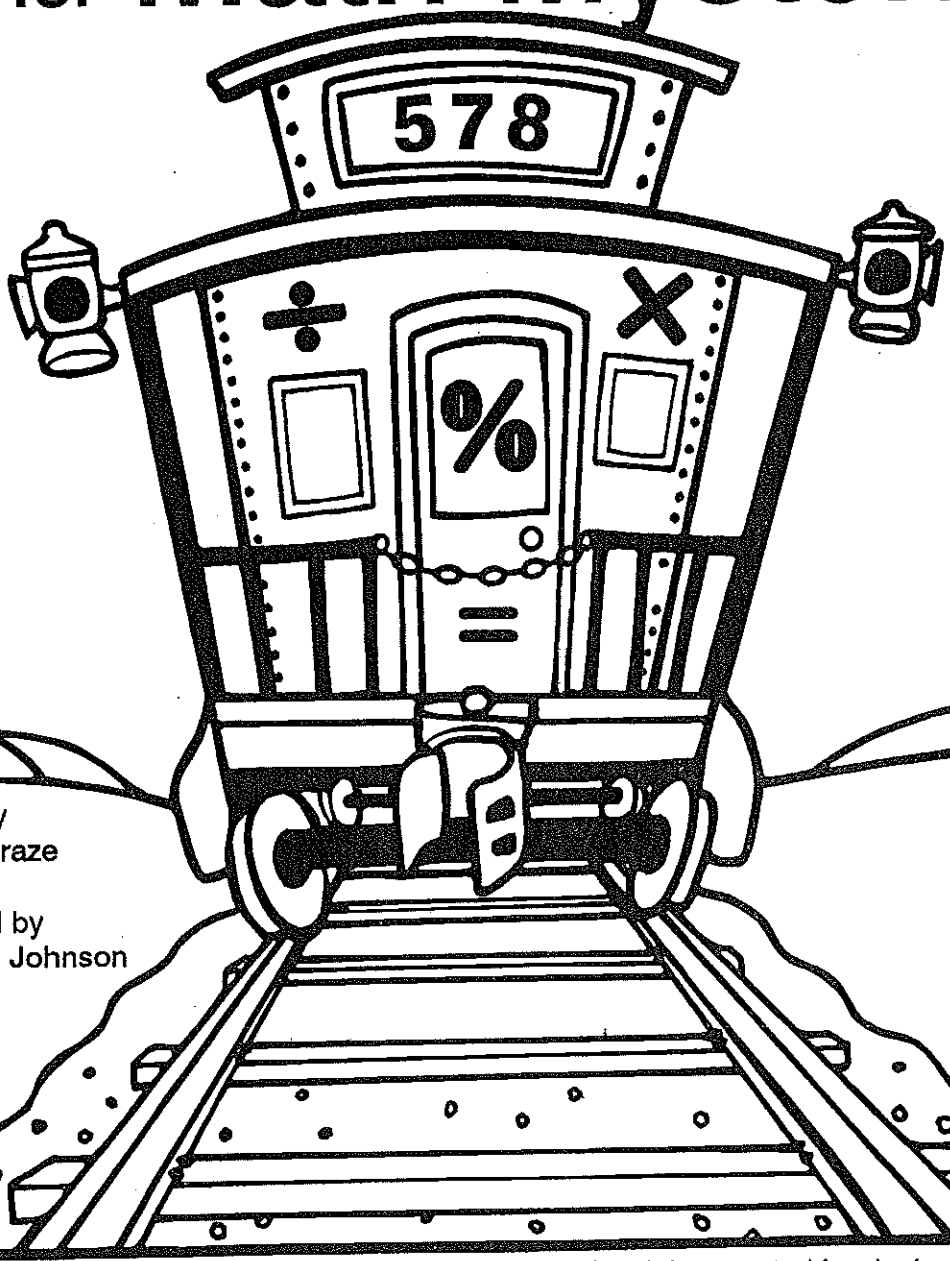
PEN

DL 113 Grades 5-8

The LOOSE CABOOSE And Other Math Mysteries



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Information for the Instructor

About This book

The Loose Caboose and Other Math Mysteries is a unique math book that combines math practice with the intrigue of solving a mystery. In each exercise students are presented with a mystery to solve. By doing math and logic problems they find clues that allow them to solve the mystery. Students play the roles of mathematicians as well as detectives. It's a motivating vehicle for applying and practicing math skills.

The mysteries offer a variety of topics, skills and time frames. They vary in length from 2 to 7 lessons. Depending on the mathematical skills of your class and your class structure, you may want to present one lesson per day or you may choose to finish the entire mystery in one class period. You can have students work individually or in small groups. Choose the mystery and presentation that best suits your students' needs.

It is suggested that you give your students only one worksheet at a time. In several of the mysteries the solutions in one lesson will eliminate suspects so these suspects are not included in subsequent lessons. By giving students all of the worksheets at one time, it will often be obvious who the remaining suspects are as soon as they refer to the last page of the mystery.

The following outline of lessons provides you with an overview of each mystery, a list of the mathematical skills that are employed in solving the mystery, and any special considerations you need to know before presenting the mystery. Please be advised that the **math skills that are listed for a mystery should have been introduced before presenting the mystery.** The mysteries are meant to give students opportunities to apply and practice these skills, not as introductory lessons.

If it has been awhile since students have practiced the math skills, you may want to do a quick review lesson before introducing the mystery or do a lesson in conjunction with solving the mystery. Students should be challenged by doing the mystery, but they should also have fun and not be frustrated by their inability to apply certain mathematical procedures.

Lost Lottery Winner

Scenario

Six people line up to claim the winning lottery prize. Using clues about the properties of numbers on each ticket, students discover the one winner.

Skills

- whole numbers $+, -, \times$
- decimals $+, \times$
- prime numbers
- sequences

Flowers for Miss Sneeze

Scenario

Miss Sneeze is on a mission to find out who is bringing her flowers. Information is provided for six suspects. Using fairly easy clues, students should be able to find the person who is bringing the flowers.

Skills

- prime numbers
- whole numbers $+, \times$
- sequences
- decimals $+, -$

Teaching Notes

If students have not been introduced to the concept of prime numbers, you should explain to them that a prime number is one that is only divisible by 1 and itself. Give them a list of the first ten prime numbers (2, 3, 5, 7, 11, 13, 17, 19, 23, and 29).

New Morning Message

Scenario

Someone has reprogrammed the school's public address system so that rap music is played rather than the morning message and national anthem. Six students are suspected of making the change.

Skills

- logic
- whole numbers $\times, +, \div$
- decimals $\times, +$
- percentage

Tomb Robbers

Scenario

When Professor O. N. Tyme discovers that a valuable box has been stolen from an ancient tomb, six people are suspected. Using clues that are provided through mathematical calculations, students discover the tomb thief.

Skills

- whole numbers +, −, ×, ÷
- fractions ×
- decimals +
- logic
- area and perimeter

Foreign Frogs

Scenario

When the customs inspector discovers that a shipment of rare frogs is entering the country he becomes worried about the problems this new species could create and is quick to find the suspect who is smuggling the illegal animal into the country.

Skills

- decimals ×, +
- whole numbers +, −, ×, ÷
- fractions ×

Teaching Notes

After students have found the combination of frogs whose weight equals 8 kilograms, tell them that Lois has frogs 1, 2, and 6 and Bill has frogs 3, 4, and 5. From this they can deduce that Lois is the frog smuggler.

Mr. Bag's Inheritance

Scenario

Shredrock Homes is trying to find the one woman out of four who will inherit money left by Mr. Bags. Clues regarding the woman's age, height, zip code and birth month allow students to identify the heiress.

Skills

- logic
- whole numbers +, ×, ÷, −
- linear measurement
- calendar time
- averages

Teaching Notes

To find out how much money Bernice will inherit, students can choose any number and as long as they follow the directions carefully, they will arrive at the answer of $50,000.

Mistake at the ATM

Scenario

When the bank turns up short $5,000.00, five people who made withdrawals from the ATM machine are the prime suspects. Students use clues about the amount of money in each person's bank account as well as times they visited the bank and evidence found at their homes to discover the person who took the extra money.

Skills

- money +, −
- time
- sequences

Teaching Notes

This mystery may become confusing to students as they try to keep track of each person's money. Several suspects will have more money than they should. It may help to keep track of each suspect's assets on a separate piece of paper.

Lost in Bonkers

Scenario

Mel and Nell are heading to Bonkers to visit Nell's cousin Bell. Because they are in Bonkers, everyone gives directions that are a little confusing. Students must use math skills to decipher the directions and get Mel and Nell to cousin Bell's home.

Skills

- whole numbers +, −, ×, square
- fractions ×
- prime numbers
- sequences
- graphing

Pirate Flag

Scenario

When the British flag is replaced with a pirate flag, five people from colonial Boston are suspects. Students use clues about height,

weight, number of letters in the name and an address to find the trickster.

Skills

- whole numbers +, –, ×, ÷
- fractions ×
- logic
- linear and weight measurement

Teaching Notes

The first three worksheets can be done in any order. Each will eliminate a different person.

Slim's Silver

Scenario

When Sam receives a telegram from his brother, he sets out to find his brother's silver claim. Students use clues to find where the claim is (city and claim site) and how much silver was mined last year.

Skills

- whole numbers +, –, ×
- sequences
- area and perimeter

The Loose Caboose

Scenario

Somewhere between Last Chance and Prospect the train's caboose (and the gold it contains) disappears. Students must find where the caboose disappeared and who was working at that point.

Skills

- whole numbers +, –, ×
- fractions ×
- time
- logic
- magic square

Jewel's Jewels

Scenario

Jewel's jewels have been heisted from her safe and four employees and one known jewel thief are the suspects. Solving the mystery involves opening the safe, figuring out what jewels were stolen and finding the culprit.

Skills

- sequences
- logic
- whole numbers +, –, ÷, ×

Teaching Notes

At the end of the mystery the students discover that the police have found all the missing jewels plus a bag of fake jewels. They are asked to describe a way to find the bag of fake jewels by weighing the bags on a balance scale only twice. See the answers for a complete description of how this can be done.

Treasure Hunt

Scenario

Looking for a buried treasure takes a group of friends from the backyard of an abandoned house to a mansion and back to the yard. Each clue takes them to another location and a little closer to the treasure.

Skills

- graphing
- whole numbers +, –
- equivalent fractions and decimals
- magic squares, circles, triangles

Teaching Notes

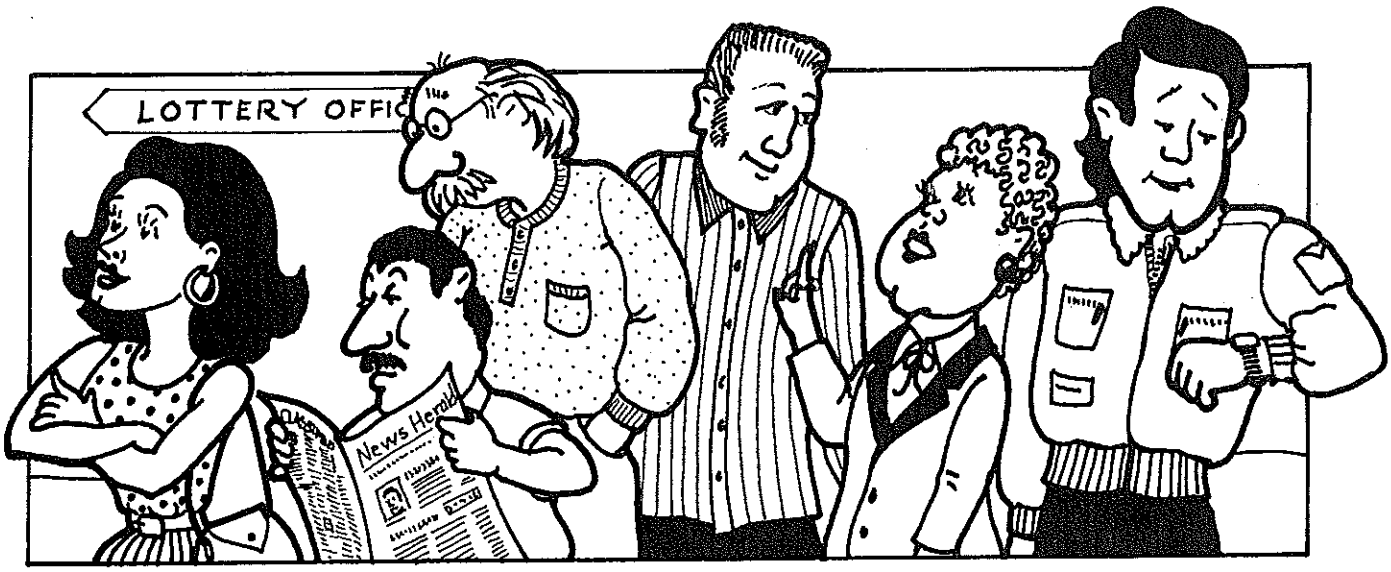
Lesson 2 - Check students' answers for the six objects that are on the map. If their answers are correct, tell them that they are to dig on point (15,10). They should draw a shovel on this spot. If they get the graphing exercise correct, hand out the next worksheet.

Lesson 3 - To find the address, students may begin with any number. After they have subtracted numbers A and B to get C, if C is less that 100, they must add a zero in front of the number to make a three-digit number that can be reserved to form another three-digit number (for instance 99 becomes 099 and when reversed becomes 990). Whatever number students start with, the result will be 1089.

Lesson 1

Lost Lottery Winner

The Winning Numbers



The state lottery system has a $1,000,000 prize for the person who holds the winning ticket that matches all five of numbers that were drawn. Six people have shown up to claim the prize. All of the six people heard only some of the numbers as they were announced on television, and all of the people have at least two of the five winning numbers on their tickets.

Do the following problems to discover the five numbers on the winning ticket. The numbers in ovals are the winning numbers.

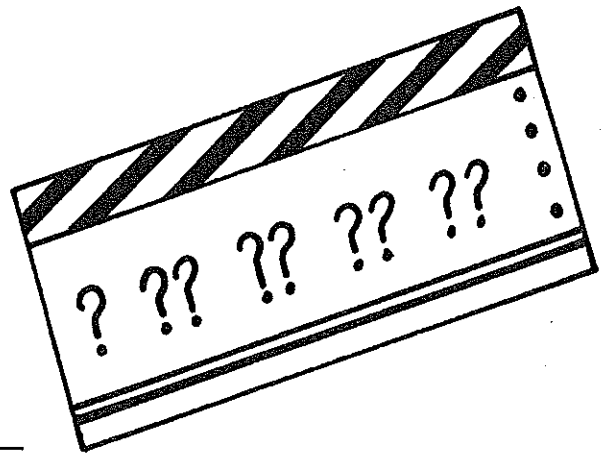
a. $246 + 931 =$ ___ ___ ___ ___

b. $6 \times 55 \times .2 =$ ___ ___

c. 1/10 of $(3772 + 528) =$ ___ ___ ___

d. $(2.8 + 9.7) \times 4 =$ ___ ___

e. $(1{,}438 - 883) \times 5 =$ ___ ___ ___ ___



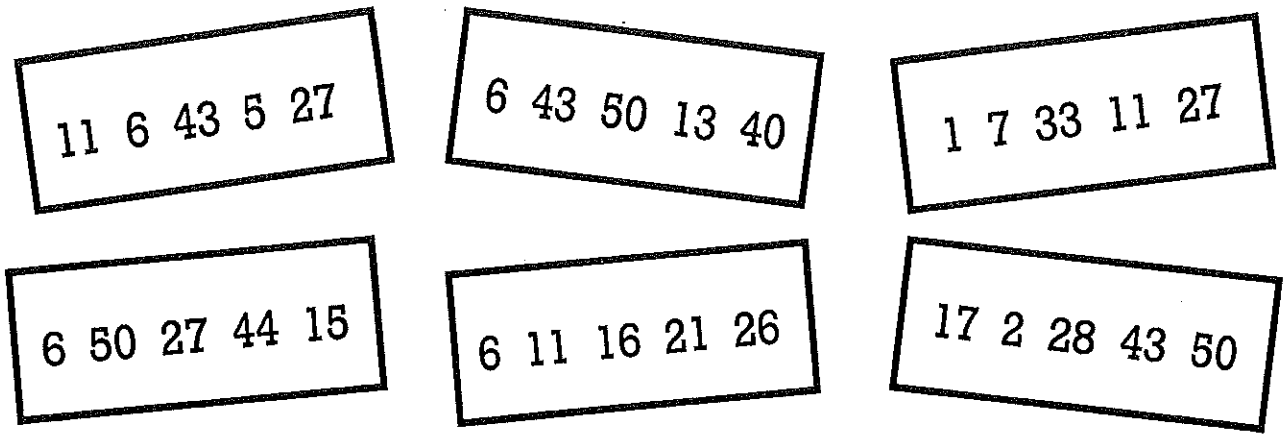
The winning numbers are ___ ___ ___ ___ ___

Lesson 2

Lost Lottery Winner

Six Tickets

Use the following clues to match up each person with one of the tickets. The six tickets are:



1. Bernard Burnside has two prime numbers on his ticket, one of which is an even number.

   Bernard's ticket is _____

2. Charlie Chapel has at least two numbers that are multiples of 2 and two numbers that are multiples of 3, and one number that is a multiple of both numbers.

   Charlie's ticket is _____

3. Carrie Moore says that the all the numbers on her ticket are odd.

   Carrie's ticket is _____

4. Dedre Goodwin says that the sum of her numbers is greater than 150.

   Dedre's ticket is _____

5. Evan Rude has three prime numbers on his ticket and the sum of two of the numbers on the ticket equals a third ticket number.

