Objectives: Soft field Takeoff and Landing

Upon completion of this lesson, the student will:

- Be able to safely perform soft field takeoffs and maximum performance climbs.
- Be able to safely perform soft field approaches and landings.

Note: Some experience needed with normal takeoffs and landings prior to attempting soft field operations.

Equipment:

- POH and/or appropriate checklists for aircraft to be flown.
- Chalkboard and/or model for demonstration of techniques.

Elements:

1. Ground - Pre-lesson briefing
   - Describe reasons for learning soft field techniques.
   - Discuss procedures for soft field takeoffs (see procedures below)
   - Discuss procedures for soft field landings (see procedures below)
   - Review slipping and crabbing approaches if there is a crosswind.

2. Flight - Soft Field Takeoff Procedure
   - Demonstrate the procedure.
   - Use proper use of flight controls while taxiing and during takeoff roll.
   - Use appropriate flap setting for soft field takeoff as specified in the POH for the aircraft being used.
   - Keep the airplane moving while holding weight off of the nose wheel.
   - Ensure student checks engine gauges after smoothly applying power (oil pressure, temperature and RPM) while and airspeed while beginning the takeoff roll.
   - Use technique of holding the nose high, nose on the horizon (or other suitable reference) until the aircraft lifts off into ground effect, then have student fly in ground effect until reaching the appropriate climb speed (VX or VY) (Note, most airplanes require a firm push on the yoke to remain in ground effect).
   - Use appropriate rudder inputs to maintain alignment with the centerline during the takeoff run.
   - Use of post departure checklist for the aircraft (gear up, flaps up, fuel pump, prop setting, etc.).

3. Flight - Soft Field Landing Procedure
   - Demonstrate the procedure.
   - Use of flaps during the approach.
   - Stabilizes the airplane at the appropriate approach airspeed as recommended by the POH.
   - Use a slip or crab on final as needed, and transition from crab to slip just before touchdown.
   - Use proper flare technique and visual references during the flare.
   - Apply a little power at touchdown (pull throttle to idle then add just enough to hear the change in engine RPM).
   - Use of flight controls to keep weight off the nose wheel through the roll-out and taxiing.
   - Use proper flight controls after landing.

Completion Standards:

This lesson will be completed when the student is able to:

- Perform safe soft field takeoffs and landings.
- Establish and maintain climb and approach speeds +10 / - 5 Knots (Private pilot standard) or +/- 5 Knots (Commercial standard).

Common Errors:

- Soft Field Takeoff
    - -Allowing airplane to stop on 'soft' surface
    - -Forgetting to set flaps
    - -Not holding yoke full back at the start of the takeoff roll
    - -Keeping the yoke full back as the airplane accelerates, delaying liftoff and possibly dragging the tail.
    - -Fails to push the yoke forward hard enough to stay in ground-effect after liftoff.
    - -Poor directional control due to looking over the raised nose and left turning tendency
    - -Stalling on liftoff allowing the plane to drop back onto the runway
    - -Forgetting to retract flaps once a safe altitude and positive rate of climb is established.

- Soft Field Landing
    - -Unstable approach.
    - -Flaring too high and dropping in
    - -Failure to hold the nosewheel off during touchdown and rollout.
    - -Poor power control during touchdown and rollout.
    - -Poor directional control due to looking over the raised nose

References:

POH For airplane used.
FTH; Pages 91 - 93, 110 - 113
Jeppesen PP Maneuvers: 7-6 to 7-9
PP-ASEL PTS Areas of Operation II, III, IV Tasks C, D, E, F
Comm-ASEL PTS Areas of Operation II, III, IV Tasks C, D, E, F

Possible Review Questions:

1. What is VX? What is VX for the airplane (being used)?
2. What is VY for the airplane (being used)?
3. When performing a soft-field takeoff, it is important to keep _____ _____ _____ during the entire taxi and takeoff roll.
4. When performing a soft-field takeoff or landing it is important to keep the _____ off the nose-wheel.