Advanced Wildland Fire Behavior Calculations, S-490

Pre-Course Study Material

Part 1: Using Topographic Maps

Materials Needed:
Pencil or pen
1/10 inch ruler
Calculator (recommended)
S-490 Student CD or S-490 Pre-Course Online

Introduction:
A map is a graphic representation of a portion of the earth's surface drawn to scale, as seen from above. Maps provide information on the distance between features, variations in terrain, roads, the extent of vegetation cover, buildings, centers of population, etc. In fire behavior projections we use topographic maps frequently. Topographic maps show the shape of the land in addition to other features such as roads, rivers, lakes, etc. They are almost indispensable to fire behavior prediction.

Directions:
Part 1 is about topographic maps. “Basic Land Navigation” is provided on the Student CD as a refresher. Other references may also be used (S-290, S-390, and the S-244 Field Observer course books, etc.). A practice test and answers are provided on the following pages.

Practice Test

All questions refer to the map on page 4. Points A, B, C, and D are on contour lines.

1. What is the contour interval on the attached map?

    a. 20 foot
    b. 25 foot
    c. 30 foot
    d. 40 foot

2. What section is point “D” located in?

    a. 4
    b. 5
    c. 6
    d. 7

3. What is the aspect for point “D”?

    a. West
    b. East
    c. South
    d. North

4. What is the elevation change from point “C” to the Lookout (marked with the x)?

    a. 5695’
    b. 5200’
    c. 695’
    d. 495’

5. What is the average slope from point “C” to the Lookout (marked with the x)?

    a. 27%
    b. 39%
    c. 19%
    d. 13%

6. What is point “E”?

    a. Remote Automated Weather Station (RAWS) site
    b. Road
    c. Trail
    d. Section corner

7. What is point “F”?

    a. Remote Automated Weather Station (RAWS) site
    b. Road
    c. Trail
    d. Section corner