   Evan's ticket is _____

6. Justin Tyme says that the numbers on his ticket form an arithmetic sequence.

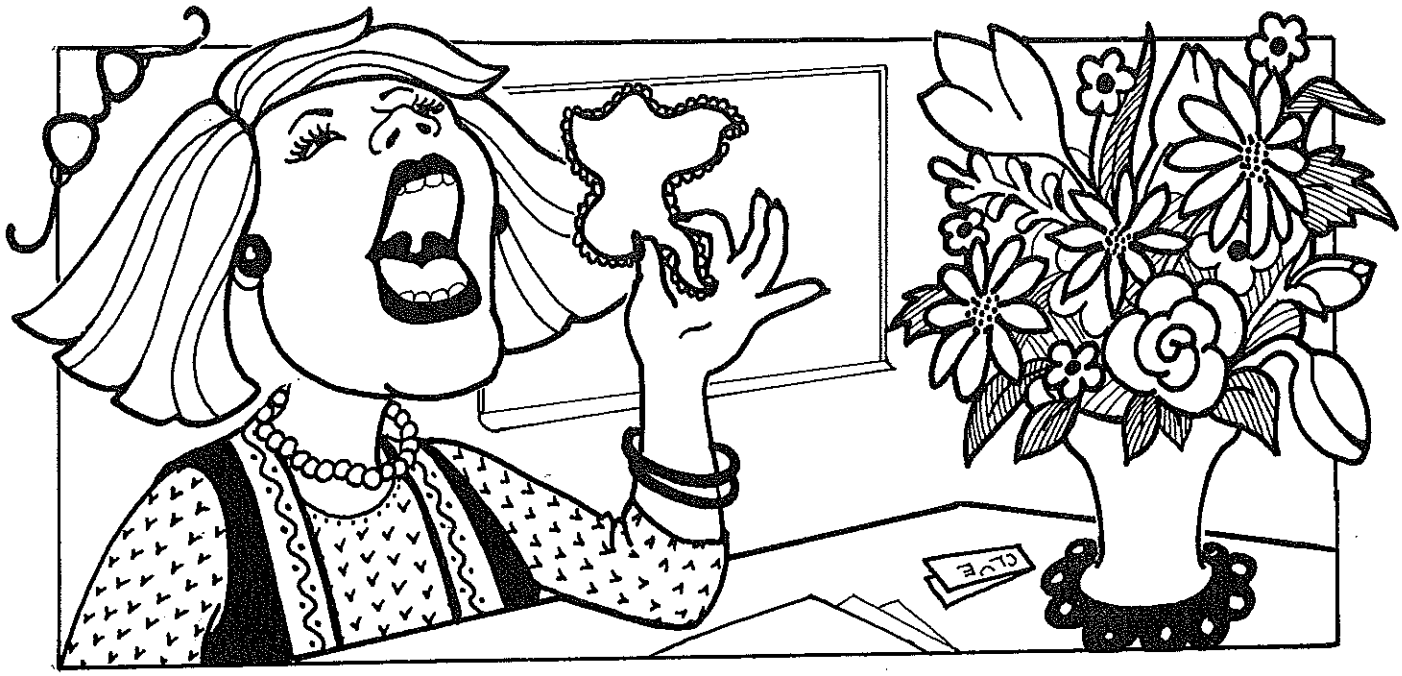
   Justin's ticket is _____

Who has the winning lottery ticket? _____

Lesson1

Flowers for Miss Sneeze

Introduction



Every Monday morning Miss Sneeze finds a bouquet of flowers on her desk. She loves the kindness behind this gesture, but she is allergic to flowers so she needs to find the generous person and ask them to stop bringing her flowers. Luckily the person who has been leaving the flowers has also left a clue each week. She has gathered four clues and consulted her class roster to find out which of her students has been bringing the flowers.

Here is the information about the six people she suspects are bringing her flowers.

name	street	birth date	seat
1. Lisa Douglas	Vistaview	2/28/86	(2, 4)
2. Jason Bartlett	Cottonwood	4/18/87	(5, 6)
3. Marilee Schwarzkof	Victoriaview	6/14/86	(3, 4)
4. Tony Scanlan	Riverside	12/19/87	(4, 5)
5. John Frisbee	Ironridge	8/4/86	(1, 3)
6. Dorothy Eggebrecht	Breckenridge	7/3/86	(4, 1)

Lesson 2

Flowers for Miss Sneeze

The Clues

Read the four clues and see if you can help Miss Sneeze figure out who is sending her the flowers before another bouquet arrives.

Clue 1

My last name has three more letters than my first name but two letters less than the street where I live.

Clue 2

When you add the numbers of letters in my first name to the number of letters in my last name, you get a prime number.

Clue 3

The product of my birth month and birth day is less than the year I was born.

Clue 4

My seat number is greater than my row number.

Note: The first number is the row and the second number is the seat number. The two numbers (2,3) indicate row 2, seat 3.

Based on these clues, which of the six original suspects are most likely the people who are delivering the flowers?

_____ _____ _____ _____

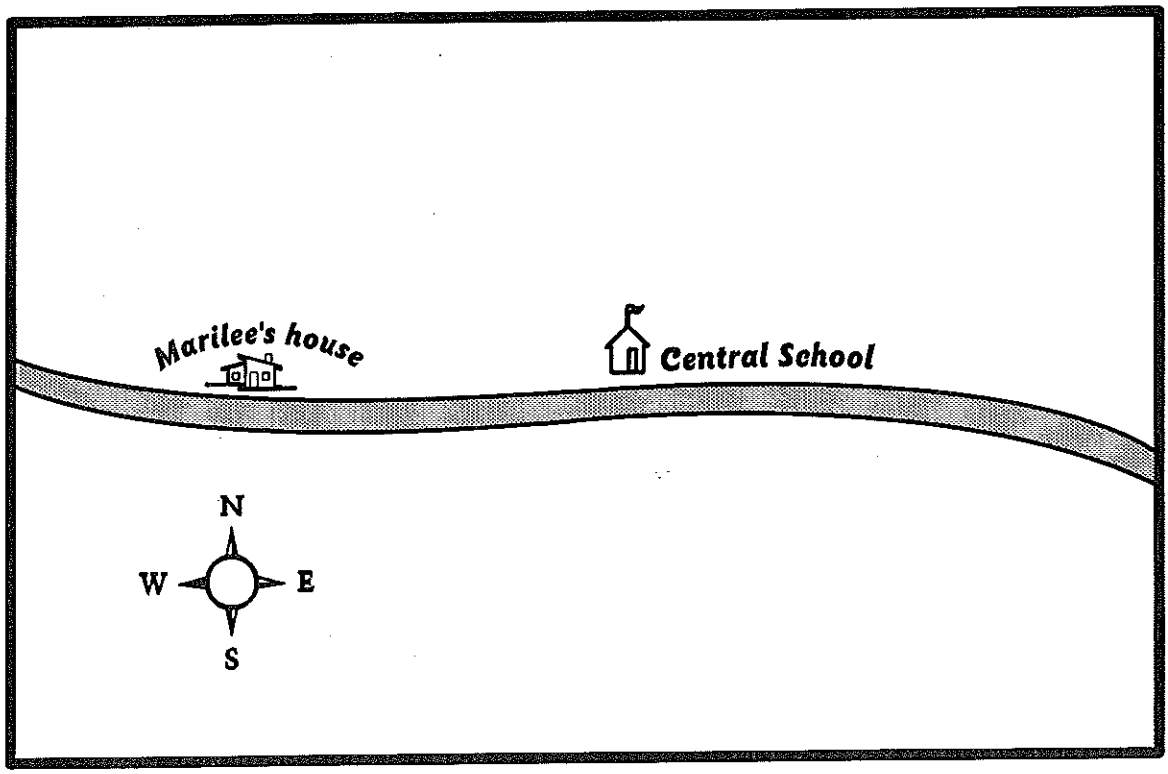
Lesson 3

Flowers for Miss Sneeze

Additional Clues

Miss Sneeze figures that the person who is bringing the flowers probably walks to school so he or she can get to school before everyone else. Everyone who lives more than 1 mile from the school rides the bus. Find out how far from the school each person lives. Draw and label their homes on the map and indicate the distance from the school.

* Marilee lives 1.8 miles west of the school.
* John lives halfway between Marilee and the school.
* Jason lives 2.4 miles east of John.
* Lisa lives .8 miles east of Jason.



Based on these clues which of the suspects probably is sending the flowers?

_____

Lesson 1

NEW MORNING MESSAGE

Introduction

The whole school was surprised to hear loud rap music blare from the public address system instead of the daily announcements and the national anthem. Who could have done it? Mr. Dunn, the principal, thinks he knows, so he has started checking out his hunches. He has six suspects (Robert, Rhonda, Rachael, Ricky, Randy and Robin), all of whom work as an office assistant at some time during the day.

Use the clues to find out which period each person works in the office.

Period	Who works
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____

Clues

1. Robert works 5th period. When he leaves he meets Rachael who is coming on duty.
2. Rhonda works after Randy and before Robin.
3. Ricky works before Robert and after Robin.

Mr. Dunn always programs the message for the next day at the end of 1st period. He knows, then, that the person who put on the new message did not work 1st period.

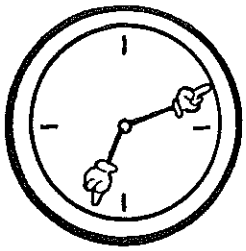
Which suspect can be eliminated? _____

Lesson 2

NEW MORNING MESSAGE

The Time Factor

Mr. Dunn figures that it would have taken at least 15 minutes for the person to reprogram the public address system. Each class is 55 minutes long. Use the clues to figure out which of the the suspects had at least 15 minutes to work on the morning message.



It takes an average of
- 4 minutes to take a message
- 1 minute to issue a late slip
- 5 minutes to enter an absentee report.

1. **Robert** took twice as many phone messages than he had late slips to issue. He had a total of 18 tasks during the period.
2. **Rhonda** folded programs at the rate of 20 programs per minute. She folded a total of 700 programs.
3. **Rachael** entered twice as many absentee reports as the number of late slips she issued. She did a total of 9 tasks.
4. **Ricky** folded programs 50% faster than Rhonda but only folded 600 programs.
5. **Randy** issued 10 late slips and took an equal number of messages.
6. **Robin** did 8 tasks. She took 6 more phone messages than the number of absentee reports she entered into the computer.

How long did each person work?

Robert - _____

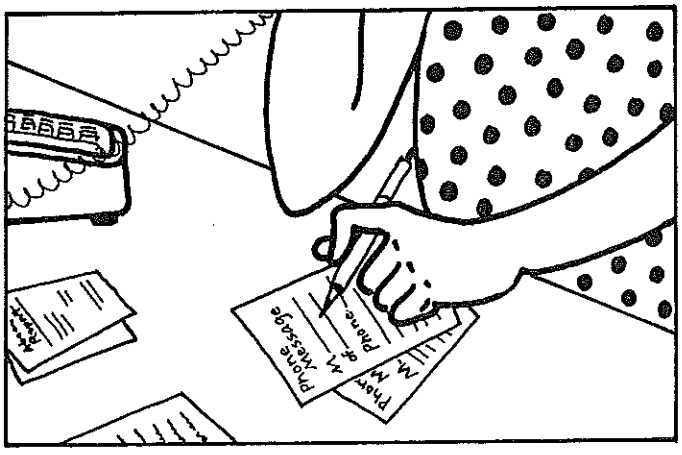
Rhonda - _____

Rachael - _____

Ricky - _____

Randy - _____

Robin - _____



Which suspect can be eliminated?_____

Lesson 3

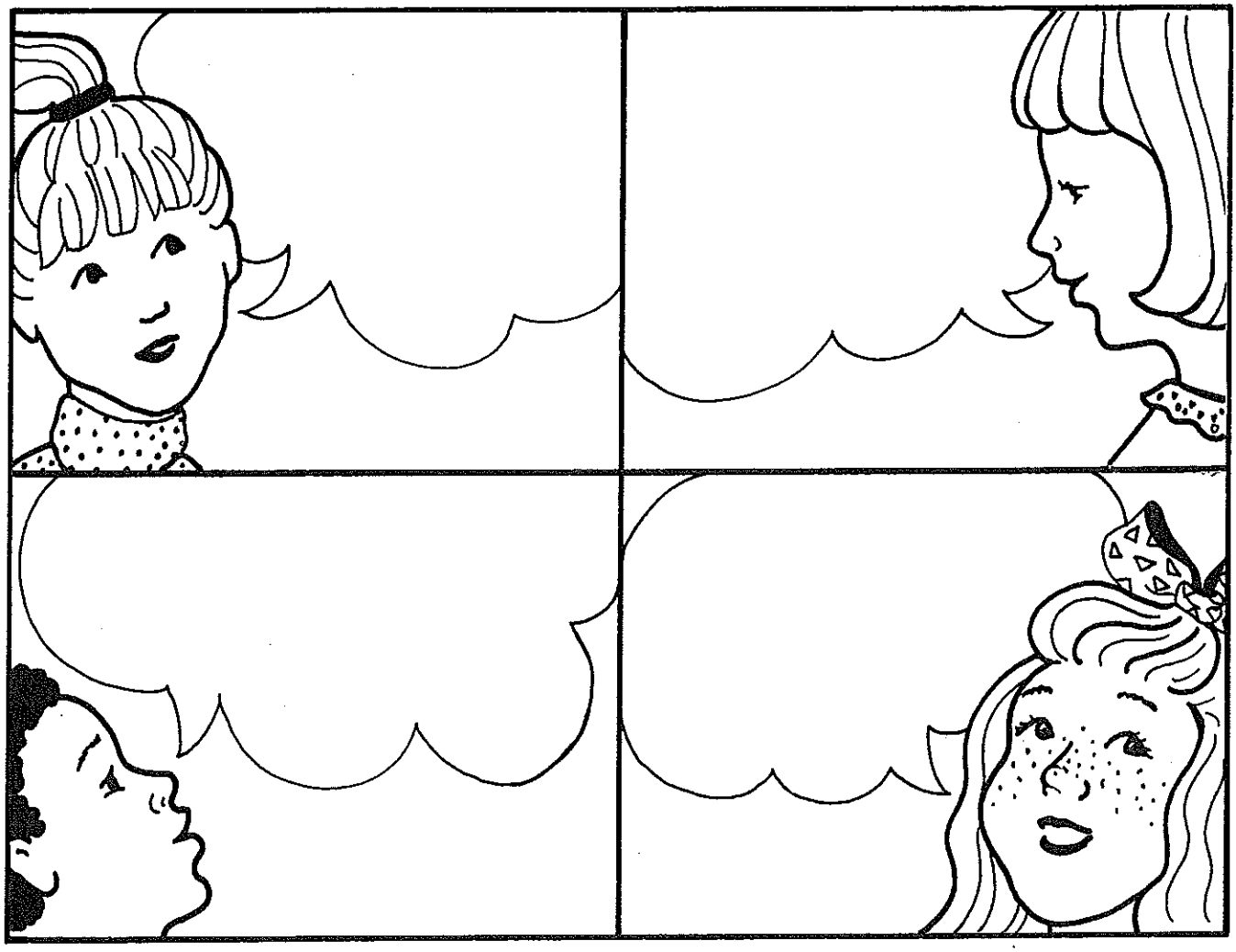
NEW MORNING MESSAGE

Confession

Do the following problems to find out what each suspect said when Mr. Dunn called the suspects into his office and questioned them.

Rhonda	$.5 \times (7 \times 10)$	a. **39**	"I did my work in the library instead of the office yesterday."
Ricky	$(21 \times 13) \div 7$	b. **35**	"I confess."
Robin	$(.3 + 1.5) \times 25$	c. **50**	"I don't know how to use the public address system.
Rachael	$(7.3 + 5.2) \times 4$	d. **45**	"It was changed before I came on duty."

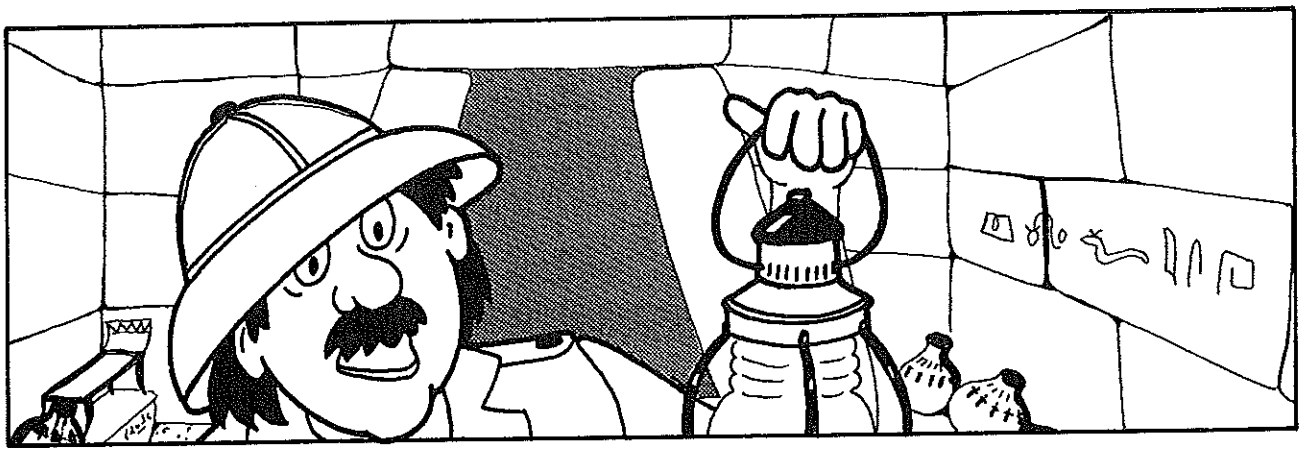
Write each person's comment in their dialog box.



Lesson 1

Tomb Robbers

Introduction



Professor O. N. Tyme is an anthropologist who studies treasures of ancient civilizations. On his latest expedition, Professor Tyme entered the tomb of the ancient Egyptian King Abdullala and found that some of the treasure in the tomb had been removed. A priceless golden box was missing. He suspects six people and has asked the police to check out where each suspect is presently located and what they have been doing recently.

Help Professor Tyme and the police find the tomb robber. Start by doing the following math problems and matching each person with their whereabouts.

Jacob Adams - $(35 \div 7) + 20$

Theresa Rich - $10 + (50 \times 1/2)$

Jules Rotten - $(2 + 3) \times (1/3 \times 18)$

Bea Smart - 1/5 the sum of 34 and 96

Arthur Old - $(55 + 71) \div 7$

George Dunn - $(52 \div 4) + (147 \div 7)$

30 - has been in and out of jail during the last year

18 - in the country operating an antique store

25 - in the country, works for an airline and makes frequent trips to Europe

26 - married to a rich business man; there are rumors that he is having problems with his business

34 - has been dead for 2 years

35 - just bought a mansion that she plans to turn into a museum

Which suspect can be eliminated?_____

Lesson 2

Tomb Robbers

Footprints

When Professor Tyme and the police inspect the tomb site, they find two separate sets of footprints. One set is shoe size 7 and the other is size 8. The impressions in the sand indicated that the thief weighed between 130 and 140 pounds. Do the problems to discover the suspects' shoe sizes and weights.

Shoe Clues

Jacob Adams - 2.3 + 1.2 + 4.5 = _____

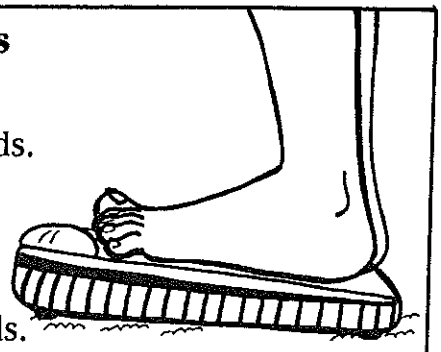
Theresa Rich - 1/4 the sum of 13 and 15 = _____

Jules Rotten - 1.1 + 2.2 + 3.3 + 4.4 + _____

Bea Smart - (9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1) ÷ 5 = _____

Arthur Old - (100 – 36) ÷ 8 = _____

Weight Clues



Theresa Rich and **Arthur Old** together weigh 252 pounds.

