

# TECHNICAL FIRE MANAGEMENT (TFM) ENTRANCE EXAMINATION

Name: \_\_\_\_\_

Agency: \_\_\_\_\_ Unit: \_\_\_\_\_

**APPLICANT BACKGROUND:** The following information may be used by your state office in selecting their TFM candidate(s). Please answer the following questions.

1. How would you rate your math skills? Have you received instruction in advanced algebra or statistics since graduating from high school?
2. Have you completed S-390, Introduction to Wildland Fire Behavior Calculations or higher?

Circle one:    Yes    No

3. I have completed (circle the highest grade):

9   10   11   12   13   14   15   16   17   18   19   20   21

4. I have the following diplomas:

a. GED    b. High school    c. AA or AS    d. BA or BS    e. MS    f. MA

**Use the table below to answer questions 5-8.**

Lightning Fire Occurrence	
Year	Fires
1	55
2	49
3	43
4	26
5	20

5. Given the data table above, the median value is:

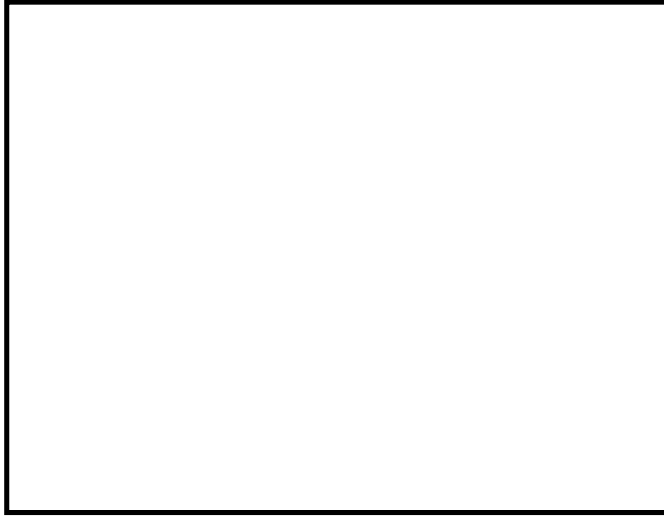
a. 51.40    b. 43.00    c. 38.60    d. 28.00

6. Given the data table the mean value is:

a. 51.40    b. 43.00    c. 38.60    d. 28.00

7. Given the data table above the range of the data is: \_\_\_\_\_

8. Draw a histogram of the data in the table (year is the independent variable):



9. Interpret the following expressions (in words):

a.  $A = B$  \_\_\_\_\_

b.  $X \neq Y$  \_\_\_\_\_

c.  $M > N$  \_\_\_\_\_

d.  $Z \leq Q$  \_\_\_\_\_

10. In the fraction,  $\frac{2}{3}$ , the 2 is the \_\_\_\_\_

11. In the fraction,  $\frac{2}{3}$ , the 3 is the \_\_\_\_\_

12. The reciprocal of 4 is \_\_\_\_\_

13. In the expression  $2^4$ , 2 is called the base and the 4 is called the \_\_\_\_\_

14. What is the value of the expression in 13 above \_\_\_\_\_

15. Evaluate the following radicals:

a.  $\sqrt{9}$

b.  $-\sqrt{25}$

c.  $\sqrt[3]{27}$

16. What is the decimal equivalent of  $7/8$ : \_\_\_\_\_
17. Calculate the percent moisture of a sample of duff that weights 40 grams when collected and 35 grams when completely dry? \_\_\_\_\_

18. Evaluate the following:

$$5 \frac{1}{5} \times 7 \frac{2}{3} = \underline{\hspace{2cm}}$$

$$\frac{1}{2} \times 2 \times \frac{1}{3} = \underline{\hspace{2cm}}$$

19. Convert 238,500 to scientific notation: \_\_\_\_\_

20. Evaluate the following:

$$(1.5)^5 \underline{\hspace{2cm}}$$

$$(2.5000)^3 \underline{\hspace{2cm}}$$

21. Solve the following equation for x:

$$y = 2x + 3$$

22. What is the independent variable in the equation presented in No. 21? \_\_\_\_\_

23. To what power must the base 10 be raised to obtain 100? \_\_\_\_\_

24. Evaluate  $e^2$  \_\_\_\_\_

25. Evaluate  $e^0$  \_\_\_\_\_

26. Change  $\log_{10} = 4$  to exponential form: \_\_\_\_\_

27. Find  $\log_{10} 185$  \_\_\_\_\_

28. Evaluate  $\ln 35.74$  \_\_\_\_\_

29. Name the following symbols:

$\beta$  \_\_\_\_\_

$\delta$  \_\_\_\_\_

$\varepsilon$  \_\_\_\_\_

$\mu$  \_\_\_\_\_

$\pi$  \_\_\_\_\_

$\Sigma$  \_\_\_\_\_

## **FIRE MANAGEMENT**

30. A fire moving at the rate of 16 chains per hour along a 500 yard front will burn over how many acres in 35 minutes (assume a line of fire that burns as a rectangle): \_\_\_\_\_
31. A helitorch can be obtained under contract for \$750 move-in costs (one time) plus \$10 per acre for operations. What would the total per acre cost of helicopter ignition if units of 46, 18, and 61 acres were burned from the same set up? \_\_\_\_\_
32. Using any release of BEHAVE for Fuel Model 3, calculate rate of spread, flame length, and heat per unit area for a dead fuel moisture of 6%, mid-flame wind speed of 4 mph, no slope, and a live fuel moisture of 70%: \_\_\_\_\_

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