Ignition Operations, S-234
Pre-Course Work

Name: _____ Date: _____

Supervisor Signature: _____

The pre-course work is mandatory; it will take approximately two hours to complete. Bring your completed pre-course work to class for discussion and review.

You may use the following references:

- Basic Land Navigation
  http://www.nwcg.gov/pms/pubs/475/PMS475.pdf

- Anderson's Aids to Determining Fuel Models
  http://www.fs.fed.us/rm/pubs_int/int_gtr122.pdf

- Incident Response Pocket Guide, NFES 1077
  http://www.nwcg.gov/pms/pubs/nfes1077/nfes1077.pdf

- Fireline Handbook
  http://www.nwcg.gov/pms/pubs/410-1/410-1.pdf

- Firefighter Training S-130, Student Workbook

- Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model
  http://www.fs.fed.us/rm/pubs/rmrs_gtr153.pdf

- Interagency Standards for Fire and Fire Aviation Operations (Red Book)
  http://www.nifc.gov/policies/red_book.htm

- Interagency Aerial Ignition Guide
  http://www.blm.gov/style/medialib/blm/nifc/aviation/iaig.Par.95159.File.dat/IAIG.pdf

1. List two hazards to operators when using a fusee.

2. List four hazards to operators when using a drip torch.

3. What is the fuel mixture for a drip torch?

4. List three essential pieces of PPE necessary when operating firing devices.

5. Use a local burn plan to 1) list the elements specific to the firing boss, and 2) identify the most important element. Also, bring the burn plan to class and be prepared to discuss.

6. Does your home unit or region have any specialized firing devices (other than fusee or drip torches)? What are their advantages/disadvantages?

7. Where in the IRPG can you find the Briefing Checklist?

8. What is the purpose of an after action review? What section of the IRPG is it found in?

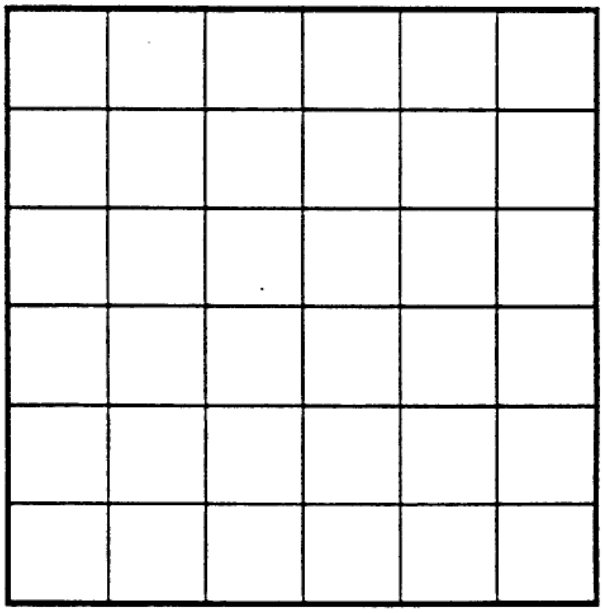
9. Using Anderson's fuel model guide, what fuel model(s) is most representative in your home area?

10. What is the moisture of extinction of that fuel model?

11. How many square miles are within a township?

12. How many acres in a section?

13. Number the sections in this typical township:



14. Determine the equivalent unit of measurement for the following:

    A. 2.5 mile = _____ chains

    B. 3 chains x 20 chains =_____ acres

    C. A ranch that covers approximately 1/8 area of a section on a map is _____ acres.

15. Two adjacent index contour lines on a map are 500 feet and 700 feet, with 5 intermediate contours between them. What is the contour interval?

