

Wildland Fire Behavior
NM FFA Forestry CDE
Study Guide

1. What are the three methods of heat transfer? **Radiation, Convection, Conduction**
2. What are the three components of the fire triangle? **oxygen, heat, fuel**
3. When is a fire controlled? **When the fire is expected to hold under reasonable conditions.**
4. Should you fight fire without an anchor point? Why? **No, it minimizes the chance of being flanked by the fire.**
5. What is a barrier? **Any obstruction that would stop the spread of the fire**
6. Under normal conditions, a north facing aspect will have more fire activity than a south facing aspect.
 - a. True
 - b. False**
7. Name two types of canyons that can result in extreme fire behavior? **Box canyon, narrow canyon**
8. What are the six major fuel types? **grass, grass-shrub, shrub, timber-understory, timber litter, slash-blowdown**
9. Match the definitions to the correct descriptions.

_____ Uniform Fuels C	A. The amount of water in a fuel, expressed as a percentage of the oven-dry weight of that fuel.
_____ Surface Fuels D	B. Grasses, leaves, pine needles
_____ Ladder Fuels F	C. Fuels distributed continuously over the area.
_____ Fuel Timelag E	D. All combustible materials lying on or immediately above the ground.
_____ Light Fuels B	E. The rate at which dead fuel gains or loses moisture.
_____ Fuel Moisture A	

F. Combustible materials that aid the spread of fire from the surface to the upper canopy.

10. A stable atmosphere:

A. Encourages upward vertical motion

B. Resists upward motion

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12. An inversion is:

A. A layer of air where temperature increases with altitude.

B. A layer of air where temperature decreases with altitude.

C. A layer of air where there is no temperature change with altitude.

13. General winds are:

A. Found at lower levels of the atmosphere and are induced by smallscale (local) differences in air temperature and pressure.

B. Large scale upper level winds caused by high and low pressure systems.

C. Local winds that develop in mountainous terrain where the differences in heating and cooling occur.

14. The different types of local winds include (circle all that apply):

A. upslope wind

B. downslope wind

C. upvalley wind

D. jet stream

E. sea-breeze

15. What is the job of predictive services? **They monitor, analyze and predict fire weather, fire danger, and interagency fire management resource impact.**

16. When is a red flag warning issued? **When the combination of dry fuels and weather conditions support extreme fire behavior.**
17. Air Temperature is:
- A. The degree of hotness or coldness of the air.**
 - B. The amount of moisture in the air.
 - C. The amount of moisture in the air divided by the amount the air could hold when saturated at the same air temperature.
18. Relative humidity is:
- A. The degree of hotness or coldness of a substance.
 - B. The amount of moisture in the air divided by the amount the air could hold when saturated at the same air temperature.**
 - C. Expressed in degrees Fahrenheit.
 - D. Expressed as a percentage.
 - E. B and D
19. As temperature increases, relative humidity:
- A. Increases
 - B. Decreases**
20. Chinook and Santa Ana winds are examples of:
- A. A foehn wind**
 - B. A cold front wind
 - C. A thunderstorm wind
 - D. A sea-breeze
21. Cold front winds:
- A. Are strong, dry winds caused by the compression of air as it flows down the lee side of a mountain range.
 - B. Are winds associated with a boundary between two dissimilar air masses.**
 - C. A and B.

22. List the seven factors within the fire environment that fireline personnel must monitor. **Fuel characteristics, fuel moisture, fuel temperature, topography, wind, atmospheric stability, fire behavior**

23. When is a fire contained? **When the fires spread has been stopped.**

24. How many feet are in a chain? **66ft.**

25. Match the terms with the following definitions:

- | | | | |
|-----------------|------------------|-----------------|-----------------|
| A. Smoldering | B. Creeping fire | C. Running fire | D. Spotting |
| E. Torching | F. Crown fire | G. Flare up | H. Firewhirl |
| I. Backing fire | J. Flaming front | K. Anchor point | L. Control line |
| M. Fireline | N. Mop-up | O. Contained | P. Controlled |

_____ Any sudden acceleration in the rate of spread or intensification of the fire. **G**

_____ An inclusive term for all constructed or natural barriers. **L**

_____ Behavior of a fire producing sparks or embers which start new fires. **D**

_____ Fire burning without flame and barely spreading. **A**

_____ The completion of control line around a fire, any spot fires and any interior islands. **P**

_____ A fire that advances from the top to top of trees or shrubs. **F**

_____ An advantageous location from which to start constructing a fire line. **K**

_____ That zone of a moving fire where the combustion is primarily flaming. **J**

_____ Spinning vortex column of ascending hot air and gases carrying smoke, debris and flame. **H**

_____ Extinguishing or removing burning material near control lines to make a fire safe. **N**

_____ Behavior of a fire spreading rapidly with a well defined head. **C**

_____ The part of a containment or control line that is scraped or dug to mineral soil. **M**

_____ Fire burning with a low flame and spreading slowly. **B**

_____ That portion of the fire with slower rates of fire spread and lower intensity moving into the wind or down slope. **I**

_____ The burning of the foliage of a single tree or a small group of trees. **E**

_____ A control line has been completed which can reasonably be expected to stop the fire's spread. **O**

26. What are the two types of fuel arrangement? **Horizontal and Vertical**

27. When monitoring a fire in a saddle what fire behavior would you expect? **The fire is pushed faster through these during uphill runs.**

28. Explain problem fire behavior and extreme fire behavior. **Problem fire behavior is the fire activity that presents potential hazard to fireline personnel if the tactics being used are not adjusted. Extreme fire behavior is the highest level of problem fire behavior that includes rapid rate of spread, intense burning, spotting and crowning.**

29. What factor influences fire spread more than any other? **Wind**

30. Write the correct number beside each term.

- _____ Spot Fire **9** _____ Fire perimeter **5** _____ Pockets **7** _____ Flank **3**
- _____ Island **8** _____ Rear **4** _____ Head **2** _____ Point of Origin **1**
- _____ Fingers **6**

