# Cross Timbers Tree Model

| Name: | Class/Period: | Date: |
|---|---|---|

## Part A: Background Information

During the introductory slideshow, respond to the prompts below:

**1) What is the definition of "fuel" for ecosystems where fires occur?**

| |
|---|
| |

**2) Complete Table 1.**

**Table 1: The "Four Layers" of the Cross Timbers (From Highest to Lowest)**

| Layer Name | Description of Vegetation Found in the Layer |
|---|---|
| | |
| | |
| | |
| | |

**3)Complete Table 2.**

**Table 2: Descriptions of the Tree Model Fuel Types**

| Fuel Types | Description/Definition/Example(s) |
|---|---|
| | |
| | |
| | |

**4) What is the primary purpose of this lesson?**

## Part B: Data Collection

Use this link to access the "Tree Model" page of the JenksFERST website.

**Table 3: Descriptions of "Tree Model" Experimental Treatments**

| Treatment | Description |
|---|---|
| No Surface Fuels | No paper on the surface of the "ground" |
| "Light" Surface Fuels | One (1) layer of packing paper on the surface of the "ground" |
| "Heavy" Surface Fuels | Two (2) layers of packing paper on the surface of the "ground" |
| Debris with "Light" Surface Fuels | Five (5) crumpled "tree branch foliage" packing-paper strips on the "ground" with one (1) layer of paper on the "ground" |
| Ladder Fuels with "Light" Surface Fuels | Three (3) hanging, slightly crumpled "tree branch foliage" packing-paper strips with one (1) layer of paper on the "ground" |

**5) Describe the experimental setup and procedure/methodology.**

**6) Does this appear to be a controlled experiment? Explain.**

**7) Based on the question produced for 4) and your current understanding of the three fuel types, develop a hypothesis or null hypothesis to be tested that corresponds with the primary purpose of the lesson. Observing a few trial videos may be helpful.**

8) Determine a way to collect quantitative data that is appropriate to test your hypothesis/null hypothesis. The information provided in the website's "Physical Model Description" could furnish some ideas. Describe how you will collect data from the videos.

9) Describe how the values or quantities for the data will be determined.

10) What are the dependent and independent factors in your experiment?

**BEFORE BEGINNING DATA COLLECTION, DISCUSS ## 7-10 WITH THE INSTRUCTOR.**

Develop a table or tables that organizes the collected data. Be sure to title the table and to include appropriate headings/labels.

**INSERT DATA TABLE(S) HERE.**

## Part C: Results

**BEFORE WORKING ON THE GRAPH(S), DISCUSS THE GRAPH TYPE TO BE USED WITH THE INSTRUCTOR.**

**Develop graphs for data analysis.**

**INSERT GRAPH(S) HERE.**

## Part D: Data Analysis

**11) Describe possible limitations of the data. Describe possible data collection sources of error.**

**12) Describe the results depicted in the graph(s).**

**13) Did your results support your hypothesis/null hypothesis? Explain.**

## Part E: Applications

**14) Predict what the outcomes would have been if the following fuel treatments had been included in the investigation.**

| Treatment | Description | Predicted Outcome |
|---|---|---|
| Debris with "**Heavy**" Surface Fuels | Five (5) crumpled "tree branch foliage" packing-paper strips on the "ground" with **two (2)** layers of paper on the "ground" | |
| Ladder Fuels with "**Heavy**" Surface Fuels | Three (3) hanging, slightly crumpled "tree branch foliage" packing-paper strips with **two (2)** layers of paper on the | |

| | | |
|---|---|---|
| | "ground" | |

**Image 1: Spring "Green Up" After a Dormant Season Burn in the Cross Timbers**

**15) In Image 1, how complete was the consumption of surface fuels in this Cross Timbers woodland? Answer with a percentage value (e.g., 0%, 10%, 20%, …, 90%, 100%). Explain the reasoning used to determine your response. Be sure to read the image's title.**

| |
|---|
| |

**16) Describe each of the four layers seen in Image 1 (e.g., is vegetation present, type of fuels in the layer).**

| Layer | Description |
|---|---|
| Canopy | |
| Understory | |

| | |
|---|---|
| **Shrub** | |
| **Surface/Floor** | |

**17) Explain a possible cause for the composition of the "four layers" in Image 1.**

**18) With your understanding of fuel types and vegetative layers, what may have caused the death of the tree in the foreground?**

**19) One of the real-world problems faced by land managers is how to prevent or reduce the likelihood of crown fires. Using the results of your investigation, which fuel type would you recommend that land managers eliminate or reduce? Include how you would explain/support your recommendation from your study's data/results.**

**20) For decades, land managers have been using fire suppression in an effort to stop crown fires. Using your understanding of fuels, vegetative layers, and plant growth, explain why fire suppression alone will not prevent crown fires.**

## Part F: Student Worksheet Submission

**FOLLOW THE INSTRUCTOR'S DIRECTIONS TO CORRECTLY SUBMIT THIS STUDENT WORKSHEET.**