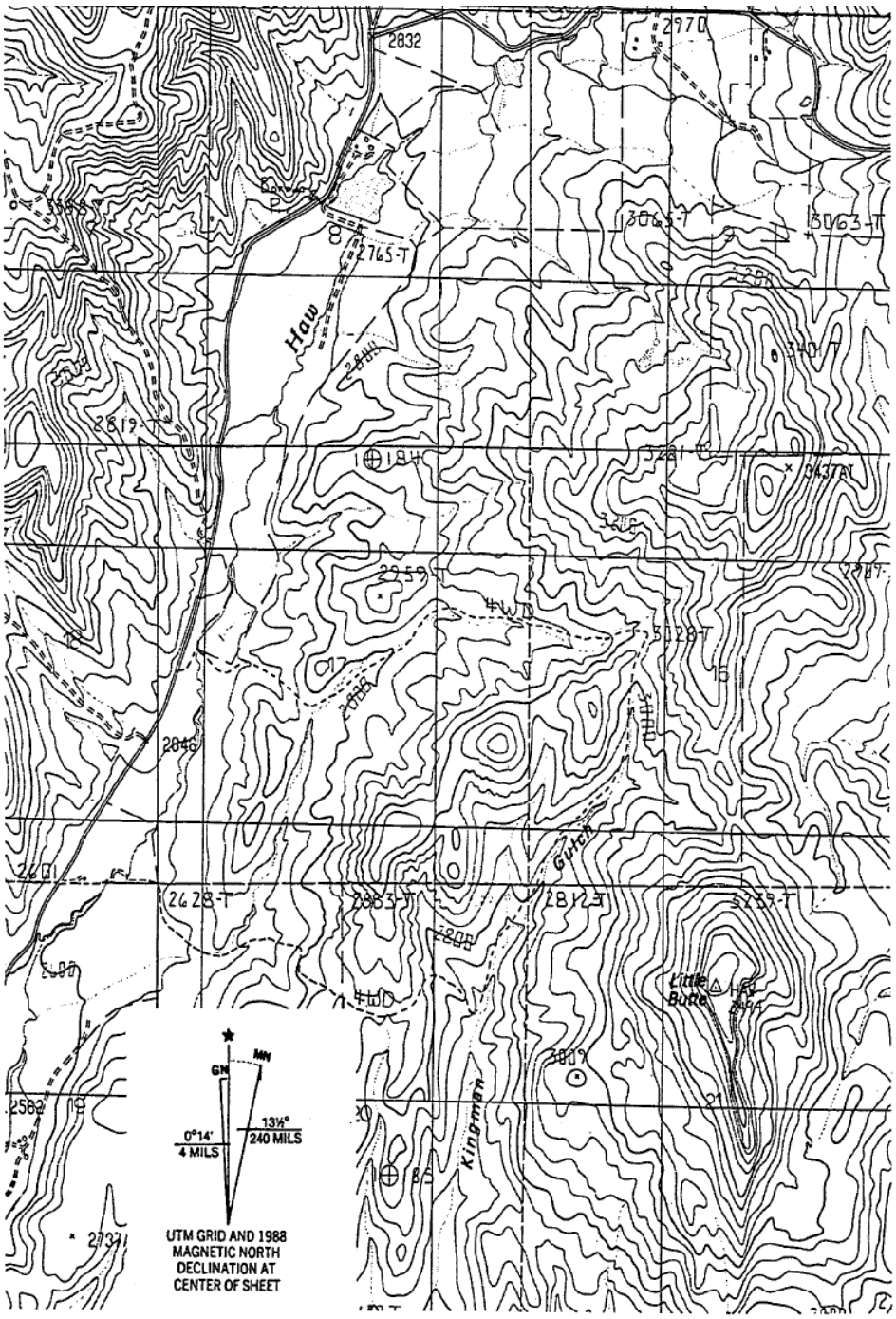
16. What is the percent slope formula?