Theresa Rich weights 10 pounds more the Arthur Old.

Jacob Adams weights 13 pounds more that Arthur Old.

Bea Smart and **Jacob Adams** together weigh 275 pounds.

Jules Rotten weighs 15 pounds more than the heaviest of the other suspects.

The suspects' weights are

Jacob Adams _____

Theresa Rich _____

Jules Rotten _____

Bea Smart _____

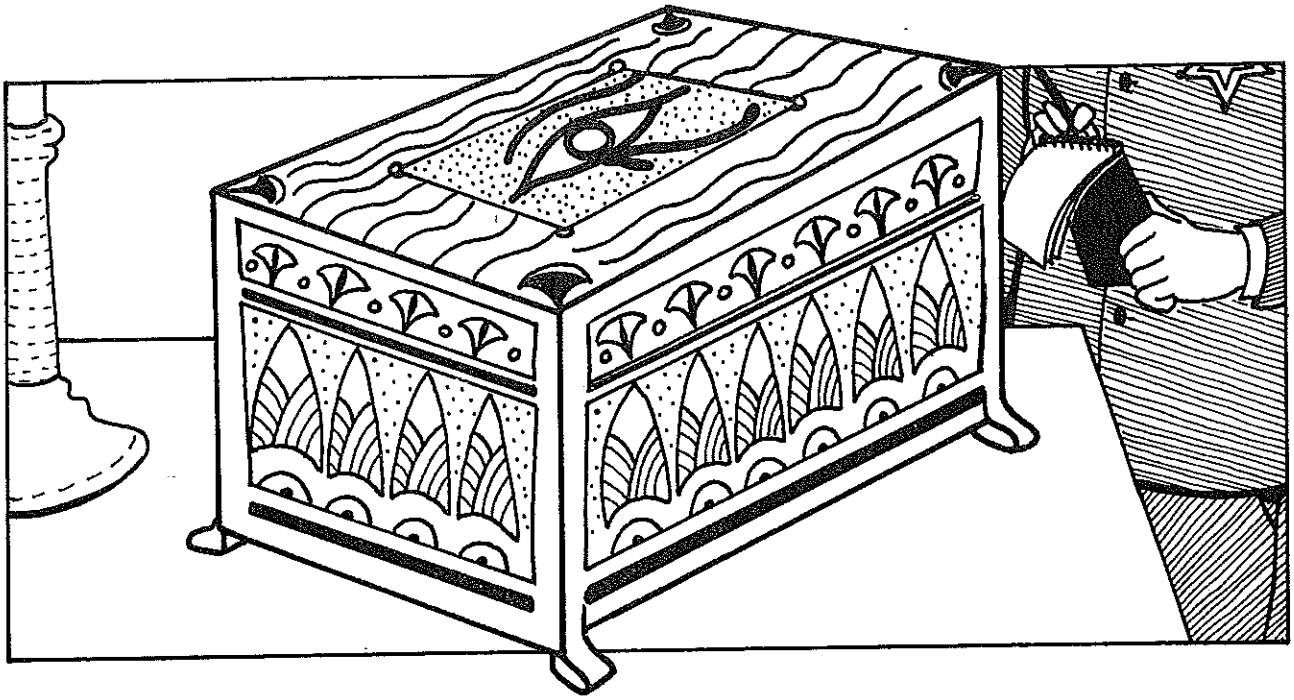
Arthur Old _____

What suspects can be eliminated? _____

Lesson 3

Tomb Robbers

Lost Box



At this point, the police have decided to search the homes and businesses of the two remaining suspects. They find that each person possesses an old box. Since they are not experts in ancient treasures, they don't know if the boxes are just old or if they might be the missing box from the tomb. They write a description of each box that includes the dimensions. If you compare the dimensions of each suspect's box with the dimensions of the missing box you will be able to find out who the robber is.

Jacob Adams' box measured 20 in. (length) by 12 in. (width) by 4 in. (height).

base area = _____ volume = _____

Theresa Rich's box measured 8 in. (length) by 30 in. (width) by 3 in. (height).

base area = _____ volume = _____

It is known that the ratio of the stolen box's base area to its volume is 1 to 3.

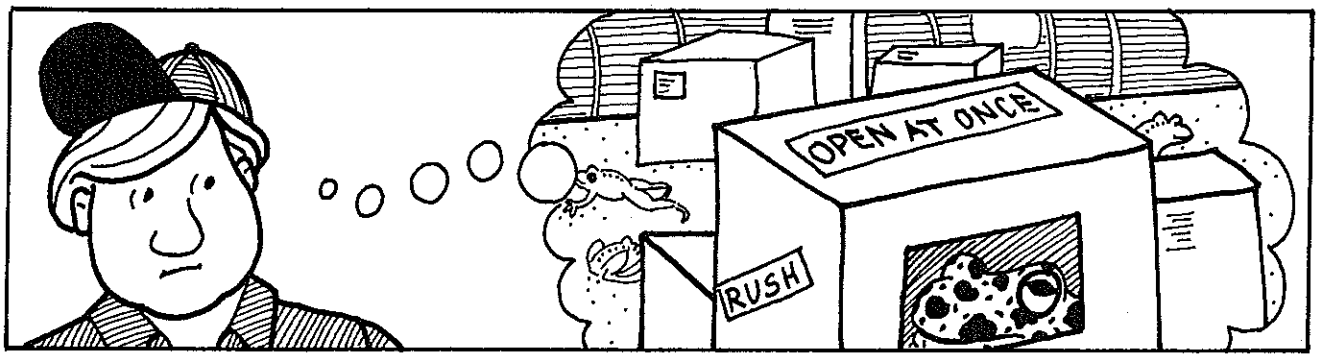
Who is the thief? _____

Lesson 1

Foreign Frogs

Introduction

Ian Farmer, the agricultural customs agent, just got a tip that there is a shipment of illegal frogs arriving from South America. These frogs are known to not only wipe out entire populations of insects but also to reproduce at astonishing rates. If they are released into the local environment they will severely alter the natural ecology. He has to find the frog smuggler and intercept the shipment before the frogs are picked up. Checking the passenger lists from several airlines, he finds that the following people are on flights that are landing at the airport.



Do the problems and match up each person with their profile to find the most likely suspects.

Lois Layman - $(3 + 8) \times (7 - 4)$

Polly Wog - 2/5 of $(8 + 17)$

Bill Biologist - $(72 \div 9) \times (108 \div 12)$

Zeb Zoologist - 2/3 of $(96 + 33)$

Sally Mander - $(7 \times 5) + (7 \times 4)$

86 - a professor of biology who collects unusual animals to use in college classes and research

72 - a researcher who is looking for natural ways to prevent insects from damaging plants

33 - owner of EXOTIC CRITTERS AND MORE, a pet store that specializes in unusual animals

63 - owner of *Amphibian World*, a tourist attraction featuring frogs and more

10 - Owner of Frog World, a shop of frog books, pictures, stuffed animals and ceramic figures

Which person is **not** a likely suspect? _____

Lesson 2

Foreign Frogs

Name Clues

Ian gets a clue from one of the customs agents in Brazil that three of the suspects were collecting or buying frogs while they were in South America. The Brazilian agent has sent the names of the suspects to Ian in a coded message.

Do the following problems on a calculator. When you get the answer, write the answer on the line. Then turn the calculator upside down and read the answer. Write the word or name on the second line.

a. $5 \times (508 + 492) + (.5 \times 214)$ _____ _____

b. $3 \times (700 + 400) + 204$ _____ _____

c. 1/3 of 2496 _____ _____

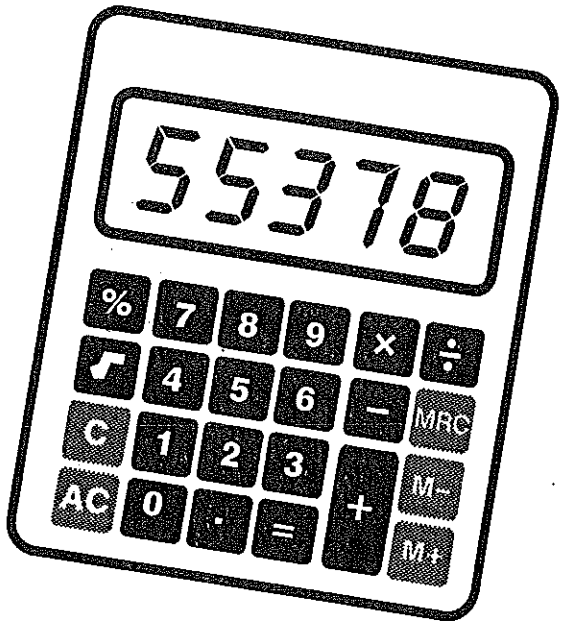
d. $(3 \times 2402) + 512$ _____ _____

e. $6 \times (2000 - 750) + 578$ _____ _____

f. $5 \times (506 + 605) - 238$ _____ _____

g. 1/2 of 11,074 _____ _____

Which suspect can be eliminated?_____



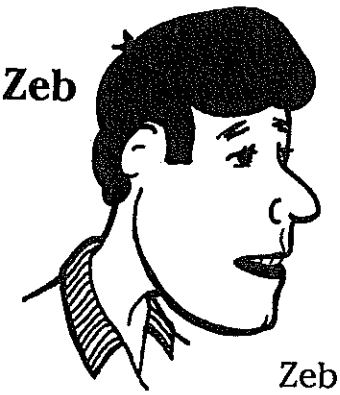
Lesson 3

Foreign Frogs

Head Count

Ian intercepts the package that contains the frogs but he finds that there are only 7 frogs in the container. His informants have told him that 10 frogs had been smuggled out of Brazil. This means that 3 frogs are missing. He meets each suspect at the baggage claim area and finds that each picks up a container that is typically used to transport animals. When he questions the suspects about what animals they have in the containers, this is what they say.

Zeb



I have birds and frogs.
When I count the legs I have 20 legs.
When I count the heads I have 7 heads.

Zeb has _____ birds and _____ frogs.

Bill

I have spiders and frogs.
When I count the legs I have 24 legs.
When I count the heads
I have 4 heads.

Bill has _____ spiders and _____ frogs

Lois

I have frogs and snakes.
When I count the legs I have 12 legs.
When I count the heads I have 6 heads.

Lois has _____ snakes and _____ frogs.

Which suspect can be eliminated? _____

Lesson 4

Foreign Frogs

Case Closed

Ian collected the frogs from the two remaining suspects, tagged each frog with a number, and put them in a box. The frogs looked exactly alike but only three of the frogs were the kind of frogs that Ian wanted to prevent from coming into the county. By looking at the shipping documents that were on the case containing the 7 other frogs, he knew that these three frogs together had a combined weight of 8 kilograms. He weighed each frog and these are the weights he got.

Frog 1 - 3.4 kg **Frog 2** - 2.1 kg **Frog 3** - 2.3 kg

Frog 4 - 3.5 kg **Frog 5** - 2.9 kg **Frog 6** - 2.5 kg

Which three frogs together weighed 8 kilograms? _____

Your teacher will tell you which frogs belonged to which of the suspects.

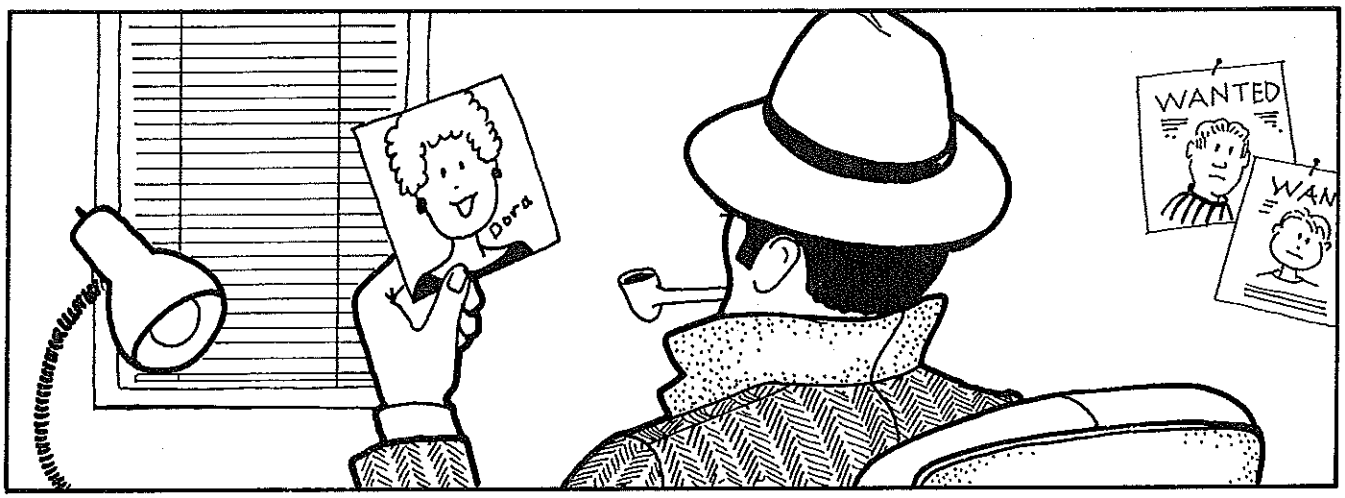
Who is the frog smuggler? _____

Lesson 1

MR. BAG'S INHERITANCE

Introduction

Shredrock Homes has a new assignment. He is trying to track down the person who is to receive a very large inheritance from Mr. Mon E. Bags. Mr. Bags said that the inheritance was to go to one of his four nieces and left four clues for Mr. Homes to use to find out which of the four women he wanted to receive the money.



The four clues are:

- **AGE** - The woman's age is greater than 20 but less than 29.
- **HEIGHT** - The correct woman is less than 5'6" tall.
- **LOCATION** - The correct woman lives in the western part of the United States. and has a zip code between 70000 and 99999.
- **BIRTHDAY** - The woman was born in the first half of the year.

Use this chart to keep tract of the facts for each of the four women and find out who should inherit Mr. Bag's fortune.

	AGE	HEIGHT	ZIP CODE	BIRTH MONTH
Lana				
Bernice				
Clara				
Dora				

Lesson 2

Mr. Bag's Inheritance

Age Facts

Lana's age and Benice's age when added together equal 40.

Bernice is 6 years older than Lana.

Clara's age is twice Bernice's age minus Lana's age.

Dora's age is an average of Lana's age and Bernice's age.

Height Facts

Lana is 5'6" tall.

Bernice is 3 inches shorter that Lana and 1 inch taller than Dora.

Clara is 6 inches taller than Dora.

Lesson 3

Mr. Bag's Inheritance

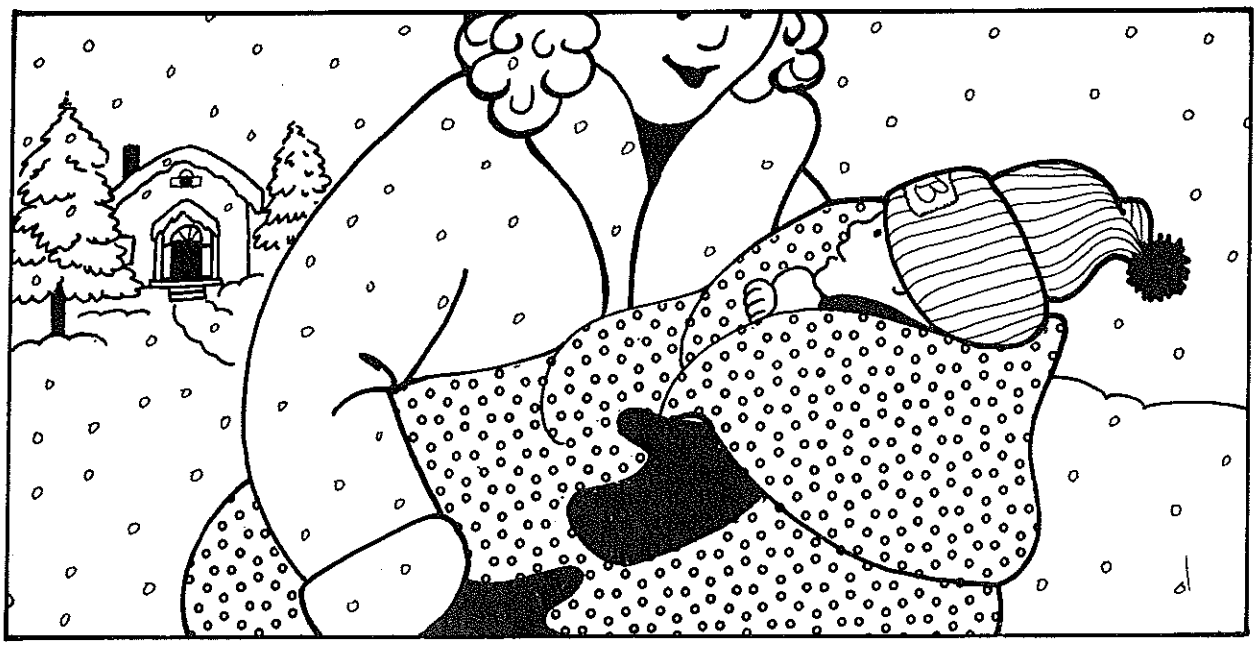
Zip Codes

Lana's zip code is 93401.

Bernice's address is 10001 less than Lana's zip code.

Clara's zip code is the reverse of Lana's zip code.

Dora's zip code is 60000 more than Clara's.



Birth Month

Bernice was born in February.

Lana was born 3 months after Bernice.

Clara's birthday is celebrated one half a year after Lana's birthday.

Dora's birthday is 2 months before Clara's.

Lesson 4

MR. BAG'S INHERITANCE

Who and How Much?

Tell who will inherit Mr. Bag's money and why the other three women were disqualified.

To find out how much the inheritance is, follow these instructions that Mr. Bag's left with Shedrock Homes.

- Choose any number
- Add the next larger number
- Add 9 to this sum
- Divide this second sum by 2
- Subtract the original number
- Multiply by 10,000

How much money did Mr. Bags leave his niece?_____

If she decided to divide it with the other three nieces so that her share was twice as much as any of the other girls' shares, how would she do that?

Lesson 1

Mistake at the ATM

Missing Money - The Basic Facts

On Wednesday morning Wesley, the bank auditor, checks the record of deposits and withdrawals at the ATM machine and night deposit box from the previous day and finds that there had been a mix-up. This is what he finds.

ATM beginning balance	$15,500.00
deposits	4,572.18
withdrawals	7,900.00
balance should have been	_____

When he actually counted the money, he found that he had:

checks	$3,959.23
cash	3,212.95
total	_____

He is missing _____

Wesley begins investigating to see if he can discover where the mistake has been made. He calls the police and together they decide to investigate the most likely suspects. They are Adam Dogood, Barney Bust, Camille Cash, Miss Take, and Mark Down.