8. The arrow at “G” points to a:

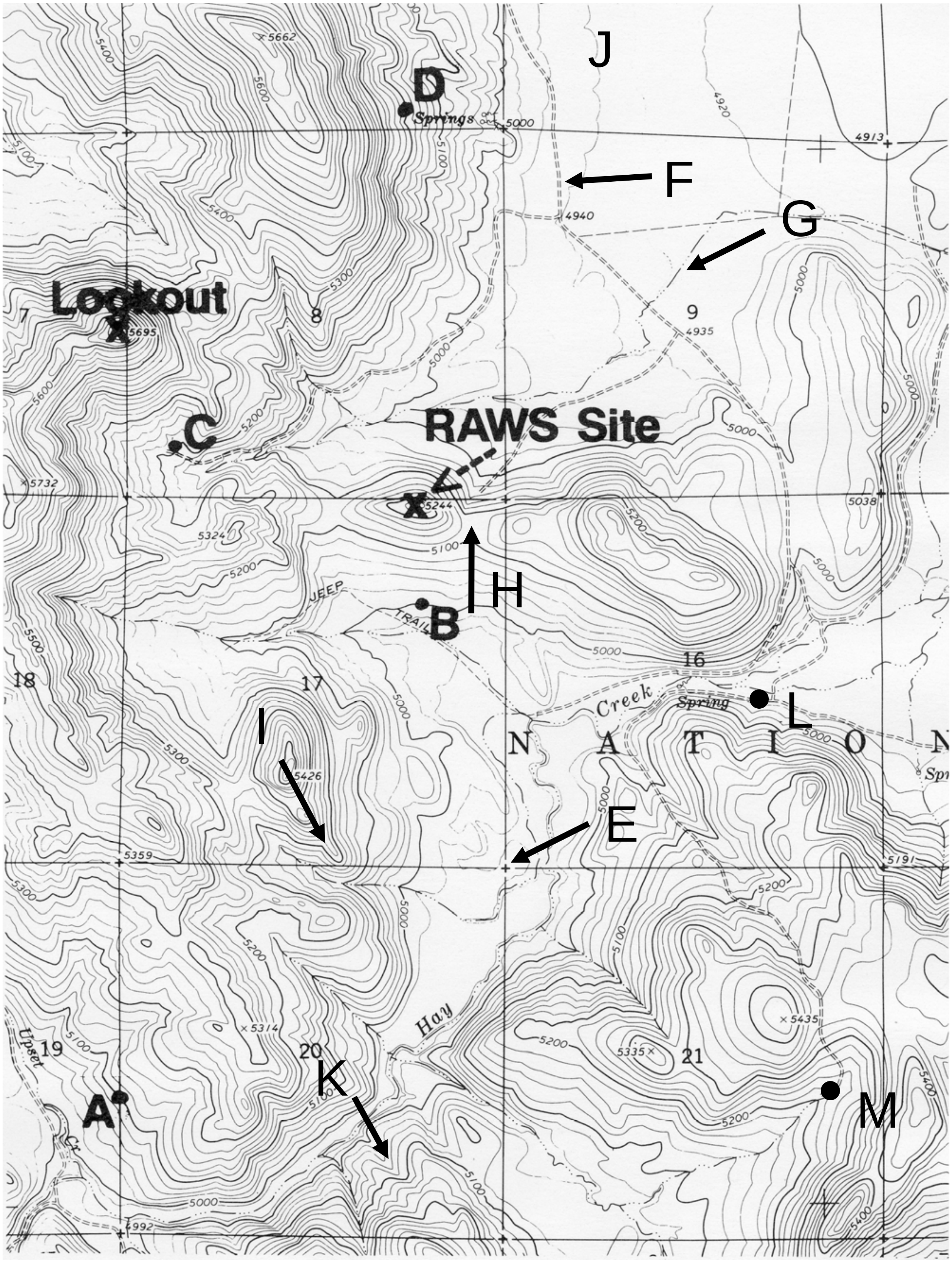
    a. Jeep trail
    b. Spring
    c. Unimproved road
    d. Intermittent stream

