
Procedure Turn.....	PT	VORTAC .....	
Radar Vector .....	RV	While in Control Area.....	
Radial (080° Radial) .....	080R		

# Appendix B

## Instrument Training Lesson Guide

### Introduction

Flight instructors may use this guide in the development of lesson plans. The lessons are arranged in a logical learning sequence and use the building-block technique. Each lesson includes ground training appropriate to the flight portion of the lesson. It is vitally important that the flight instructor brief the student on the objective of the lesson and how it will be accomplished. Debriefing the student's performance is also necessary to motivate further progress. To ensure steady progress, student pilots should master the objective of each lesson before advancing to the next lesson. Lessons should be arranged to take advantage of each student's knowledge and skills.

Flight instructors must monitor progress closely during training to guide student pilots in how to properly divide their attention. The importance of this division of attention or "cross-check" cannot be overemphasized. Cross-check and proper instrument interpretation are essential components of "attitude instrument flying" that enables student pilots to accurately visualize the aircraft's attitude at all times.

When possible, each lesson should incorporate radio communications, basic navigation, and emergency procedures so the student pilot is exposed to the entire IFR experience with each flight. Cross-reference the Instrument Training Lesson Guide with this handbook and the Instrument Practical Test Standards for a comprehensive instrument rating training program.

### Lesson 1—Ground and flight evaluation of student's knowledge and performance

- Aircraft systems
- Aircraft performance
- Preflight planning
- Use of checklists
- Basic flight maneuvers
- Radio communications procedures
- Navigation systems

### Lesson 2—Preflight preparation and flight by reference to instruments

#### Ground Training

- Instrument system preflight procedures
- Attitude instrument flying
- Fundamental instrument skills
- Instrument cross-check techniques

#### Flight Training

- Aircraft and instrument preflight inspection
- Use of checklists
- Fundamental instrument skills
- Basic flight maneuvers
- Instrument approach (demonstrated)
- Postflight procedures

### Lesson 3—Flight instruments and human factors

#### Ground Training

- Human factors
- Flight instruments and systems
- Aircraft systems
- Navigation instruments and systems

#### Flight Training

- Aircraft and instrument preflight inspection
- Radio communications
- Checklist procedures
- Attitude instrument flying
- Fundamental instrument skills
- Basic flight maneuvers
- Spatial disorientation demonstration
- Navigation systems
- Postflight procedures

### Lesson 4—Attitude instrument flying

#### Ground Training

- Human factors
- Flight instruments and systems

Aircraft systems  
Navigation instruments and systems  
Attitude instrument flying  
Fundamental instrument skills  
Basic flight maneuvers

### **Flight Training**

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Attitude instrument flying  
Fundamental instrument skills  
Basic flight maneuvers  
Spatial disorientation  
Navigation  
Postflight procedures

## **Lesson 5—Aerodynamic factors and basic flight maneuvers**

### **Ground Training**

Basic aerodynamic factors  
Basic instrument flight patterns  
Emergency procedures

### **Flight Training**

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Basic instrument flight patterns  
Emergency procedures  
Navigation  
Postflight procedures

## **Lesson 6—Partial panel operations**

### **Ground Training**

ATC system  
Flight instruments  
Partial panel operations

### **Flight Training**

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Basic instrument flight patterns  
Emergency procedures  
Partial panel practice  
Navigation  
Postflight procedures

## **Lesson 7—Recovery from unusual attitudes**

### **Ground Training**

Attitude instrument flying  
ATC system  
NAS overview

### **Flight Training**

Preflight  
Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Instrument takeoff  
Navigation  
Partial panel practice  
Recovery from unusual attitudes  
Postflight procedures

## **Lesson 8—Navigation systems**

### **Ground Training**

ATC clearances  
Departure procedures  
IFR en route charts

### **Flight Training**

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Intercepting and tracking  
Holding  
Postflight procedures

## **Lesson 9—Review and practice**

### **Ground Training**

Aerodynamic factors  
Flight instruments and systems  
Attitude instrument flying  
Navigation systems  
NAS  
ATC  
Emergency procedures

### **Flight Training**

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Review and practice as determined by the flight instructor

Instrument takeoff  
Radio communications  
Navigation systems  
Emergency procedures  
Postflight procedures

## Lessons 10 through 19—Orientation, intercepting, tracking, and holding using each navigation system installed in the aircraft

### Ground Training

Preflight planning  
Navigation systems  
NAS  
ATC  
Emergencies

### Flight Training

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Departure procedures  
En route navigation  
Terminal operations  
Partial panel operation  
Instrument approach  
Missed approach  
Approach to a landing  
Postflight procedures

## Lessons 20 and 21—Cross-country flights

### Ground Training

Preflight planning  
Aircraft performance  
Navigation systems  
NAS  
ATC  
Emergencies

### Flight Training

Emergency procedures  
Partial panel operation  
Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Departure procedures  
En route navigation  
Terminal operations

Instrument approach  
Missed approach  
Approach to a landing  
Postflight procedures

## Lessons 22 and 23—Review and practice

### Ground Training

Human factors  
Aerodynamic factors  
Flight instruments and systems  
Attitude instrument flying  
Basic flight maneuvers  
Navigation systems  
NAS  
ATC  
Emergency operations

### Flight Training

Aircraft and instrument preflight inspection  
Checklist procedures  
Radio communications  
Review and practice as determined by the flight instructor  
Instrument takeoff  
Partial panel operations  
Unusual attitude recoveries  
Radio communications  
Navigation systems  
Emergency procedures  
Postflight procedures

## Lessons 24 and subsequent—Practical test preparation

### Ground Training

Title 14 of the Code of Federal Regulations (14 CFR) parts 61, 71, 91, 95, and 97  
*Instrument Flying Handbook*  
Practical test standards  
Administrative requirements  
Equipment requirements  
Applicant's requirements

### Flight Training

Review and practice until the student can consistently perform all required tasks in accordance with the appropriate practical test standards.

**NOTE:** It is the recommending instructor's responsibility to ensure that the applicant meets 14 CFR part 61 requirements and is prepared for the practical test, including: training, knowledge, experience, and the appropriate instructor endorsements.