17. What is the definition of slope?

18. Use the map on the next page and a protractor to determine the degree reading between the following points (be sure to include declination):

    A. From the 3009 ft. peak in the NW¼ of section 21, to the 2959 ft. peak in the NE¼ of section 17.

    B. From the intersection of roads in the SE¼ of section 18, to the fork in the road in the NW¼ of section 7.

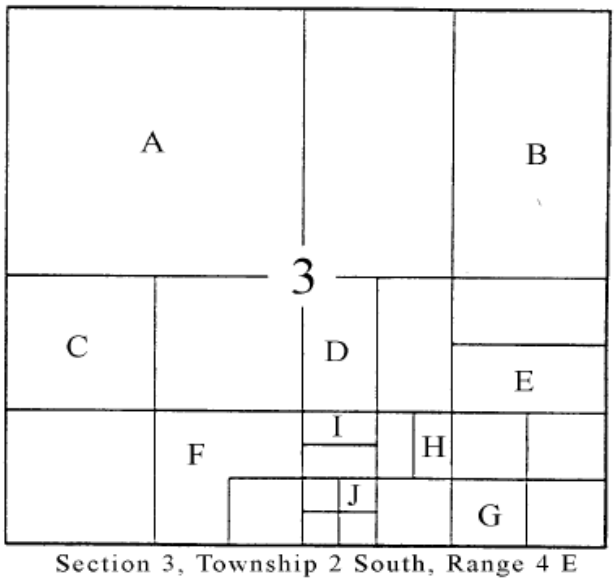


SCALE 1:24,000

19. Determine the back azimuth of the given forward azimuth (use degree symbols):

35º_____
340º_____
210º_____
125º_____

20. Assume the area within the overall square represents a typical section:



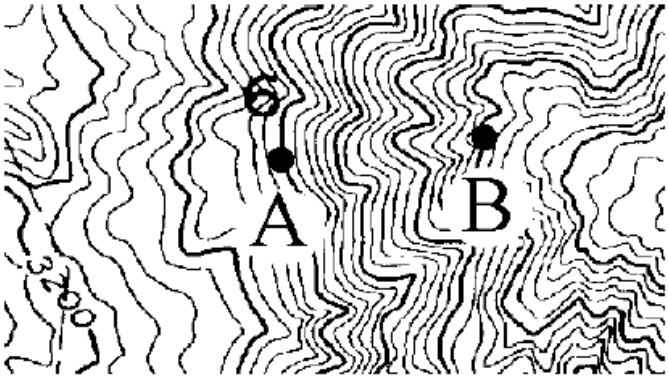
Section 3, Township 2 South, Range 4 E

A. How many acres in area “A”? _____

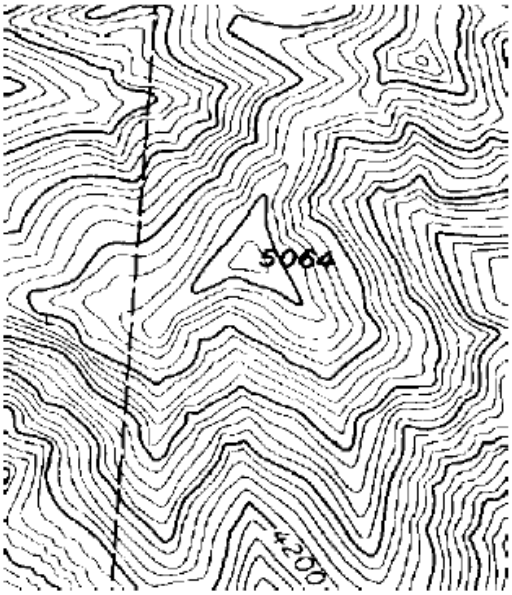
B. How many acres in area “C”? _____

C. How many acres in area “J”? _____

21. Assume the map scale is 1:24,000 and the contour interval is 40 feet. What is the slope in percent from Point “A” to Point “B”?