9. At “H” the arrow points to a:

    a. Mesa
    b. Drainage
    c. Chimney
    d. Saddle

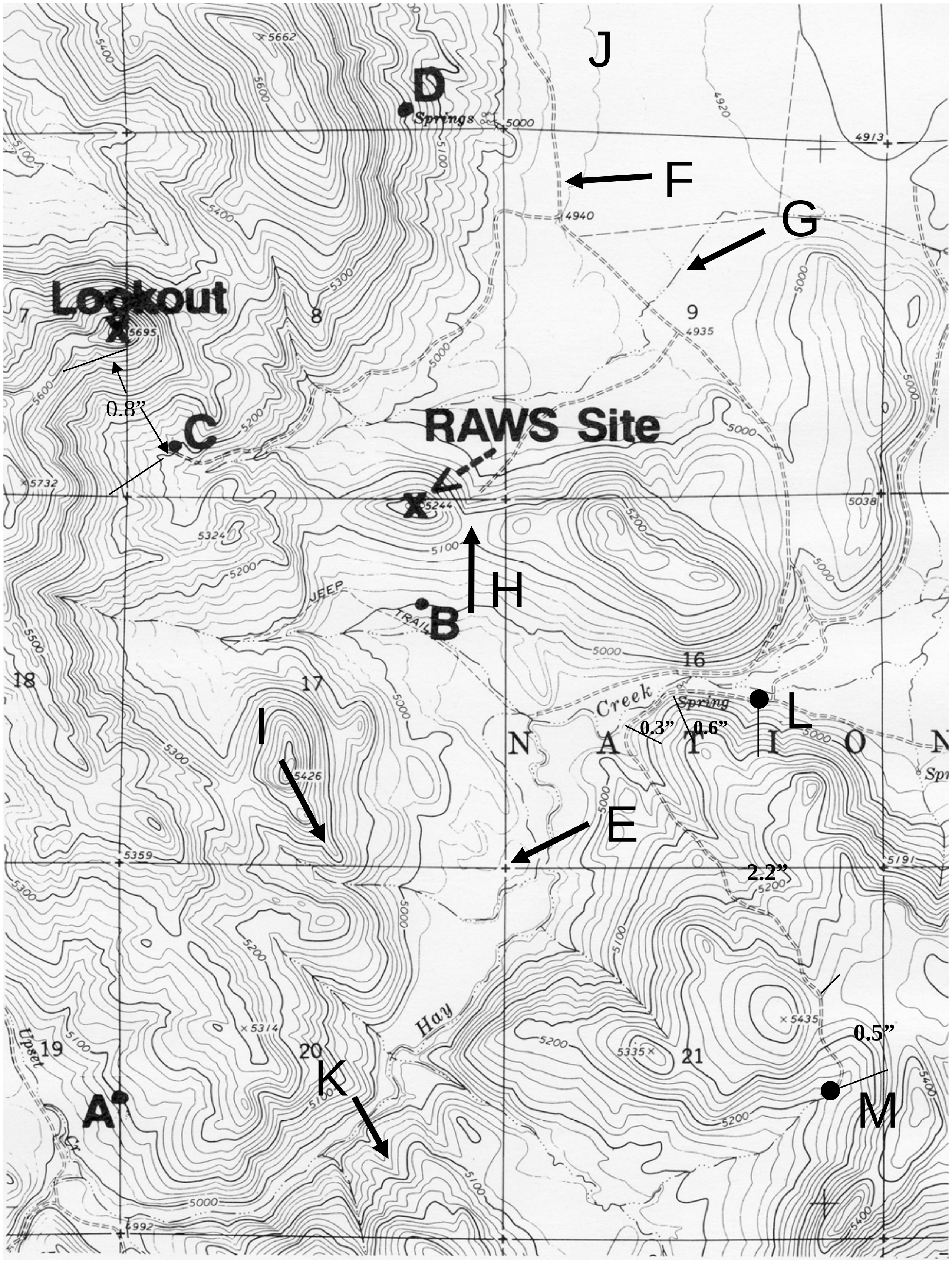
10. A supply truck is at the fork in the road near “L.” You tell the driver to continue to Drop Point “M” at the end of the four-wheel drive road (jeep trail). In general, the road is in poor shape and the driver will only be able to manage 8 to 10 miles per hour. Approximately, how long will it take the driver to reach Drop Point “M” from “L” at the fork in the road?

    a. 4-5 minutes
    b. 8-10 minutes
    c. 15-20 minutes
    d. Over 20 minutes


J
D
Springs
F
G
Lookout
5695
C
RAWS Site
5244
H
B
JEEP
TRAIL
9
4935
4940
4913
5038
7
8
16
17
18
19
20
21
Creek
Spring
L
N A T I O N
I
5426
E
5359
5191
Hay
5314
5335
5435
K
A
Upset
Cr.
M
5732
5324
4992

Practice Test Answers

1. a
2. b
3. b
4. d
5. a 400 ft (rise) ÷ ((0.8” ÷ 2.64 in/mi) x 5280 ft/mi) (run) = 25%
6. d
7. b
8. d
9. d
10. b (0.6” + 0.3” + 2.2” + 0.5”) = 3.6”
    (3.6” ÷ 2.64”/mi) = 1.4 miles
    1.4 miles ÷ 9 mi/hr = 0.15 hr
    0.15 hr * 60 min/hr = 9 min



J
D
Springs
F
G
Lookout
0.8”
C
RAWS Site
H
B
JEEP
TRAIL
17
18
I
Creek
Spring
0.3”
0.6”
L
N A T I O N
E
2.2”
0.5”
M
Hay
19
20
21
K
A
Upset
Cr.