Lesson 2

Mistake at the ATM

Bank Times

Wesley figures that the extra money was distributed between 1 o'clock and 2 o'clock Tuesday afternoon, so the police question the five suspects about their whereabouts. Use the police report to figure the time each person visited the ATM machine.

1. Adam Dogood went to the bank during his lunch hour. He got off work at 1:00 p.m., went to the post office and then to the bank. It is a ten minute walk between his workplace and the post office and a 15 minute walk between the post office and the bank.

   Adam visited the bank at _____ .

2. Barney Bust visited the ATM and then drove to the car lot to pick up his new car at 2:00 p.m. The car lot is a 15 minute drive from the bank.

   Barney visited the bank at _____ .

3. Camille Cash left her hair dresser at 1:00 p.m. and did several errands, including going to the bank, between that time and 4:00 p.m. when she arrived at the community center for her volunteer work.

   Camille visited the bank at _____ .

4. Miss Take visited the ATM before going to her karate lesson at 2:00 p.m. It is a 20 minute drive between the bank and the karate studio.

   Miss Take visited the bank at _____ .

5. Mark Down visited the bank twice, once at 2:15 p.m. and once half an hour earlier.

   Mark visited the bank at _____ and _____.

Can any suspects be eliminated? _____

Lesson 3

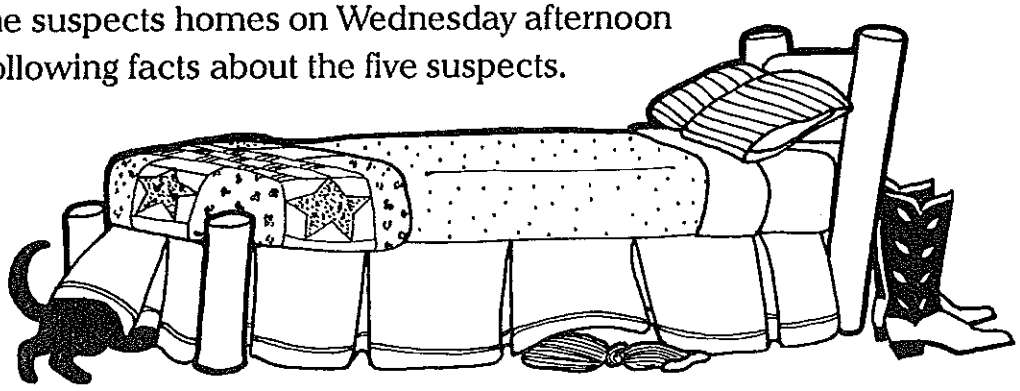
Mistake at the ATM

The Investigation

These are the records for the five people who made withdrawals at the ATM on Tuesday afternoon.

	beginning balance	amount withdrawn	**balance should be**
Adam Dogwood	$875.50	$200.00	
Barney Bust	$659.20	$550.00	
Camille Cash	$942.67	$110.00	
Miss Take	$296.40	$75.00	
Mark Down	$3,469.50	$125.00	

A search of the suspects homes on Wednesday afternoon reveals the following facts about the five suspects.



1. Adam Dogood has a bank balance of $675.50, $150.00 in his wallet, and $459.00 stashed in a sock under his bed.
2. Barney Bust has a bank account that shows a balance of $109.20, $27.50 in his wallet, and a new car in the garage with 52 miles on the odometer.
3. Camille Cash has $832.67 in the bank, $47.80 in the cookie jar, and receipts for a new big screen television and a stereo system.
4. Miss Take has $1,471.80 in the bank, and $352.60 in her purse.
5. Mark Down has $8,344.50 in the bank, a deposit slip for $5,000.00 dated Wednesday morning, and $18.55 in coins in a piggy bank.

Based on the bank records and the results from the search warrants can any suspects be eliminated? Why? _____

_____

Lesson 4

Mistake at the ATM

Additional Evidence

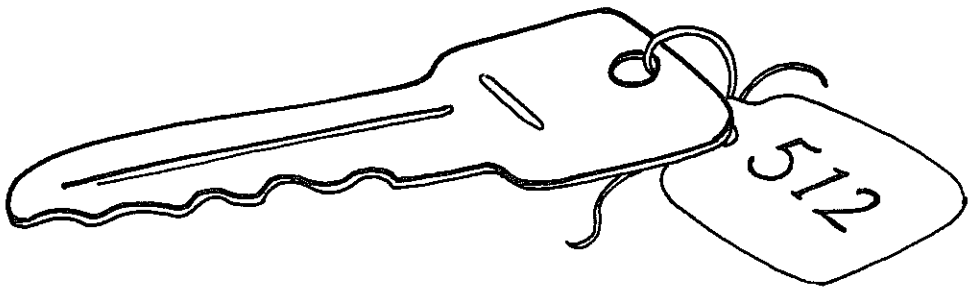
While the police are doing their search, they collect some evidence that they will take back to the station to compare with all the other evidence. Each piece of evidence is numbered. Finish the sequences and use the last number of the sequence to match each piece of evidence with the correct suspect.

Mark Down - 150, 140, 145, 135, 140, 130, 135, _____, _____, _____

Barney Bust - 1, 2, 3, 5, 8, 13, 21, 34, _____, _____, _____

Camille Cash - 3, 6, 8, 16, 18, 36, 38, 76, _____, _____, _____

Miss Take - 1, 2, 4, 8, 16, 32, 64, _____, _____, _____



Evidence

144 - receipt for a cash payment of $500 to Buy Right Cars on Tuesday afternoon

158 - charge slip from Tom's TVs and More for $2,346.00 that shows a down payment of $100 paid in cash

120 - receipt from Leon's Coins for $5,000.00 for the sale of two rare coins

512 - a key to a safe deposit box that contains a deposit slip for $1,250.40 dated Wednesday morning and $3,397.00 in cash.

Who would you charge with the crime and why?

_____

_____

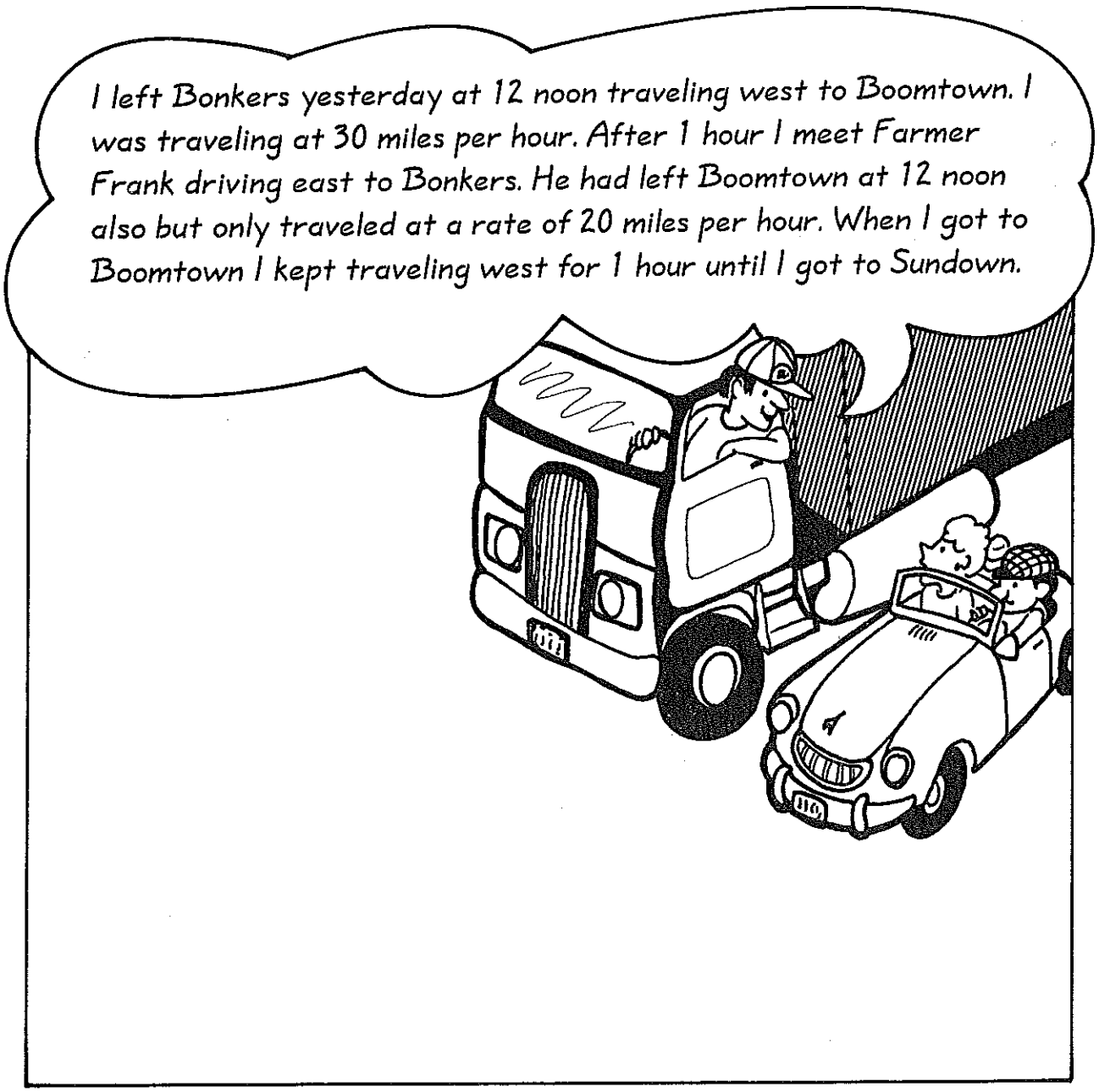
_____

Lesson 1

Lost in Bonkers

Which Way to Bonkers?

Mel and Nell Snell lived in Sundown and wanted to visit Nell's cousin who lived in Bonkers. They had no maps (only the directions Cousin Bell had sent them), so they had to stop often to ask for directions. Their first request for directions came before they got out of Sundown. They asked a truck driver at a truck stop at the edge of town, "Which way to Bonkers?" This was his reply.



If Mel and Nell are in Sundown, what direction and how many miles do they have to travel to get to Bonkers?_____

Lesson 2

Lost in Bonkers

Which Street?

Mel and Nell knew from other trips to Bonkers that no one in Bonkers ever gave directions that were easy to follow. Sure enough! When they got out the directions that Cousin Bell had sent them, they were a bit confused.

Do the calculations and plot out the route on the map. Label each point on the map.

A. Start at the monument at the west edge of town – point (0, 11) .

B. Go east $(3^2 - 1)$

C. Head south (½ of 4^2)

D. Go north 2^2

E. Then travel west (5^2 – ¼ of 96)

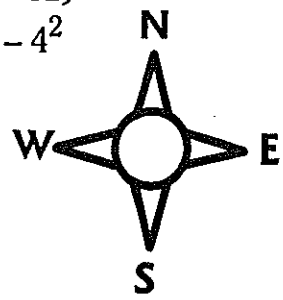
F. Drive north $4^2 - 3^2$

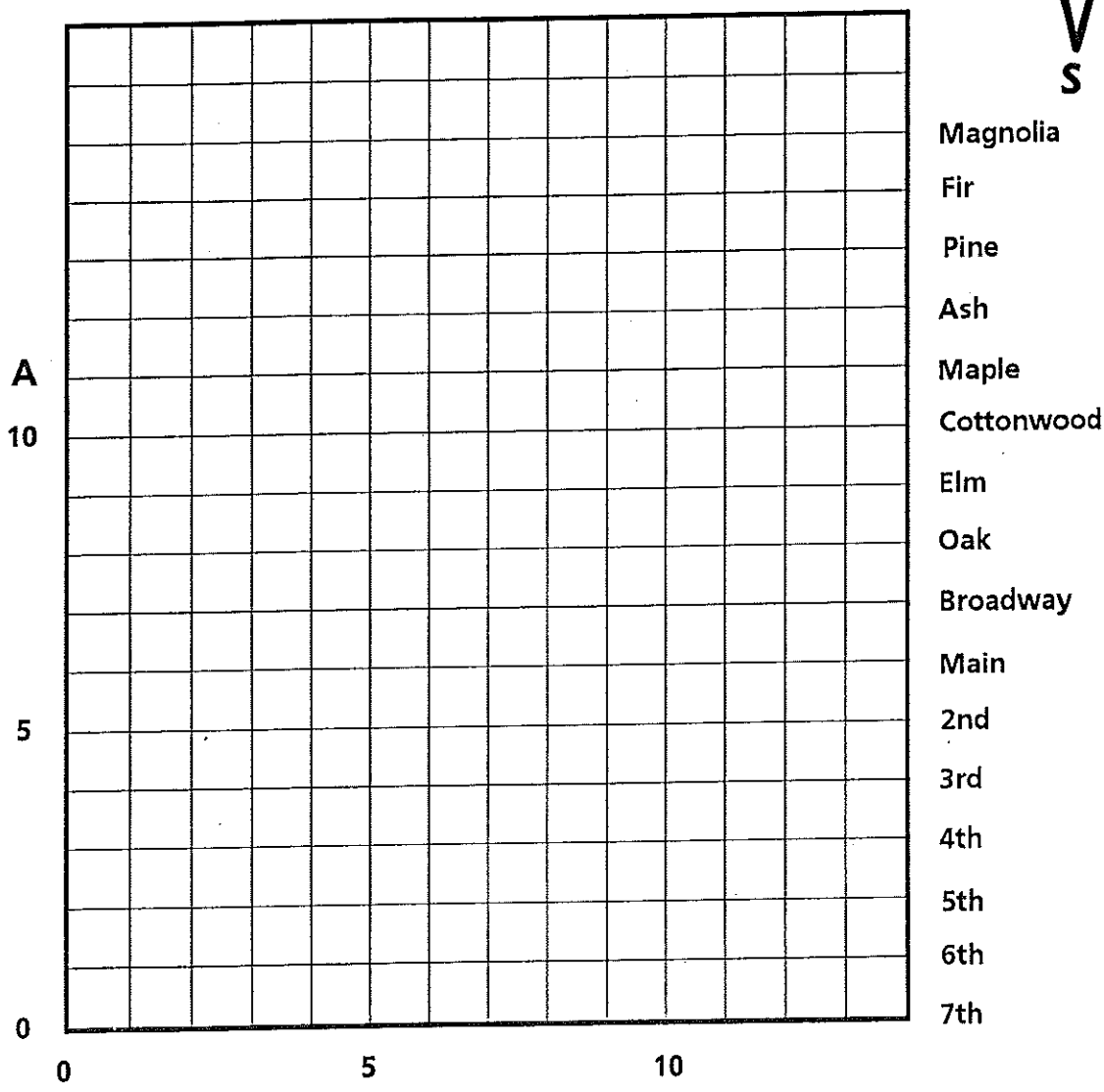
G. Then go west $3^2 - 2^2$

H. Head south 3 x (14 – 12)

I. Finally travel east $5^2 - 4^2$

There you are!



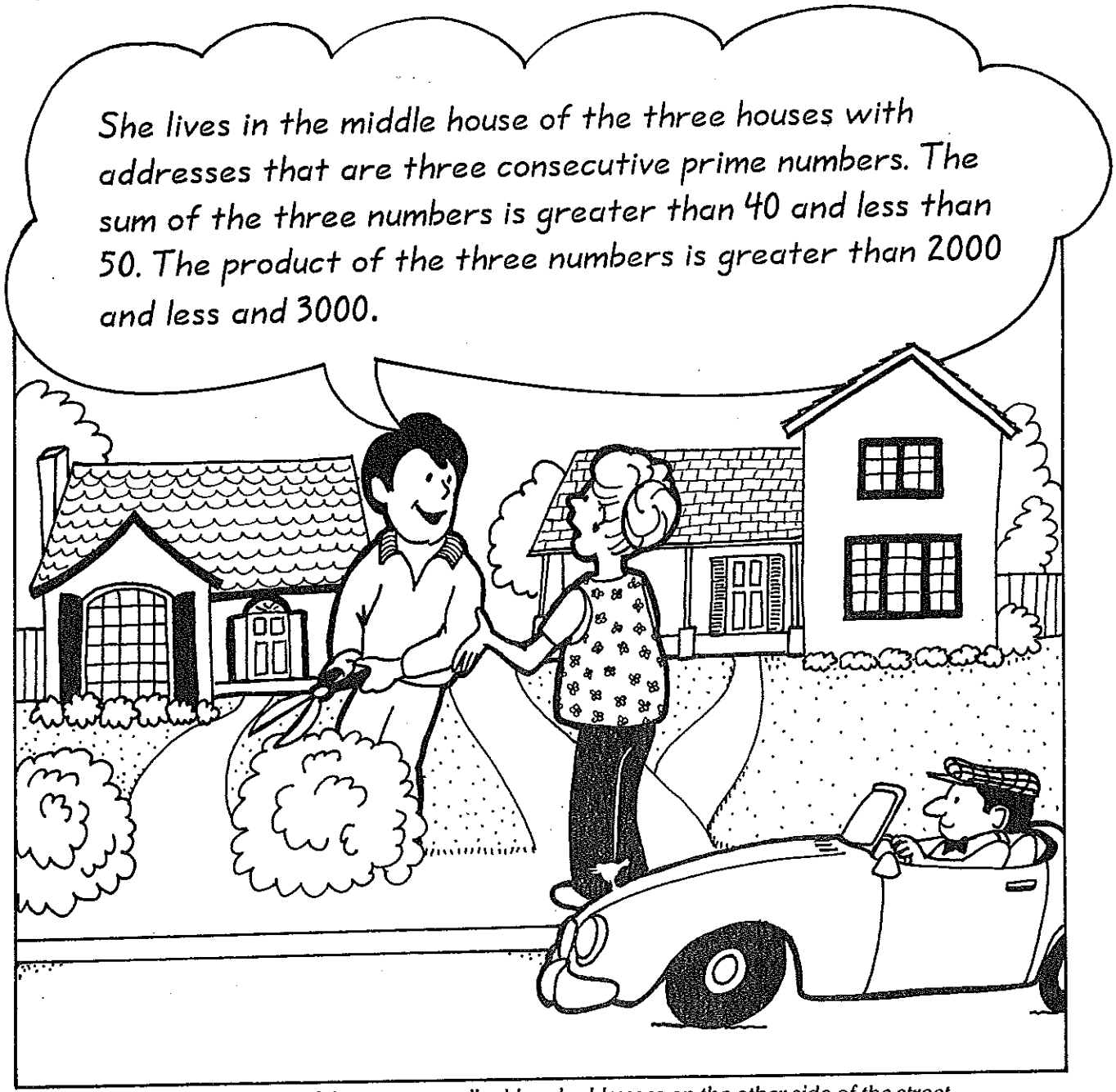


Lesson 3

Lost in Bonkers

Which House?

Then Mel and Nell were on the street where her cousin lived, but they had no idea in which house her cousin lived. Nell stopped and asked someone who was working in his yard if he knew where her cousin lived. His reply was:



Note: Addresses on one side of the street are all odd and addresses on the other side of the street are all even.

