

Forensic Science Unit Schedule

Feb. 14

Topic:

What is Forensics?

Homework due today:

Read "Doggone Puppies" and "An Eye for Crime". Answer questions under "How it Works".

In Class Work:

Detective Stories and observation skills

Feb. 21

Topic:

Crime Scene!

Homework due today:

Use this website below to help solve a crime! Bring in your Crime Report to share with the class.

<http://www.cyberbee.com/whodunnit/crimescene.html>

In Class Work:

Tire tracks and shoe prints

Feb. 28

Topic:

Fingerprints and Chromatography

Homework due today:

Read "Fingerprints" and "Types of Fingerprints" and complete "Fingerprint Review".

In Class Work:

Taking fingerprints and detecting clues using chromatography

Mar. 7

Topic:

A visit from a Forensic Scientist!

No Homework for today's class.

In Class Work:

Dr. Joan Bienvenue will be sharing about what a forensic scientist does. Read her bio here:

Dr. Bienvenue is the director of UVA's Applied Research Institute. The focus of her work is on homeland security, national intelligence and Defense challenges. Before coming to ARI in June 2013, Joan was chief scientist and program manager at Lockheed Martin. There she oversaw a project aimed at developing rapid microfluidic DNA analysis systems. She has a Masters in Science in Forensic Science. Over the course of her career she has led several projects focused on the development of new technologies for the purification and analysis of both mitochondrial and nuclear DNA in forensic casework.

Website suggestions for this unit:

<http://www.cyberbee.com/whodunnit/crime.html>

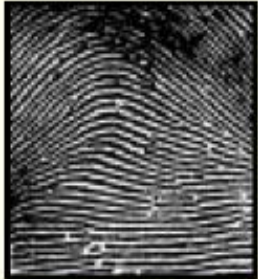
People have noticed the subtle differences in fingerprint patterns for hundreds of years. Centuries ago, Chinese and Japanese emperors signed papers with thumbprints to make them authentic. But it wasn't until the late 1800s that fingerprints were used as evidence to link a suspect to a crime. The first step in understanding fingerprints-and fingerprinting-is to examine your own.

The skin on the palms of our hands (and the soles of our feet) is covered with tiny raised lines, called friction ridges. These ridges allow people to pick up and handle objects easily. Each person, even an identical twin, has a totally unique pattern of ridges on his or her hands and feet. And for each person, the pattern on each finger or toe is unique and different from the pattern on every other finger or toe.

A fingerprint is an impression of these ridge patterns transferred to a surface. Fingerprints occur because glands in our hands and feet secrete liquids, mainly sweat and oils. These liquids leave the patterned mark of our fingerprints on most everything we touch.

There are three ways that fingerprints are valuable as evidence. First, fingerprints can confirm the identity of a person. When a criminal is taken into custody, it is a fairly simple task to take his or her fingerprints and cross-check them against other prints. This will prove who the criminal is and determine whether he or she has a criminal record or whether he or she is wanted by the police. Second, fingerprints can be used to compare a suspect in custody with fingerprints left at the scene of a crime. Third, forensic scientists can compare fingerprints left at the scene of a crime with those of a known criminal whose fingerprints are on record.

Types of Fingerprints



Plain Arch



Tented Arch



Ulnar Loop



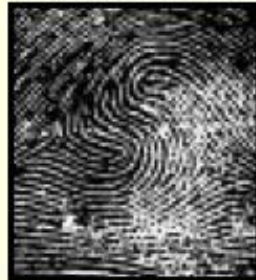
Radial Loop



Plain Whorl



**Central Pocket
Loop**



**Double Loop
Whorl**



**Accidental
Whorl**

The three main groups of fingerprints are arches, loops, and whorls.

60% of people fingerprinted have loops

35% of people fingerprinted have whorls

5% of people fingerprinted have arches

Fingerprints

Review

Name _____

1. What are the three main groups for fingerprints? _____, _____, & _____

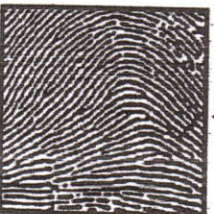
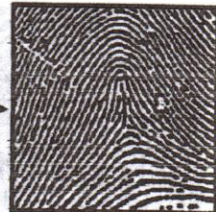
2. Fill in the blanks with the correct numbers. Choose from: 5%, 35%, and 60%.