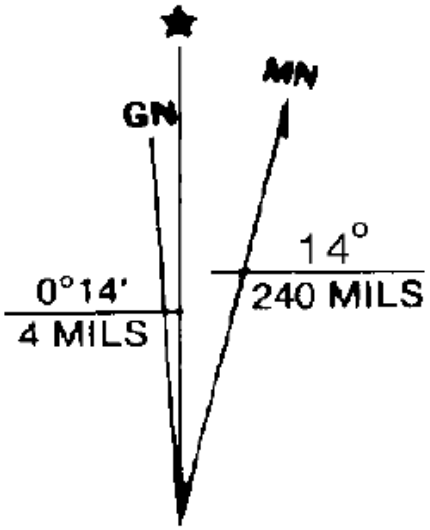


22. What topographic feature is depicted at 5064 feet?



23. What does a clinometer do?

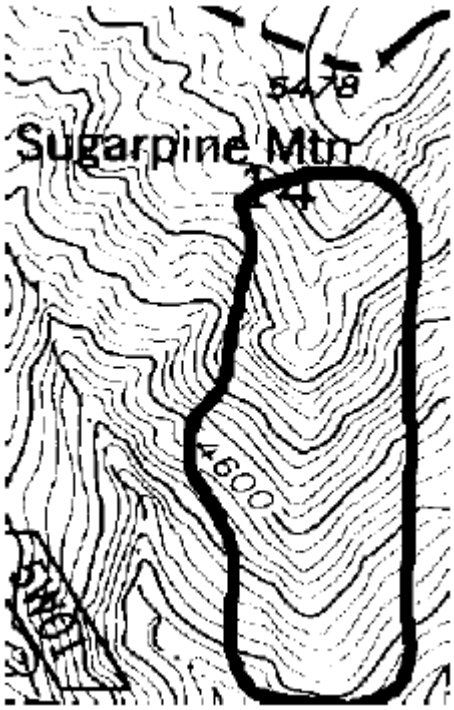
24. What information can you gain from the map feature indicated below?



25. In the illustration above, what do the letters “MN” stand for?

26. On a USGS topographic map, where will you find the map feature shown in question 24?

27. What is the topographic map feature indicated in the outlined area?



28. Rate of spread (ROS) is usually expressed in chains per hour. The primary factors that affect rate of spread are:

29. Fire is burning in litter on top of the ground, but occasionally carries into the crowns of individual trees. It then produces burning embers that start new fires outside the fire perimeter. This is known as:

    A. Crown fire with convection column and firewhirls.
    B. Running wind-driven fire with active crowning.
    C. Crown fire with flare-up and torching.
    D. Ground fire with smoldering and flare-ups.
    E. Surface fire with torching and spotting.

30. As air sinks, it:

    A. Rises in pressure, cools and expands.
    B. Lowers in pressure, warms and compresses.
    C. Lowers in pressure, cools and expands.
    D. Increases in pressure, warms and compresses.
    E. Increases in pressure, warms and expands.

31. Why do dry climates usually have lower nighttime temperatures than humid climates?

    A. Because the atmospheric pressure is usually lower.
    B. Because there is less water vapor in the air to absorb and reflect heat back to the surface at night.
    C. The winds are usually stronger in dry climates.
    D. All of the above.

32. On average, relative humidity doubles with each 20˚F decrease of temperature, or halves with each 20˚F increase in temperature.

    A True
    B. False

33. What is the general effect of stable air on wildland fires?

    A. There is no change in fire activity.
    B. Fire activity decreases.
    C. Fire activity increases.

34. Unstable air can often be found in low pressure systems and on the leading edge of cold fronts.

    A. True
    B. False

35. Air flows clockwise around low pressure systems and counterclockwise around high pressure systems.

    A. True
    B. False

36. The five stages of general vegetative development for live fuel moisture are:

    A. 500%, 400%, 300%, 200%, less than 100%
    B. 300%, 200%, 100%, 50%, less than 30%
    C. 200%, 150%, 100%, 50%, less than 25%
    D. 400%, 200%, 100%, 75%, less than 50%

37. Select the fuel complex that would reach its moisture of extinction first during nighttime humidity recovery.

    A. Heavy slash, no attached needles
    B. Cured cheatgrass
    C. Chaparral shrub
    D. Palmetto gallberry

38. If the wet bulb is not read at its lowest point, what will happen?

    A. The calculated relative humidity will be too low.
    B. The meteorologist will become angry.
    C. The dry bulb will read too high.
    D. The calculated relative humidity will be too high.

39. The effective wind speed combines the effect of slope and fuels.

    A. True
    B. False

40. Which of the following is an indicator of a stable atmosphere?

    A. Clear visibility
    B. Gusty winds and dust devils
    C. Inversion
    D. Thunderstorm development