What is Nell's cousin's address (house number and street)? _____

Lesson 4

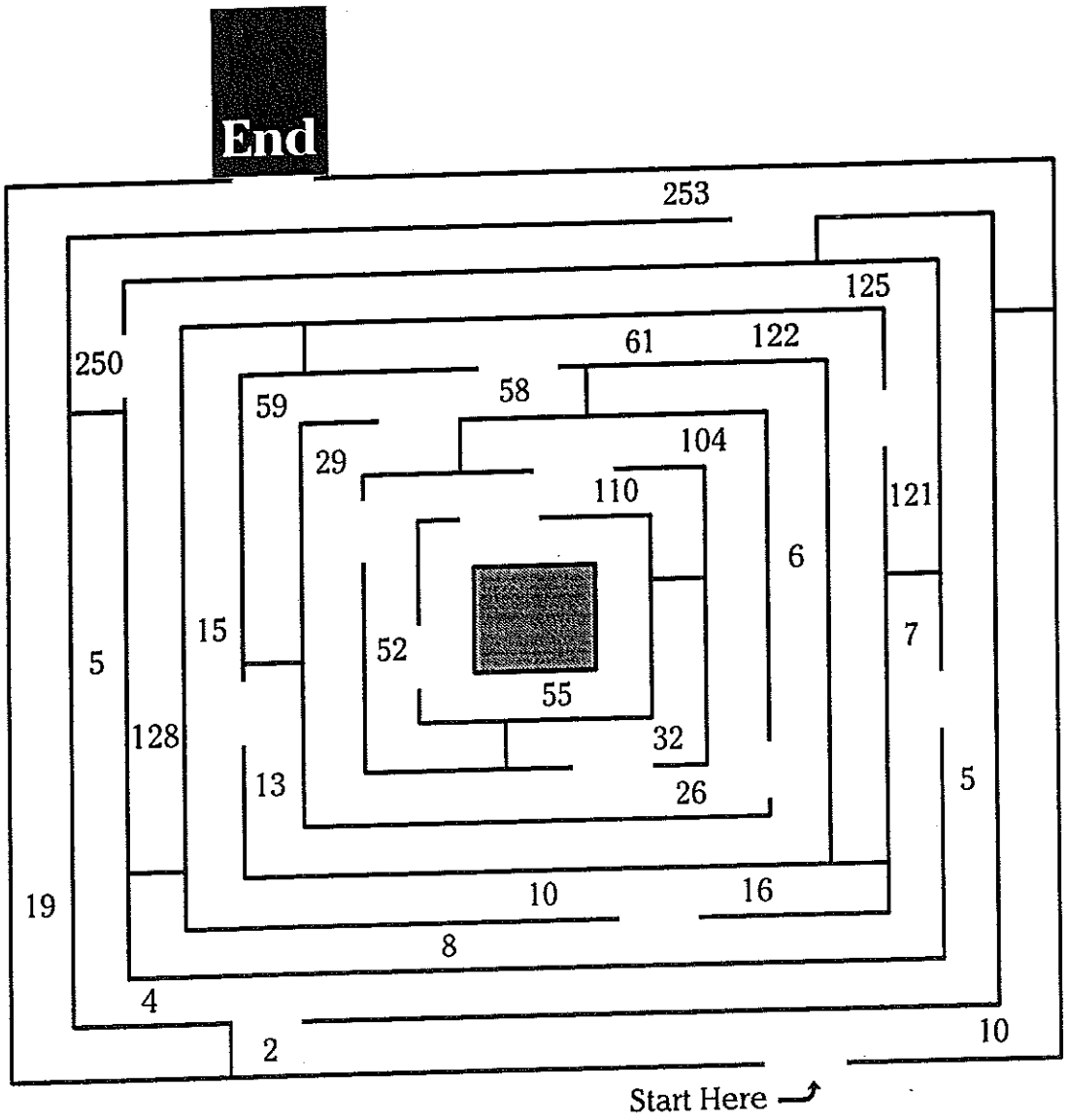
Lost in Bonkers

Amazing Entrance

When Mel and Nell got to her cousin's house they found that the yard was a maze. The instructions at the entrance said:

> *Let the number sequence guide you through the maze to my front door.*

Find the way through the maze and then write the rest of the number sequence on the lines below the maze.



2, 5, 10, 13, ___ ___ ___ ___ ___ ___ ___ ___

Lesson 1

Pirate Flag

Introduction

When the crew of the H.M.S. Royal prepared to sail out of Boston Harbor, they found that a pirate's flag was flying instead of their British flag. Captain Cornwall was furious and was determined to find out who took down the British flag and replaced it with the pirate flag.

The suspects were the following people.

- **Montgomery Landlock** was an American patriot who had been very vocal about opposing the tax on tea.
- **Jonathan Huntington** was an American longshoreman who loaded and unloaded tea off the British ships. He was known to sympathize with the American colonists.
- **Alexander Rockforth** was a statesman who had booked passage on the H.M.S. Royal to travel to England to discuss the differences that existed between the British and the Americans.
- **Beatrice Chandelier** was a French citizen who owned tea plantations in the Caribbean and would profit from trade with the American colonies if the colonies could cut their ties with England.
- **Tom Swain** was a young boy who spent a lot of time around the ships in the harbor. He had read pirate stories and yearned to live the life of a sailor. He often stowed away on ships but was always caught and returned to his home.

Lesson 2

Pirate Flag

Who Can Climb the Pole?

To climb the mast and put the flag in place a person could not weight more than 175 pounds. Use the following clues to determine the weight of each suspect.

- Montgomery Landlock and Jonathan Huntington together weighed 335 pounds.
- Jonathan Huntington weighed 20 pounds less than Alexander Rockforth.
- Alexander Rockforth and Beatrice Chandelier together weighed 15 pounds more than the combined weight of Montgomery Landlock and Jonathan Huntington.
- Tom Swain weighed in at 150 pounds and was 10 pounds less than Jonathan Huntington and 30 pounds less than Alexander Rockforth.

Record the weights of each person.

Montgomery Landlock _____

Jonathan Huntington _____

Alexander Rockforth _____

Beatrice Chandelier _____

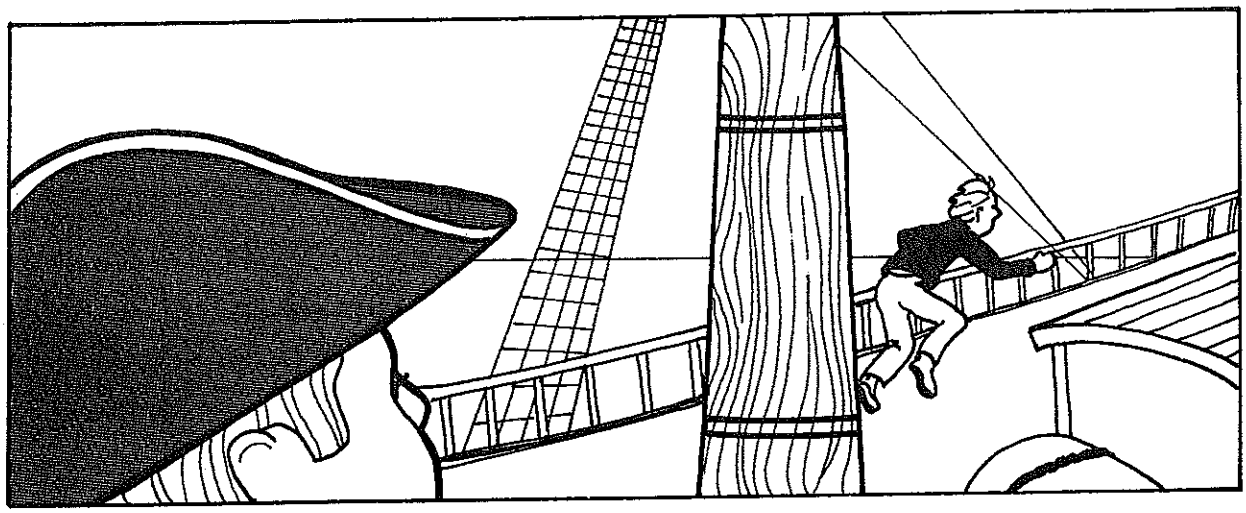
Tom Swain _____

Which suspect can be eliminated? _____

Lesson 3

Pirate Flag

Suspects' Heights



The ship's first mate said he saw someone sneaking away from the mast. While he couldn't see what the person looked like, he thought he or she was about the same height as he was (within 3 inches). Use the clues to find out which of the suspects are within 3 inches in height of the first mate.

- Montgomery Landlock was 2 inches shorter than Alexander Rockforth.
- Alexander Rockforth was three inches taller than Tom Swain and 1 inch shorter than Jonathan Huntington.
- The ship's first mate was 5'6".
- At 5'3", Tom Swain was 2 inches taller than Beatrice Chandelier.

Record the suspects' heights.

Montgomery Landlock _____

Jonathan Huntington _____

Alexander Rockforth _____

Beatrice Chandelier _____

Tom Swain _____

Which of the suspects can be eliminated? _____

Lesson 4

Pirate Flag

Name Clue

The trickster left a clue attached to the flag pole. Do the following problems. Use the answers to place letters in the correct spaces to decode the clue.

A. $43 + 69$

E. 17×2

G. $1001 - 97$

H. $144 \div 2$

I. 1/3 of 45

L. 26×52

M. $2708 - 913$

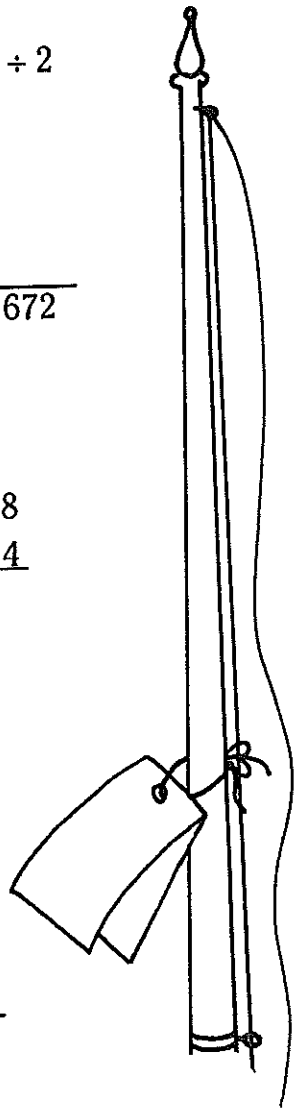
N. $12\overline{)672}$

R. 1/4 of 104

S. $63 + 107$

T. 1/2 of 394

Y. 78×4



Clue

1795	312		56	112	1795	34					
72	112	170		34	15	904	72	197	34	34	56
1352	34	197	197	34	26	170					

Which suspect can be eliminated?_____

Lesson 5

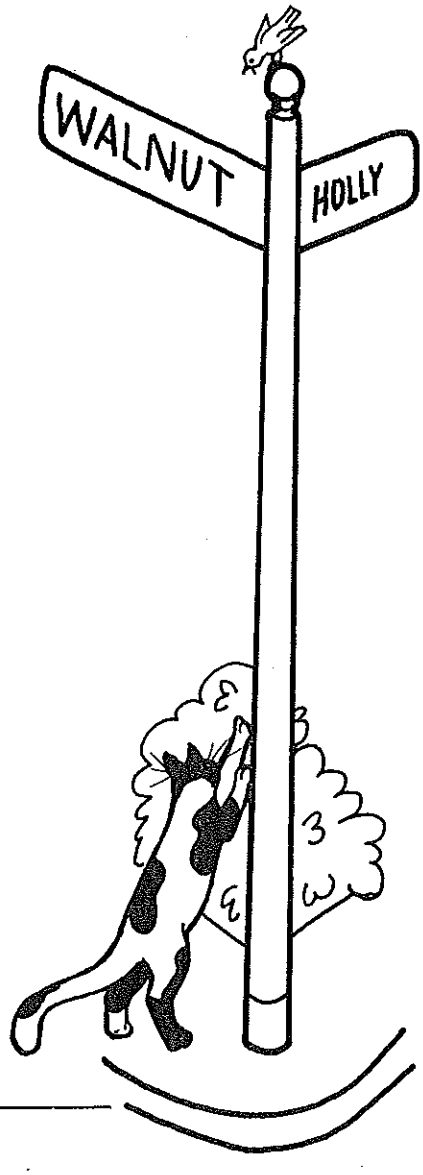
Pirate Flag

An Address

Near the mast was a card that the culprit had dropped. It said "*meeting at my house*" and gave an address on Walnut Street. The number on the card had the following characteristics.

- It was a three digit number.
- The sum of the digits was 19.
- All the digits were odd.
- The digit in the hundred's place was 2 less than the digit in the tens place.
- All the numbers were different.

What number was on the card? _____



Both Montgomery Landlock and Jonathan Huntington lived on Walnut Street and had addresses that were 3 digit numbers. Use these clues to discover their addresses.

Montgomery's address

- It was greater than 300.
- The digit in the one's place was 4 less than the digit in the ten's place.
- The digit in the hundred's place was 6 less than the digit in the ten's place.

Jonathan's Address

- Add 2 to Montgomery's address
- Reverse the digits in this 3-digit number

Montgomery's address was _____

Jonathan's address was _____

The person who hung the pirate flag was _____

Lesson 1

SLIM'S SILVER

Getting to Virginia City

Sam Sterling was working in Charleston, Virginia in 1851 when he received a telegram from his brother Slim. Slim told his brother to come West to help him mine silver. He was afraid that someone other than Sam would find his silver claim, so he left a series of coded messages at various Western Union offices.

Sam started his journey in Charleston, West Virginia. Use the following clues to find the distance he traveled and how many days it took him to make the trip.

Clues

- The distance from **Charleston** to **Kansas City** is 700 miles.
- The distance from **Denver** to **Salt Lake City** is half the distance from **Charleston** to Kansas City.
- The distance from **Wichita** to **Denver** is the same as the distance between **Salt Lake City** and **Virginia City.**
- The distance from **Wichita** to **Denver** is 100 miles more than the distance from **Denver** to **Salt Lake City** and three times the distance from **Kansas City** to **Wichita.**

Route	Distance
Charleston to Kansas City	_____
Kansas City to Wichita	_____
Wichita to Denver	_____
Denver to Salt Lake City	_____
Salt Lake City to Virginia City	_____

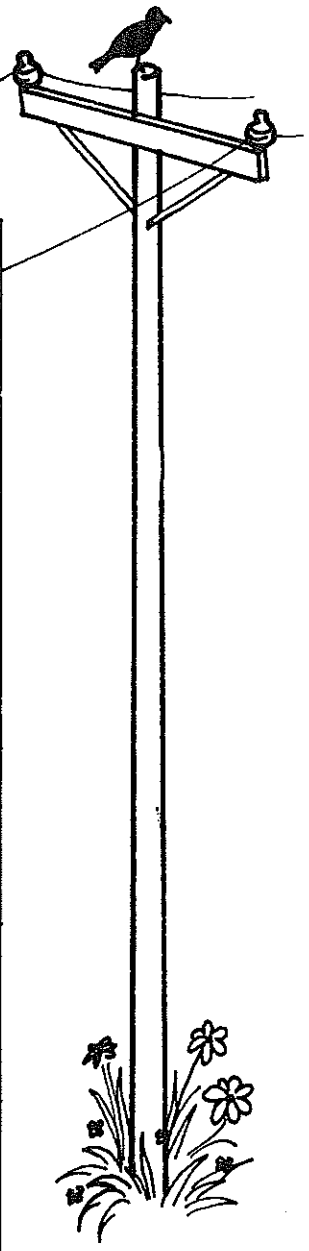
1. The total distance of the trip was _____.
2. If he traveled 50 miles a day, how many days would it take Sam to get to his destination? _____
3. If he left on February 4th (in a non-leap year), would he get to Virginia City in time for St. Patrick's Day?_____

Lesson 2

SLIM'S SILVER

Which City?

Sam picked up a clue at the Western Union office in Virginia City. It said, "*Find a numerical sequence and you'll find the directions to my claim.*"



go 5	next 23	from 7	to 4	Reno 18	Virginia 14	Nevada 19
west 20	City 21	Last 22	come 15	go 28	my 12	north 11
south 35	east 6	Gold 36	to 42	Hill 30	find 12	Carson 49
east 23	seek 32	City 56	shovel 65	town 64	silver 63	gold 55
give 33	field 70	up 44	ride 66	to 77	miles 88	Chance 22
find 84	grub 14	nugget 16	my 91	stake 48	south 89	claim 98

What is the number sequence?

7, 14, ____, ____, ____, ____, ____, ____, ____, ____, ____, ____, ____, ____

What does the second message say?