_____ % of people have loops, _____ % have whorls, and _____ % have arches

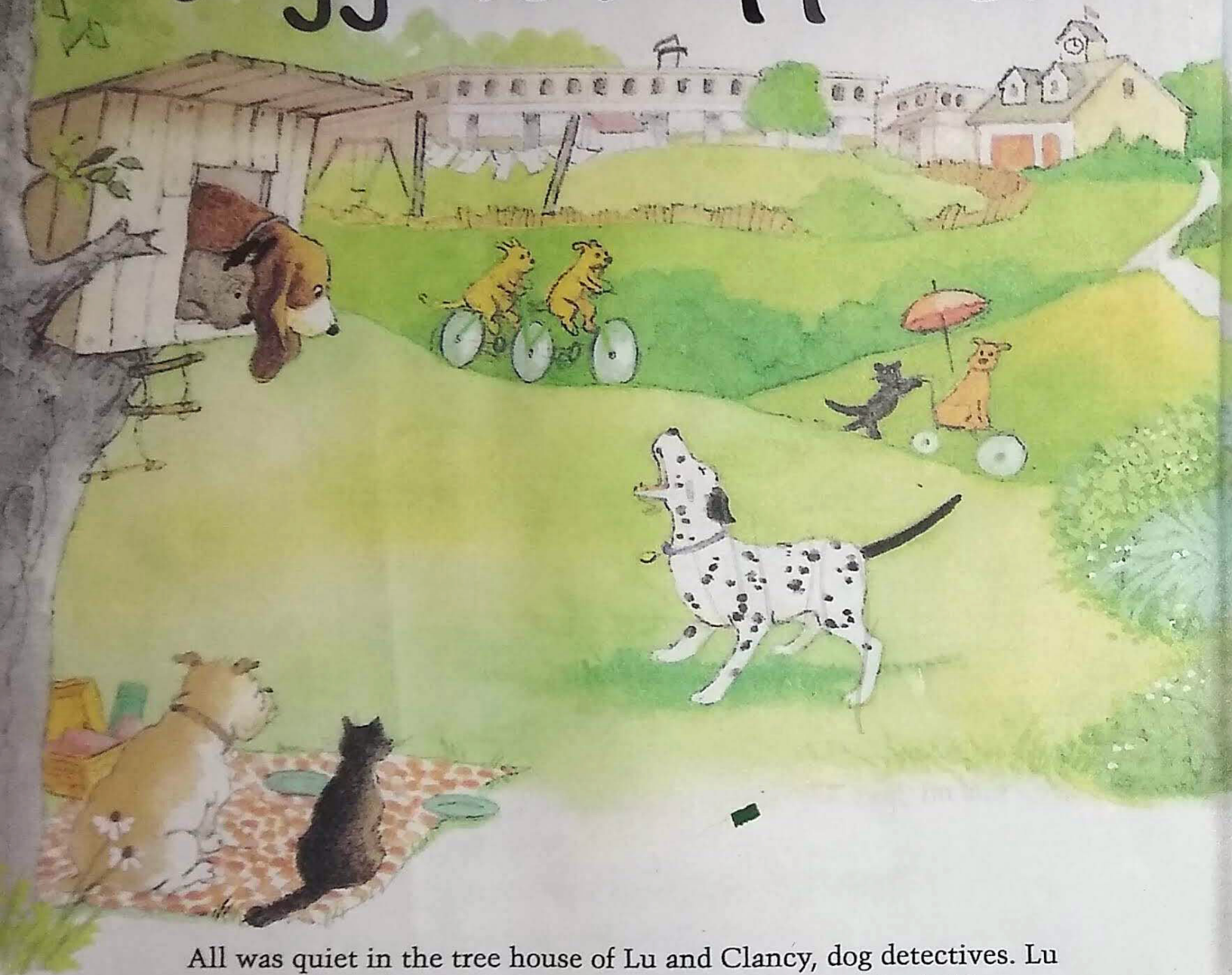
3. Identify each fingerprint below using the classification groups listed.

Plain arch
Tented arch
Radial loop (right thumb)
Ulnar loop (right thumb)

Plain whorl
Central pocket whorl
Double loop
Accidental



Doggone Puppies!



All was quiet in the tree house of Lu and Clancy, dog detectives. Lu was curled up on the couch dozing. Clancy had his nose buried in a newspaper. He was shaking his head over a story about dognappings in Barkerville when ...

"Help! Help!"

Clancy dropped the newspaper. Lu fell off the couch. Both detectives ran to the window and stuck their heads out. Dottie, their next-door neighbor, was running in circles at the bottom of the tree.

"What's wrong?" Lu shouted down.



"My puppies are missing!" Dottie whined. "I just went outside for a minute. And when I went back in — they were gone!"

Lu and Clancy scampered down to the ground. Lu patted Dottie on the back. "Don't worry, Dottie. We'll find them."

"We'll need a forensic kit to gather evidence," said Clancy.

"Forensic — as in crime?" asked Dottie.

Clancy nodded. "The puppies may have been dognapped."

"Dognapped?" Dottie's eyes rolled back and she fainted dead away.

An Eye for Crime



As soon as Dottie recovered from her fainting spell, Lu and Clancy started asking her questions.

"What time did you notice the puppies were gone?"

