

DETECTIVE NOTES

Case File: 10



Tire Tracks and Tread

Key Questions:

- What is the difference between tire tread impressions and tire tracks?
- How can tire tread impressions and tracks help to solve a crime?

Desired Outcomes:

- Students can explain the difference between tire tread impressions and tire tracks.
- Students can explain how tire tracks and tire tread impressions can help solve a crime.
- Students can make connections between footwear impression evidence and tire tread evidence.

Activities and Timelines (30 minutes)

Introduction 5 minutes
Introduction to Tire Tracks

Main Activities 20 minutes
Tire Rubbings Activity

Conclusion 5 minutes
Exit Activity: Tire Rubbings Comparison

Resources

- Resource 10-1: Comparing Tire Tracks and Tread
- Resource 10-2: Exit Activity

Introduction

10 minutes



Teacher's note: Before students arrive, write the joke below on the board if you would like:

- ▷ What type of vegetable should you have in your car if you get a flat tire?
 - Answer: A spare I guess! (asparagus)
- **Say:** Tire track evidence is like footwear impression evidence in many ways! Tires can be characterized by class and accidental characteristics, just like shoes, and these characteristics may be reproduced in the tracks left by the tire, just like footwear impressions.
- **Say:** There is a difference between a tire track and a tire tread.



Teacher's note: Display Resource 10-1: Comparing Tire Tracks and Tread on a screen to give students a visual for the difference between tire tracks and tread.

- ▷ Tire track: the path left in the soil, snow, sand, mud, etc. by the wheels of the vehicle.
 - A casting of the tire track can be made the same way a footwear impression casting is made.
- ▷ Tire tread: the pattern of the tread design on the tire; the part of the tire that makes contact with a surface.



- **Ask and Discuss:** What sort of information can tire track and tire tread evidence give to investigators?
 - ▷ Possible answers:
 - Identify or eliminate a suspect vehicle
 - The number of vehicles present
 - The direction the vehicle travelled before, during, or after a crime
 - Could connect the suspect to other crimes
- **Ask:** What do you think some class characteristics of a tire are? What about accidental characteristics?



Teacher's note: Invite students to brainstorm with a partner first. Then, if desired you can split a whiteboard into two sections and write down the students' brainstormed answers on the board.

- **Say:** With the person next to you, brainstorm some ideas for class and accidental characteristics of a tire.
 - ▷ Possible answers:
 - Class characteristics: The material the tire is made of, tire tread pattern, size of tire (width, circumference).
 - Accidental characteristics: The wear and tear on the tires, cuts, gouges, cracks, twigs/rocks in the tread, glass, nails.
- **Explain:** If tire track evidence is found and collected, investigators can compare the impression evidence to known impressions. Using the size and tread patterns of the tire, investigators can check a database of tires to narrow down the brand and model.

Main Activity

20 minutes

- **Materials:**
 - ▷ Wax crayon for each student
 - ▷ 4 pieces of paper for each student
- **Teacher Prep:**
 - ▷ Get staff members' permission for students to take tire rubbings of their vehicle's tires
 - ▷ Preparing a few sets of tire rubbings (optional)



Teacher's note: This is an outdoor activity. Before the activity, ask another staff members' permission for students to take tire rubbings of their vehicle's tires.

- **Demonstrate** how to take a tire rubbing for students, showing them how hard they should press with the crayon, how to hold the crayon, and how to hold the paper against the tire. This will be very similar to the technique for doing a crayon rubbing of the bottom of a shoe.
- **Instruct the students:**
 - ▷ Each of you are going to take a wax crayon rubbing of all four tires from one of the cars in the parking lot.
 - ▷ Record the colour, make, and model of the car you take the rubbings from.
 - ▷ Indicate the tire position for each rubbing (ex. right front, right back, etc.)



Teacher's note: wet weather adaption or additional activity: consider prepping a few sets of tire rubbings for students to match to staff members' vehicles. Students can work in small groups. Once they have made the match, the students can record the same information as in the original activity.



Hand out Resource 10-1: Exit Activity



Teacher's note: Consider having a group discussion about the questions on the exit slip before students fill it out.

- ▷ Did all the tires on the car have the same tread pattern?
- ▷ What accidental characteristics did you notice?
- ▷ Did any cars have more than one tread pattern on the tires? What does this tell you?
- ▷ If there was more than one car of the same make and model used to make rubbings, how did the treads compare?
- ▷ Did any cars have more than one tread pattern on the tires? What does this tell you?
- ▷ If there was more than one car of the same make and model used to make rubbings, how did the treads compare?

Curriculum Links

Science: Evidence and Investigation

General Learner Expectations:

- 6-8: Apply observation and inference skills to recognize and interpret patterns and to distinguish a specific pattern from a group of similar patterns.
- 6-9: Apply knowledge of the properties and interactions of materials to the investigation and identification of a material sample.

Specific Learner Expectations:

- SLE 3: Recognize that evidence found at the scene of an activity may have unique characteristics that allow an investigator to make inferences about the participants and the nature of the activity and give examples of how specific evidence may be used.
- SLE 4: Investigate evidence and link it to a possible source: e.g by: classifying tire prints.