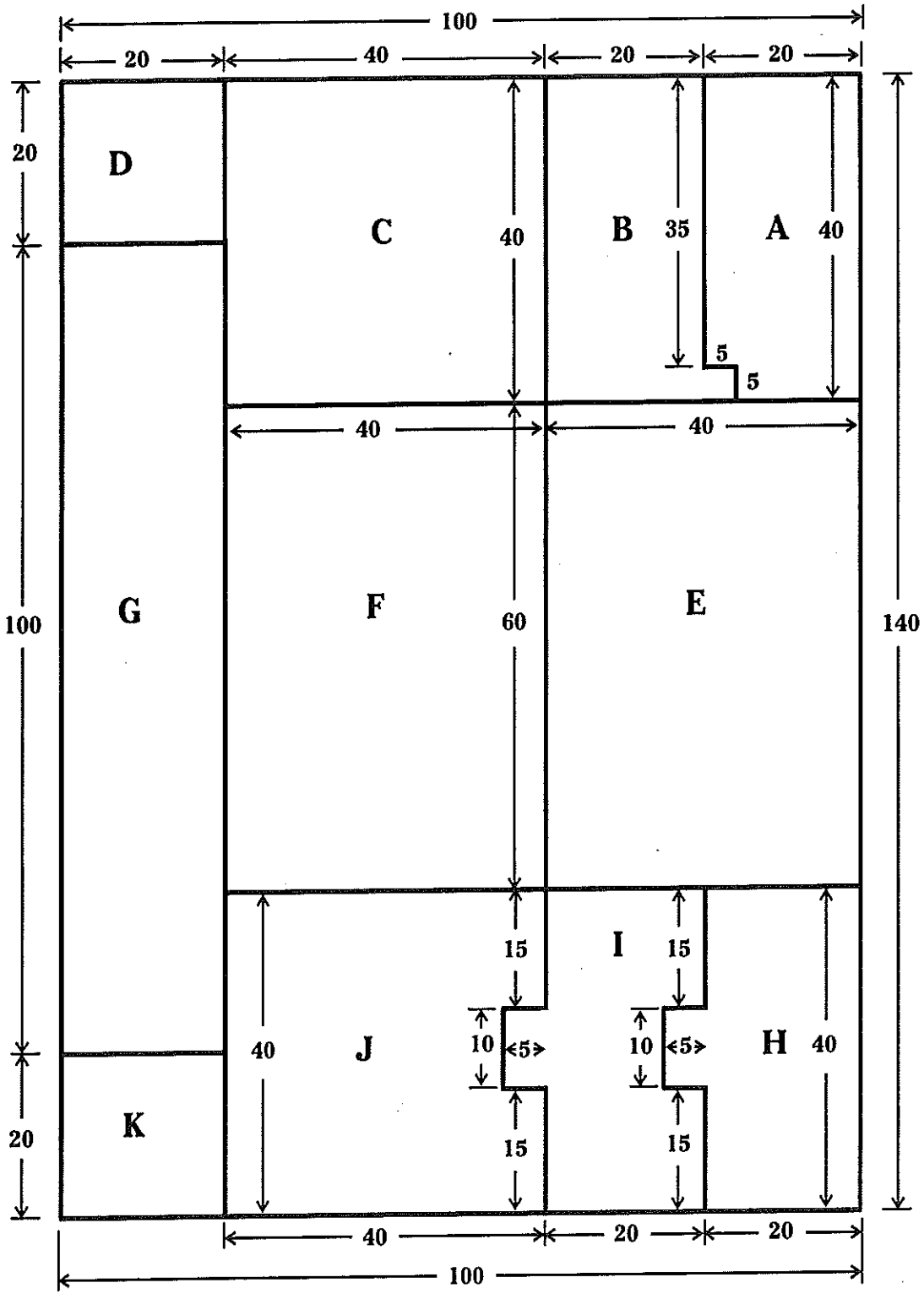
_____

_____

Lesson 3

SLIM'S SILVER

Map of the Silver Field



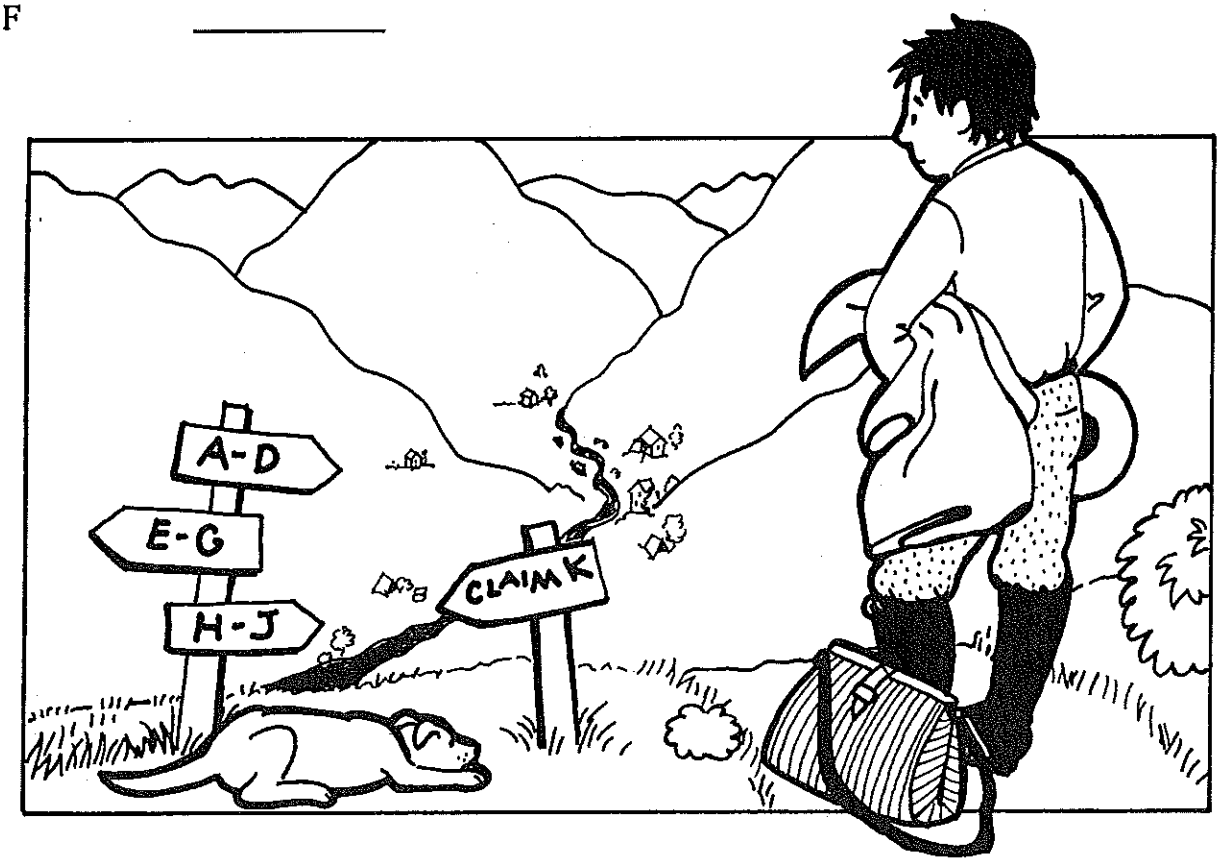
Lesson 3

SLIM'S SILVER

Which Claim?

Using the map on the previous page, figure the area of the eleven different claims. Then use the following clues to help Sam find which claim belongs to his brother.

Claim	Area	Claim	Area
A	_____	G	_____
B	_____	H	_____
C	_____	I	_____
D	_____	J	_____
E	_____	K	_____
F	_____		



Clues

- It is neither the largest nor the smallest claim.
- The area is an even number.
- No other claim has the same area.

The claims that could belong to Slim are _____ _____ _____ _____ _____.

Lesson 4

SLIM'S SILVER

More Claim Clues

Figure the perimeter of the five claims that could possibly belong to Slim Sterling and use the clues to find his claim.

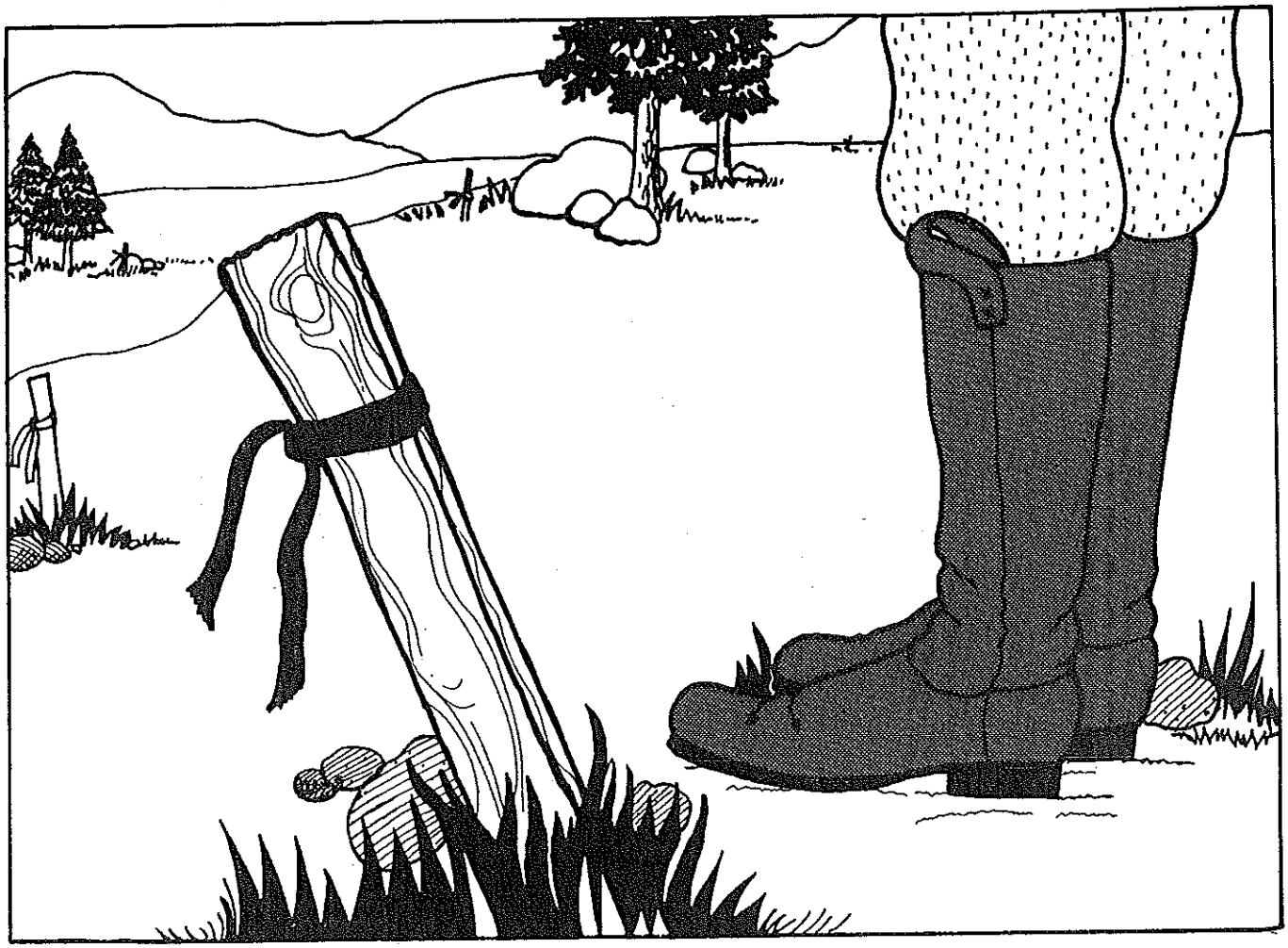
Claim _____ _____ _____ _____ _____

Perimeter _____ _____ _____ _____ _____

Clues

- The claim has neither the largest nor the smallest perimeter.
- When I walk around the claim, I don't walk around a square.
- The perimeter is divisible by 7.

The claim is letter _____.



Lesson 5

SLIM'S SILVER

Number of Bars of Silver

The following clues from Slim tell how much silver the claim produced during the last year.

- If I stack my silver bars in stacks of 2, I have a remainder of 1 bar.
- If I stack the bars in threes, I have 2 bars left over.
- If I get twice as much this year as last year, I'll have less than 50 bars but more than 40 bars.

The Solution

How many days did it take Sam to get to Virginia City? _____

In what city was the claim located? _____

What was the letter of the claim? _____

How many bars of silver were mined last year? _____

If each bar was worth $550, how much money was mined last year? _____

Lesson 1

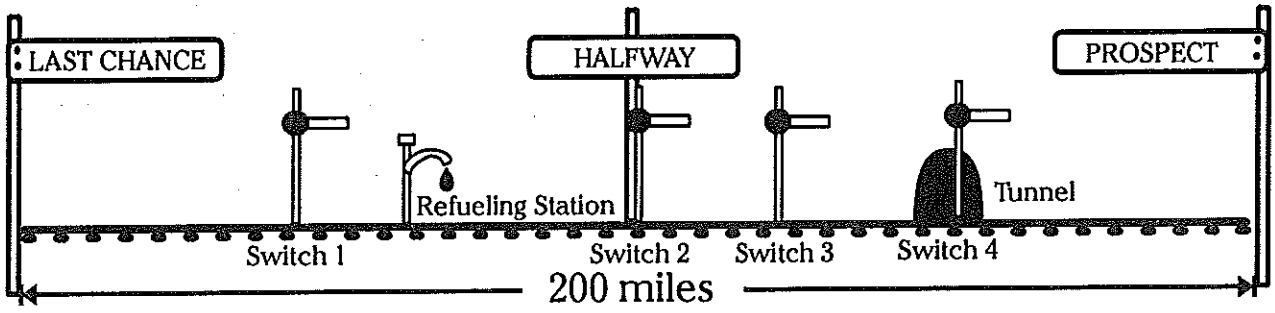
The Loose Caboose

Introduction

When train 578 pulled out of Last Chance it had an engine, 4 cars and a caboose. When it pulled into Prospect, 200 miles away, it had only an engine and 4 cars. Since the caboose contained a shipment of gold, it was imperative that the railroad find out what happened to the caboose.

There are four switching stations between Last Chance and Prospect, a refueling stop, a tunnel, and one stop (the town of Halfway) between the two towns. Use the clues to find distances between all the stations and features between Last Chance and Prospect.

1. Halfway is half the distance between Last Chance and Prospect.
2. The tunnel is halfway between Halfway and Prospect.
3. The first switching station is halfway between Last Chance and Halfway, and the second switching station is at Halfway. The third switching station is half way between Halfway and the tunnel, and the fourth one is at the tunnel, which is 5/10 of the distance from Halfway to Prospect.
4. The refueling station is 2/5 of the way between the first switching station and Halfway and 7/10 of the distance between Last Chance and Halfway.



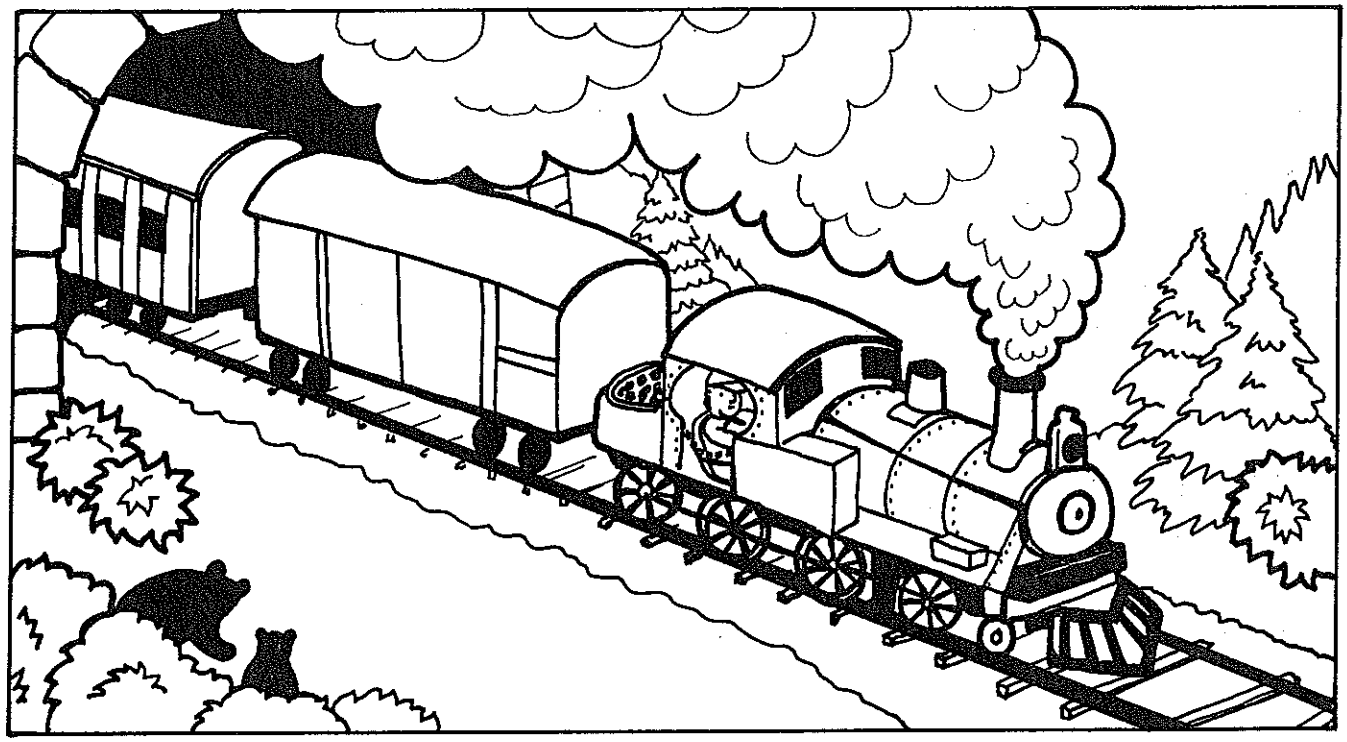
1. What is the distance between Last Chance and the first switching station? _____
2. What is the distance between Last Chance and Halfway? _____
3. What is the distance between Last Chance and the refueling station? _____
4. What is the distance between Halfway and the third switching station? _____
5. What is the distance between Halfway and the tunnel (switching station 4)? _____
6. What is the distance between the tunnel and Prospect? _____

Lesson 2

The Loose Caboose

Traveling Times

The train averages a speed of 25 miles per hour when it has all the cars and the caboose. The train left Last Chance at 8:00 a.m. Using the distances you calculated on the previous page, find out how long it would have taken to get to each location if the train had all the cars and the caboose attached.



Location	Travel Time	Should Arrive	Did Arrive
Switch 1	_____	_____	10:00 AM
Halfway	_____	_____	12:00 noon
Switch 3	_____	_____	1:00 PM
Tunnel	_____	_____	2:00 PM
Prospect	_____	_____	3:30 PM

If the train travels faster without the caboose, at which point was the caboose unlatched and switched to another track? How do you know?

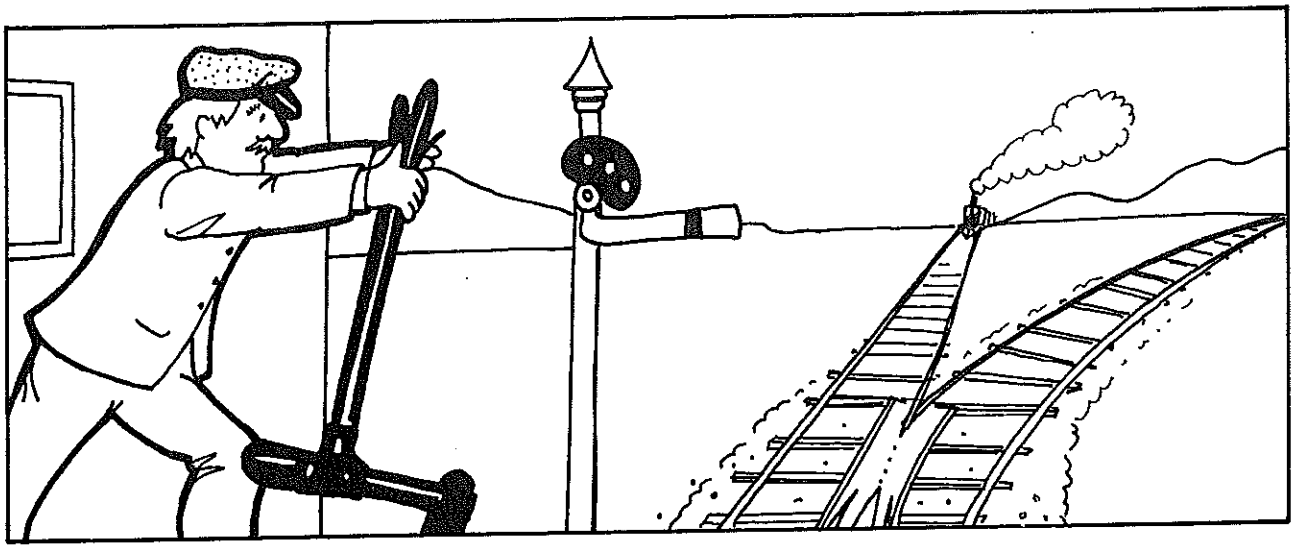
_____

_____

Lesson 3

The Loose Caboose

Suspects



The railroad officials checked on employees who worked the route between Last Chance and Prospect. The employees worked a rotating schedule. That is, if a worker was stationed at switching station 1 one day, the next day he would be working at the refueling station. Two people worked each shift and they always rotated on the same schedule.