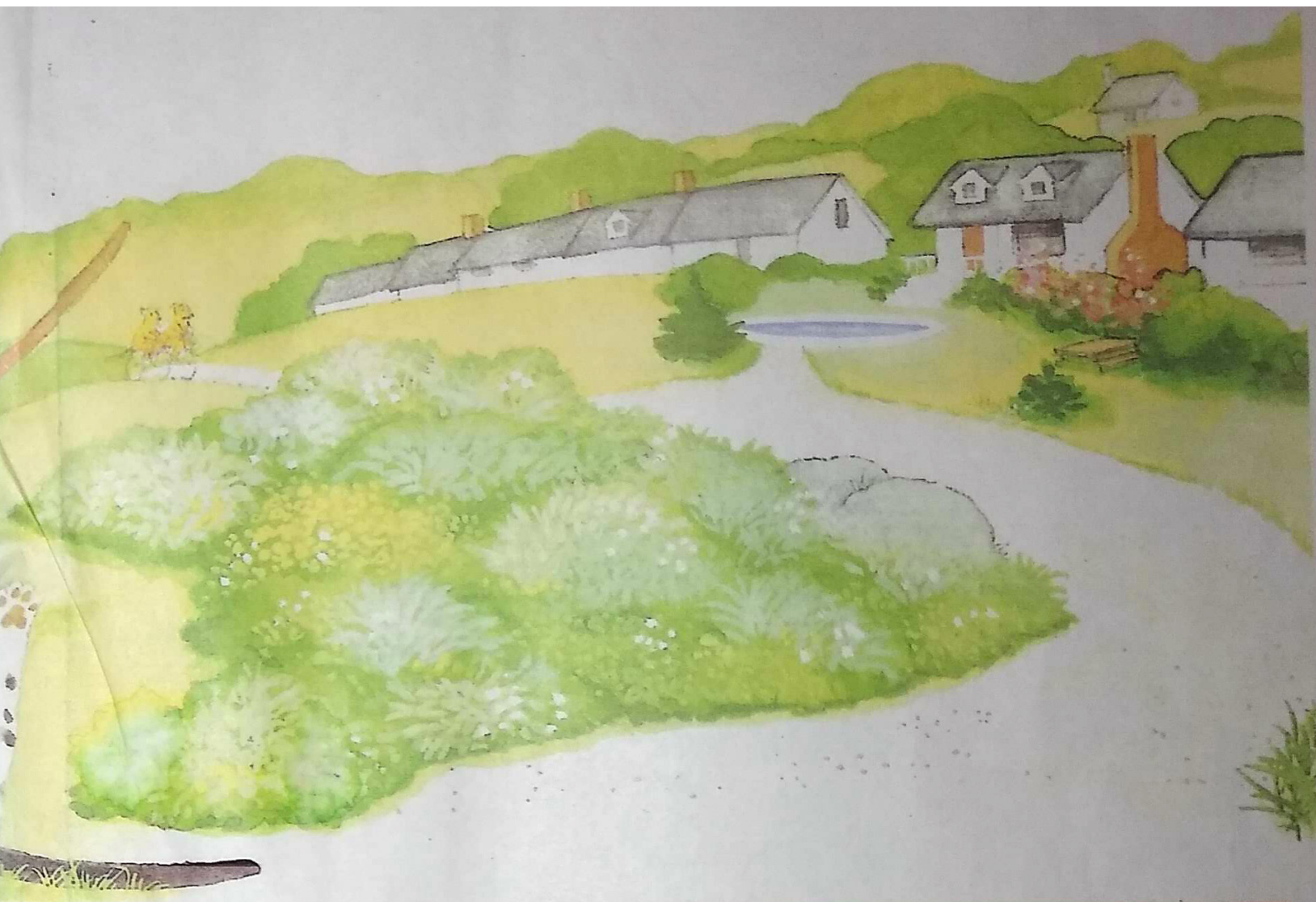
"Did you see anyone else around?"

"What were the puppies wearing?"

"Did you notice anything suspicious?"

Dottie's head swung back and forth between the two dogs. "I can't remember!" she wailed. "The only thing I noticed was that the window was open. And there were dog-biscuit crumbs on the windowsill."

"Stay here in case the puppies turn up, Dottie," said Lu. Then, like highly trained police dogs, she and Clancy put their noses to the ground and followed the trail of crumbs.



How it works

How much would you remember if a crime was committed? Here's your chance to find out. Can you answer these questions about what was happening in the picture on pages 4 and 5? Don't turn back to look — just write down your answers, then check page 40 to find out how you scored.

- How many Dalmatian puppies are there?
- Where are they?
- Who are they following?
- What is the name of the newspaper?
- What shape are the dog biscuits?
- What time is it?
- What date is it?
- Are the puppies wearing anything special?