If this is what the schedule looked like on June 1st and the caboose heist happened on June 14th, who was working at the switching point where the caboose disappeared?

Switching station 1 - Hank and Harry

Refueling station - Frank and Fred

Switching station 2 (Halfway) - Mack and Mike

Switching station 3 - Pete and Paul

Switching station 4 (tunnel) - Russ and Ruben

day off - Orville and Oliver

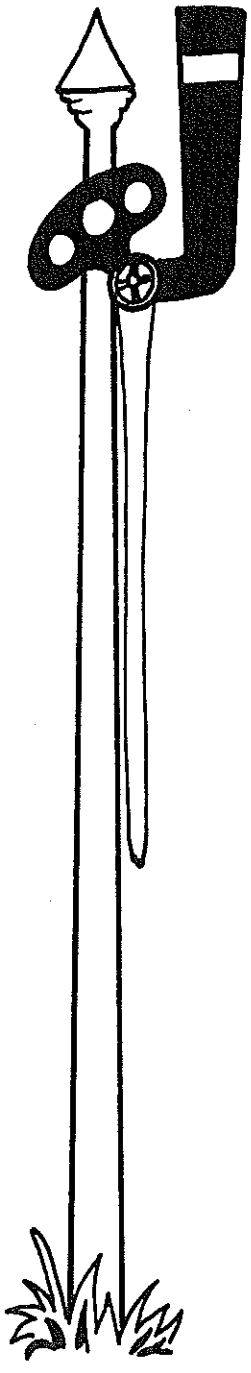
What two people were working at the switching station when the caboose was rerouted? _____

Lesson 4

The Loose Caboose

Who Threw the Switch?

Though two people worked at a station, they took breaks at different times, so it was possible that only one person was on duty when the caboose disappeared. Use this work schedule to find out who (both men or just one of the men) was working at 2:00 p.m. when the train was at the switching station.



- Pete works for 2 hours and then takes a half-hour break.
- Paul works for 2½ hours and takes a one-hour break.
- Both men start working at 8:00 a.m.

Show each man's schedule.

Pete	Paul

Which one was working at 2:00 p.m.?_____

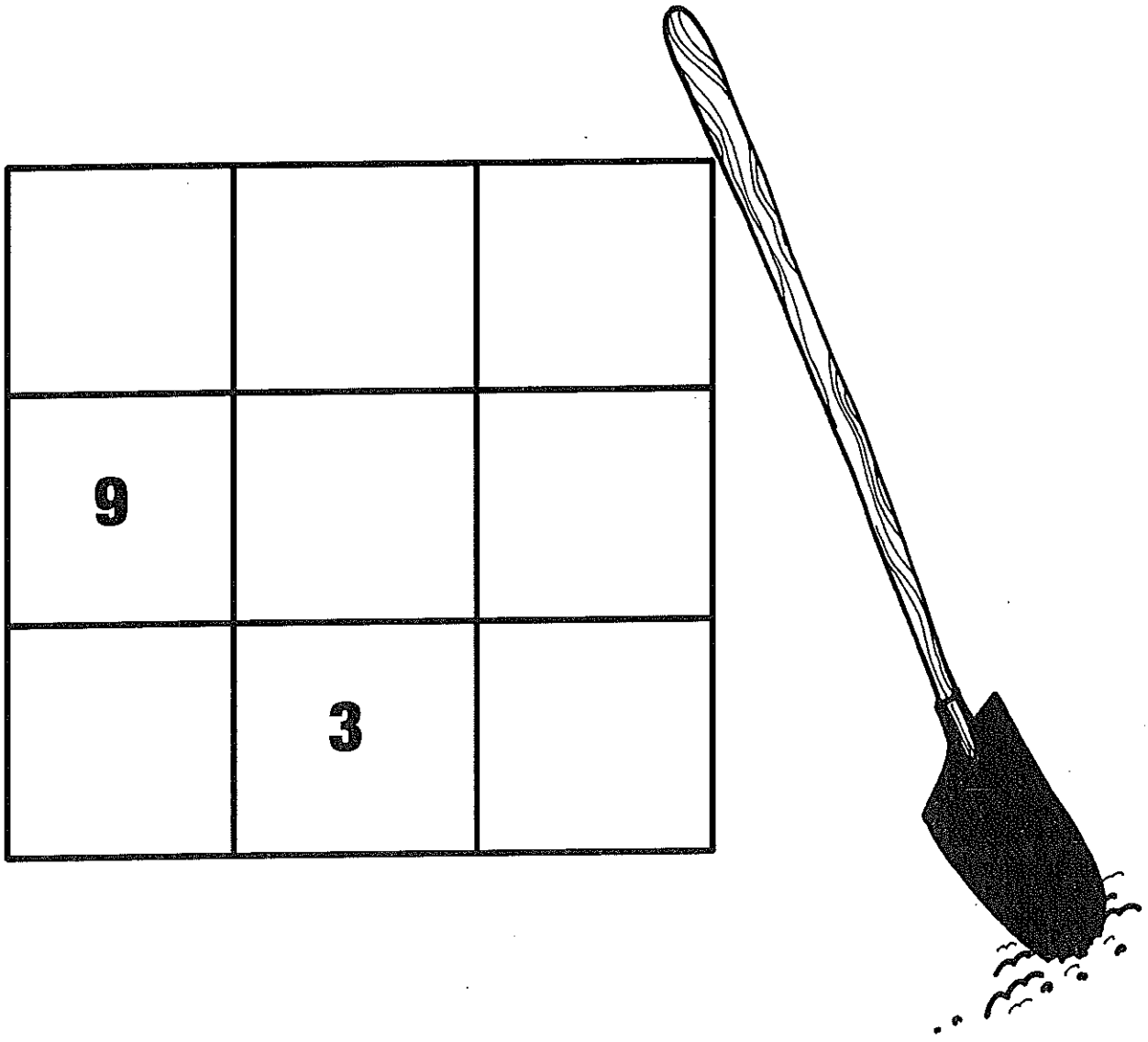
Lesson 5

The Loose Caboose

Where is the Gold?

Pete buried the gold pieces in his square garden in 9 different holes in such a way that he put 1 coin in one hole, 2 coins in another hole, 3 coins in another hole, and so forth. He placed the coins so that the sum of the number of coins in any of the rows, columns and diagonals equaled 15.

If this is the number of gold coins that were found in the first two holes that were dug, show where the other gold pieces were buried.



How many gold pieces did Pete bury all together? _____

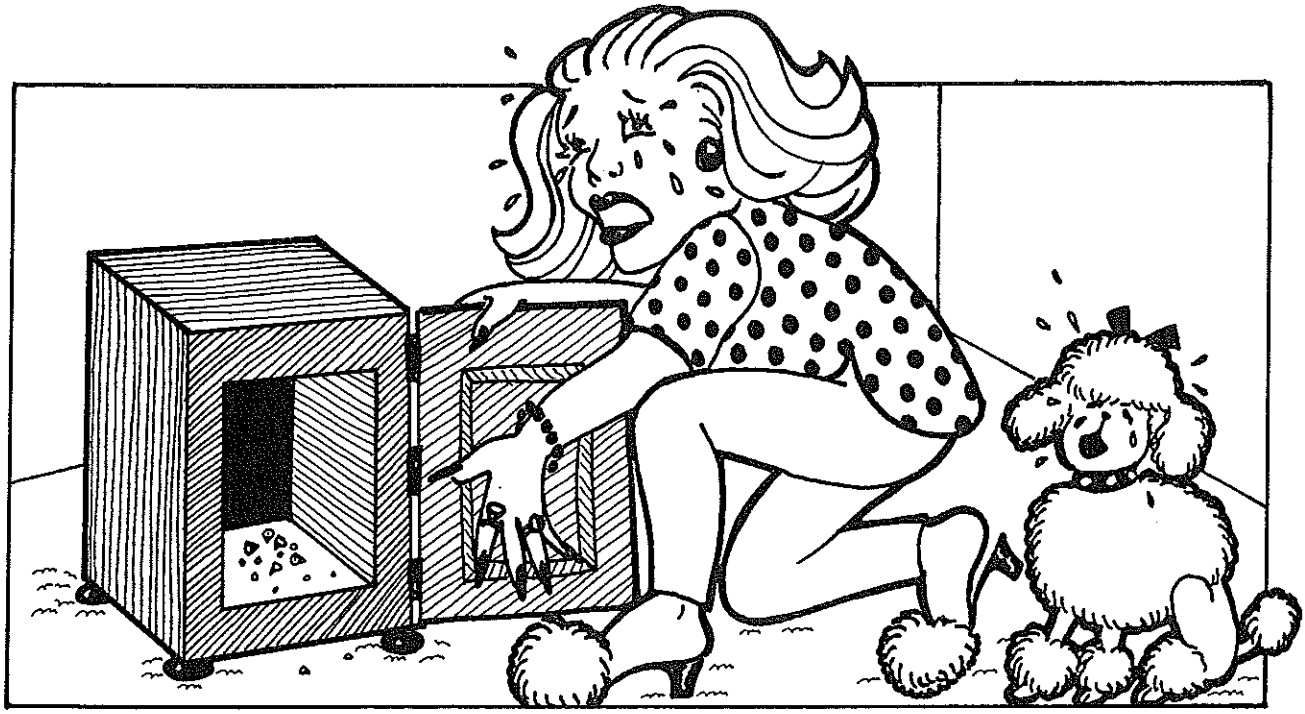
If each gold piece was worth $120, how much money was stolen? _____

Lesson 1

JEWEL'S JEWELS

Introduction

Jewel Wainright, the famous and eccentric millionaire called and reported a burglary at her mansion. When the police arrived at the mansion they found the distraught heiress crying beside her safe.



"They took my jewels!" Jewel lamented.

"But how do you know that the jewels are missing if the safe is closed and the door is locked?" the investigator asked.

"I was so upset when I found the jewels missing that I forgot that you might want to look inside the safe and I closed it. But opening it is simple." And with that, Jewel gave the investigators a way to figure out the combination to the safe.

Help the police detectives unlock the safe. Read Jewel's instructions and find the safe's combination.

> *"The combination is the seventh, ninth, and eleventh numbers in a sequence that begins 1, 1, 2, 3, 5, 8, 13, and so forth."*

The combination is _____

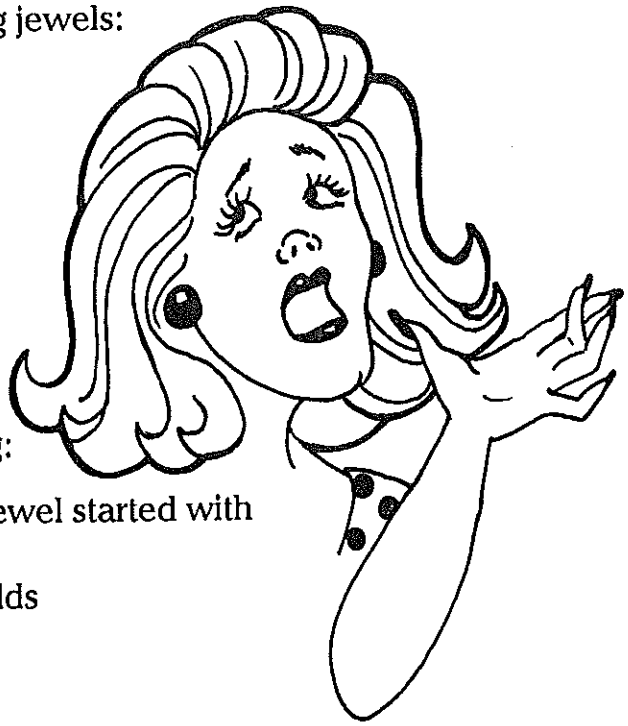
Lesson 2

JEWEL'S JEWELS

What's Missing?

When the police detectives opened the safe they found that some of the gems were still in the safe. They needed to determine what had been stolen. Jewel told them that before the heist she had the following jewels:

- twice as many rubies as diamonds
- 10 more emeralds than sapphires
- the number of emeralds and sapphires together equaled the number of rubies
- altogether she had a total of 100 sapphires, emeralds and rubies.



After the robbery the police found the following:

- five less than half the number of rubies Jewel started with
- one third the number of emeralds
- the same number of diamonds as emeralds
- half as many sapphires as emeralds

Create a police report that shows what Jewel had before the burglary, what she had after the burglary, and what was stolen.

SPRINGFIELD POLICE DEPARTMENT
Report # 2245

	before	after	stolen
diamonds			
rubies			
emeralds			
sapphires			

Lesson 3

JEWEL'S JEWELS

The Suspects

The police came up with a list of suspects that included the following people:

Walter the chauffeur

Amelia the maid

Constance the cook

Forest the gardener

Max, a notorious jewel thief

The police first wanted to know who was in the house on the day the jewels were stolen. The police gathered information about each person's schedule. This is what they found out.

- **Walter** works 4 days and gets 1 day off.
- **Amelia** works 3 days and gets a day off.
- **Constance** works every other day.
- **Forest** works one day and has 5 days off.
- **All** the employees worked on the first day of the month.
- **Max** is called the Third Thief because he only works on days that are divisible by 3.

If the burglary took place on the 18th of the month, who was working?

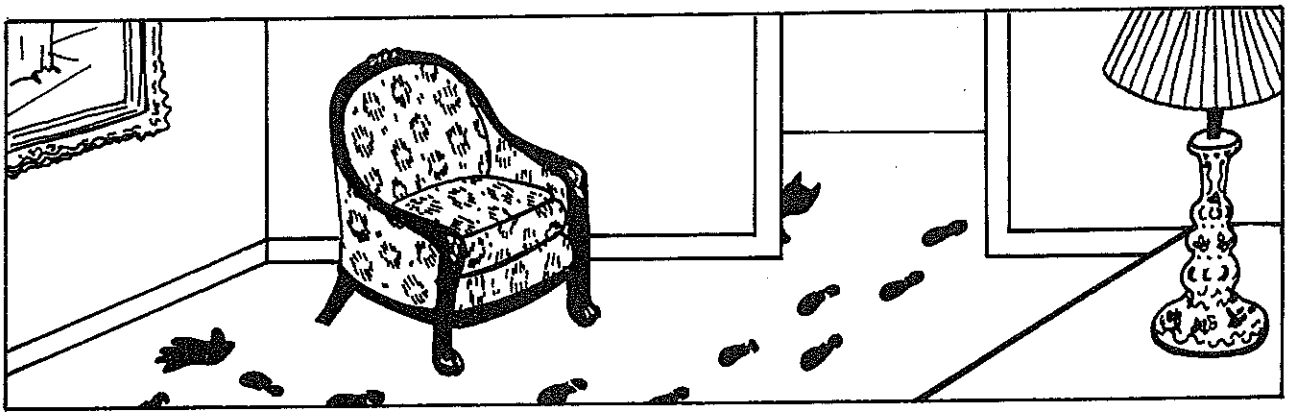
_____ _____ _____

Lesson 4

JEWEL'S JEWELS

Two Clues

The thief left two important clues at the crime scene – a set of footprints and a glove. The footprints were size 9 and the glove was size 8. When asked for their shoe size and glove size, the suspects, who did not want to cooperate completely with the police, gave the following responses.



Walter - *"My shoe size is one size larger than Amelia's and my glove size is one size smaller than Max's."*

Amelia - *"My glove size and shoe size together equal 14. My shoe size is two sizes larger than my glove size."*

Max - *"My glove size and shoe size are the same and when they are added together the sum is less than 20. When the two numbers are multiplied together, the product is between 80 and 90."*

Use the information about each of the suspects to determine the shoe and glove size for each suspect.

	shoe	glove
Walter	_____	_____
Amelia	_____	_____
Max	_____	_____

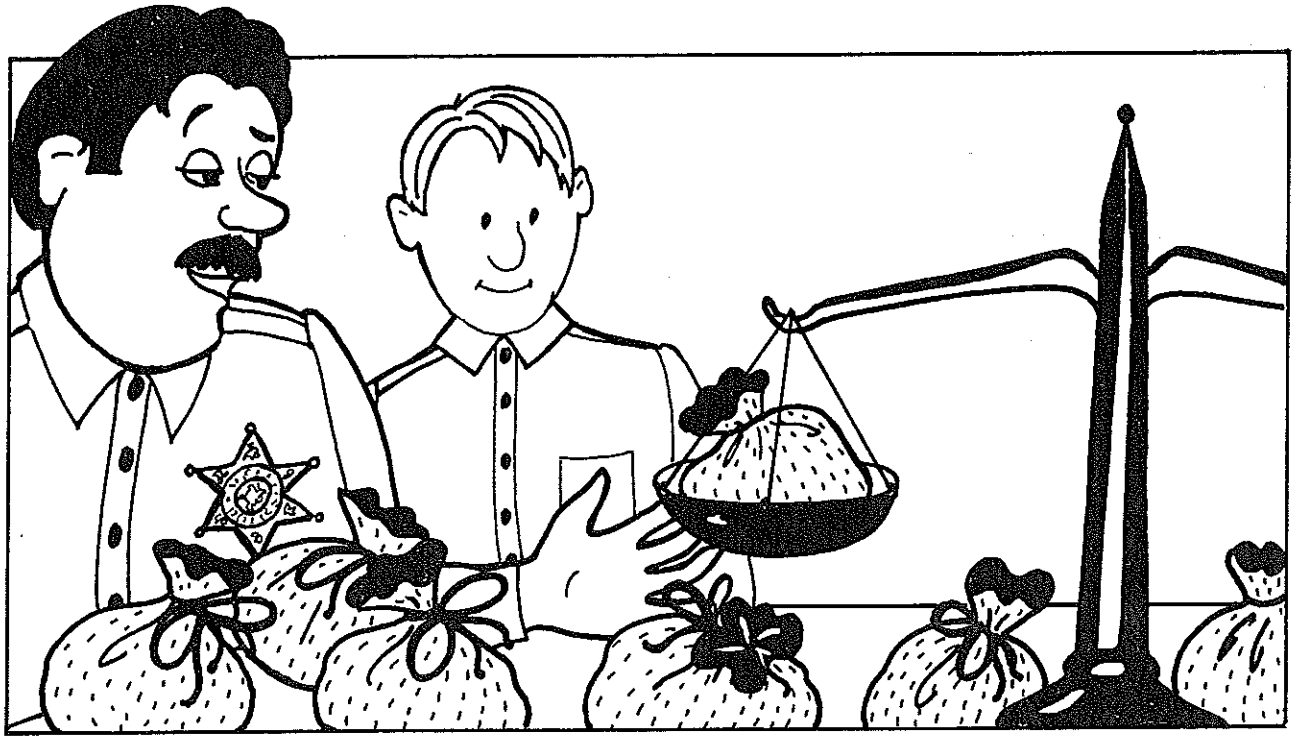
Who is the thief? _____

Lesson 5

JEWEL'S JEWELS

End of the Case

When the police retrieved Jewel's missing jewels they found that the jewels had been divided into six bags so that there were an equal number of each kind of jewel in each bag. Five of the bags contained Jewel's missing jewels and one bag contained fake gems. There were the same number of each of the jewels in each bag and the fake gems looked just like the real gems. The only difference was that the bag of fake jewels weighed slightly less than a bag containing the real jewels.



The police have only a balance scale to weigh the bags. Describe how they can find the bag of fake jewels with only 2 weighings.

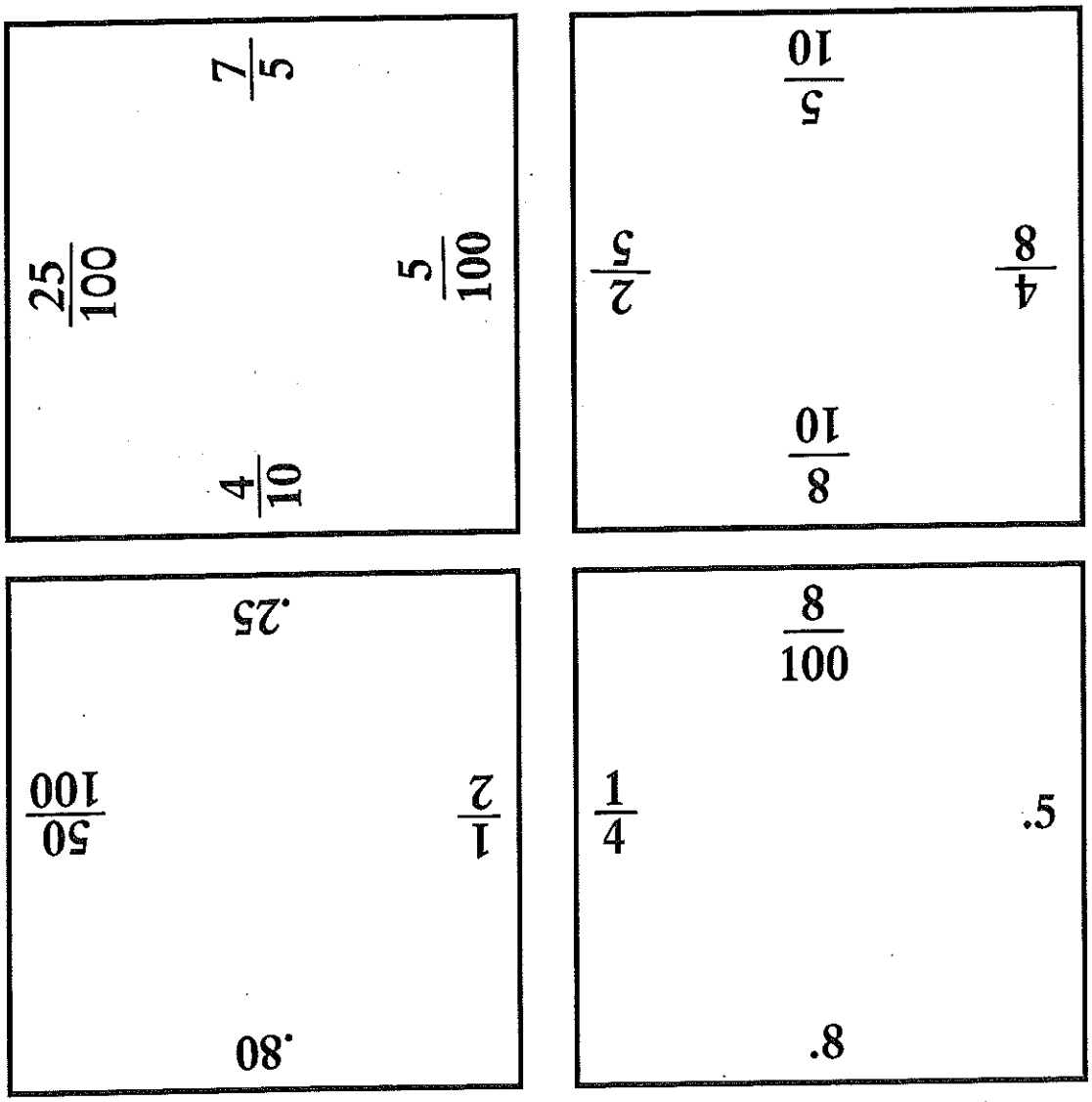
Lesson 1

Treasure Hunt

Introduction

Three friends were playing in the garden of an old abandoned house that once belonged to Gerald Farnsworth IV, who had been a very wealthy and eccentric man, when they found four pieces of paper. One one side of the paper was a map and on the other side were numbers. By matching up equivalent numbers, they were able to assemble the four pieces of paper into one whole piece of paper and read the map on the other side.

Cut out the pieces and arrange them so that equivalent fractions and decimals are matched up. Tape the pieces together. When you have done this correctly, you will receive a copy of the map that was on the other side.



Lesson 2

Treasure Hunt

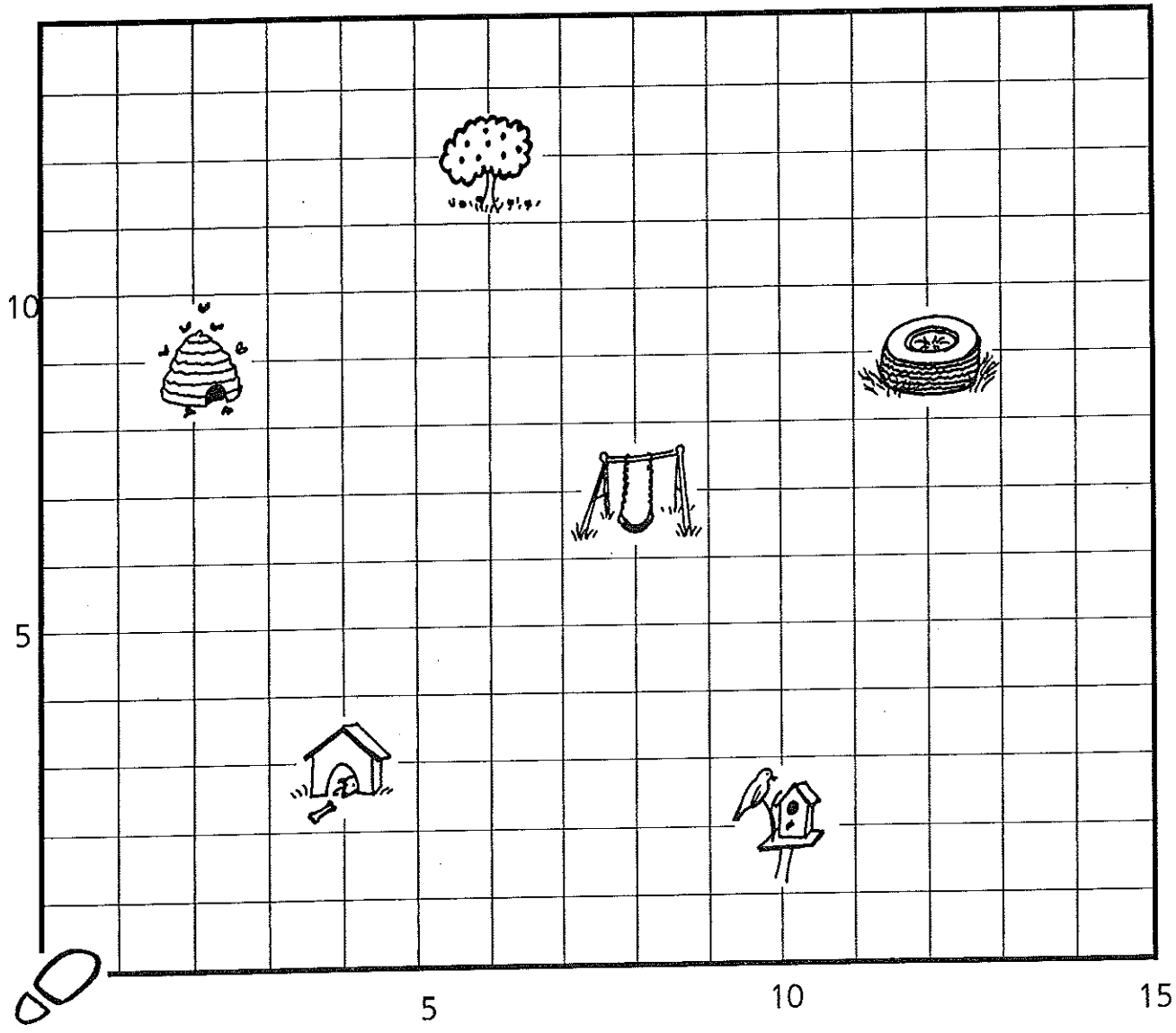
The Map

On the map were these instructions.

The footprint is on point (0, 0). Find the coordinates for each of the following things in the yard.

dog house (____, ____)
apple tree (____, ____)
bee hive (____, ____)
birdhouse (____, ____)
swing (____, ____)
wheel (____, ____)

Once you have identified each place on the map, your teacher will tell you where to dig for the next clue. Draw a shovel to show where to dig.



Lesson 3

Treasure Hunt

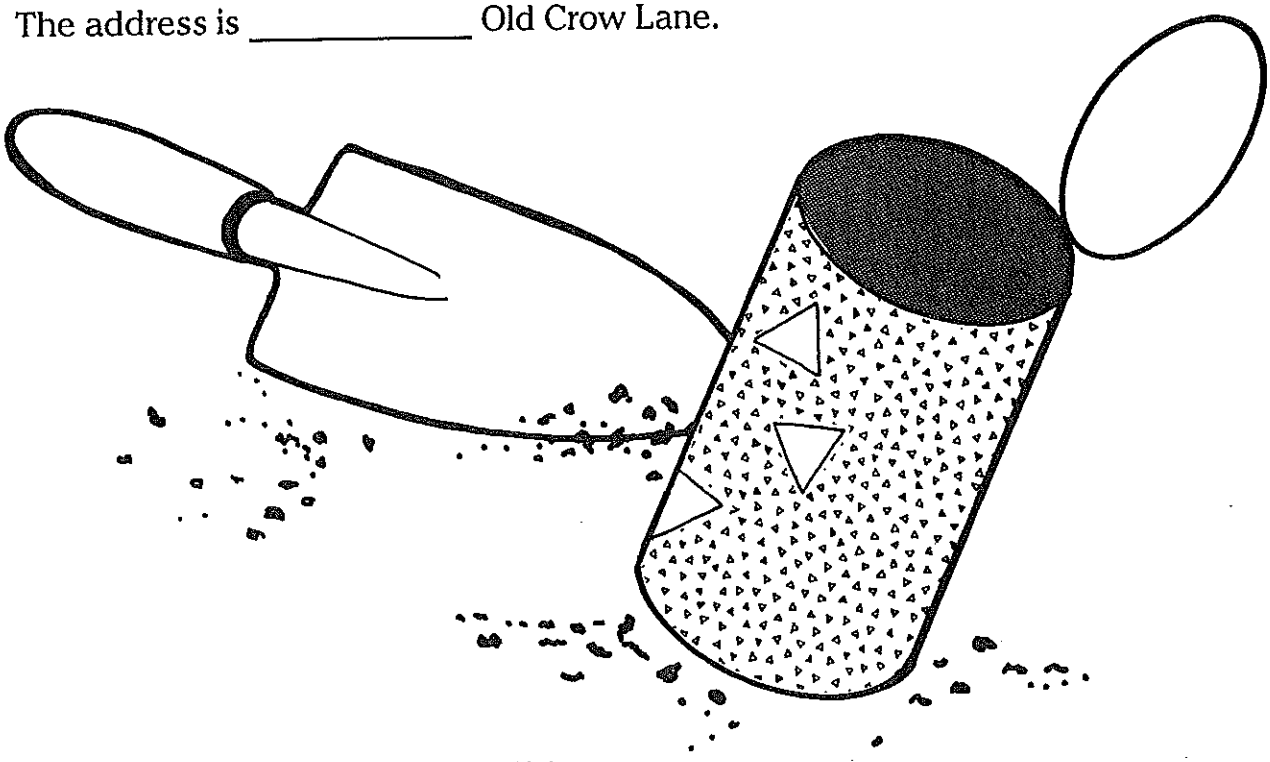
An Address

When the threesome dug at the point indicated on the map, they found an old can that contained another clue. The clue said:

Go to this address on Old Crow Lane.
Follow these instructions to discover the address.

- *Choose any 3 digit number so that all the digits are different. (number A)*
- *Reverse the order to make a new number. (number B)*
- *Subtract the smaller number from the larger number and write the difference as a new number (number C).*
- *Reverse the digits of this number to make another new number (number D).*
- *Add the last two number (C + D).*
- *This number is the house number.*

The address is _____ Old Crow Lane.



Lesson 4

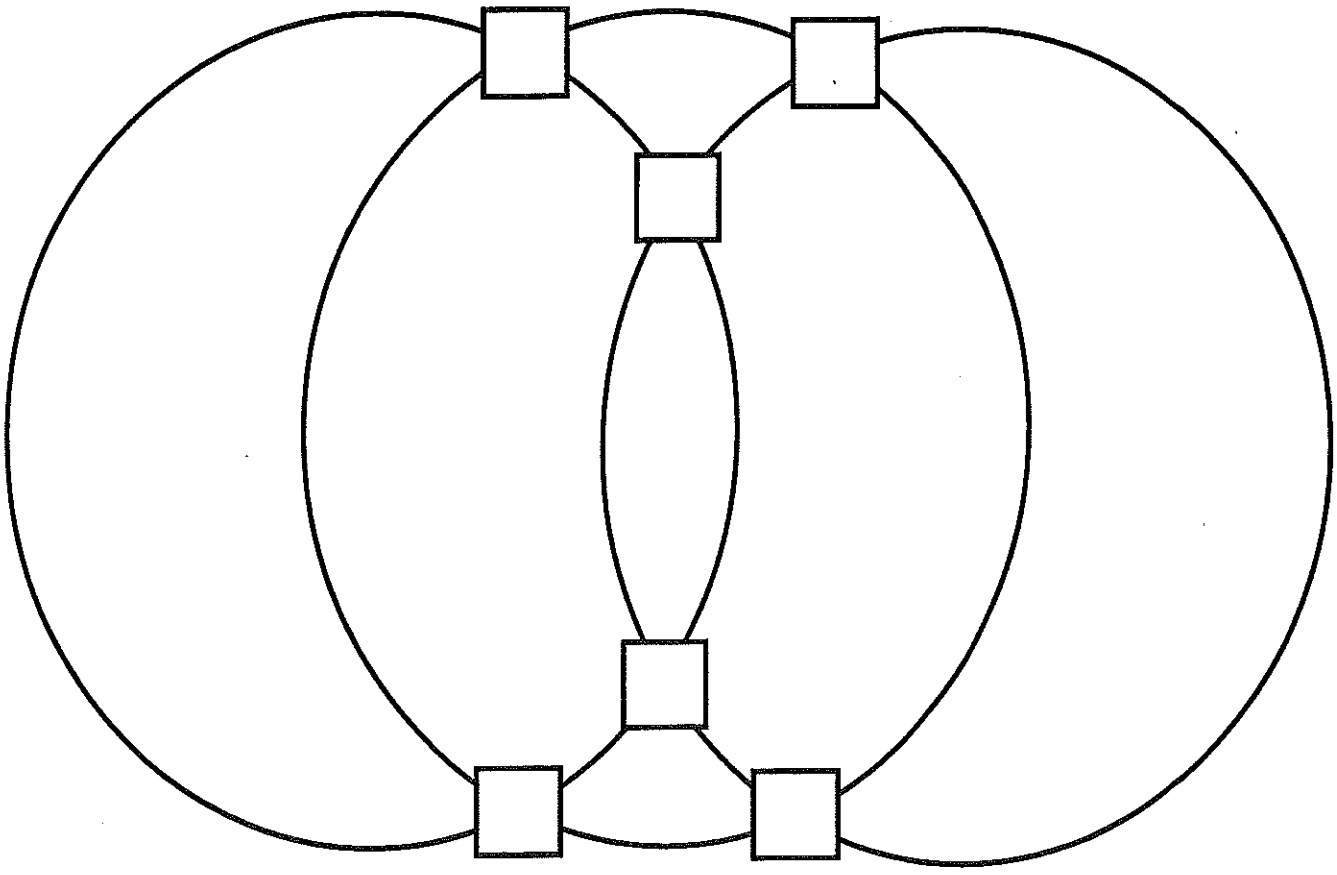
Treasure Hunt

Three Women

When the three friends got to the address indicated in the clue, they found Mr. Farnsworth's three granddaughters (Betty, Bonny, and Babette). While the granddaughters lived in the same house, they had not talked to each other in over 30 years. Each of the women had part of a clue to find the treasure their grandfather had hidden, but since they were not talking to each other, they could not share the clues and find the treasure. Each woman agreed that she would present the threesome with a puzzle and if they could solve the puzzle she would tell them her part of the clue.

Betty's Puzzle

Put the number's 1, 2, 3, 4, 5, and 6 in the squares in such a way that the sums of the numbers on each circle are the same.

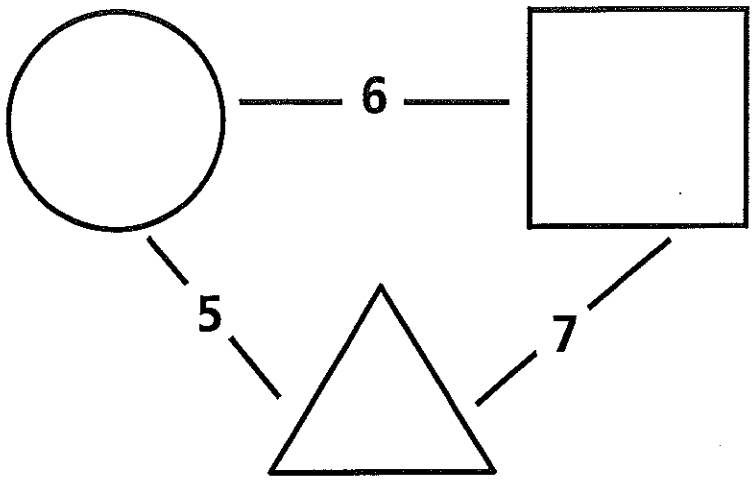


Lesson 5

Treasure Hunt

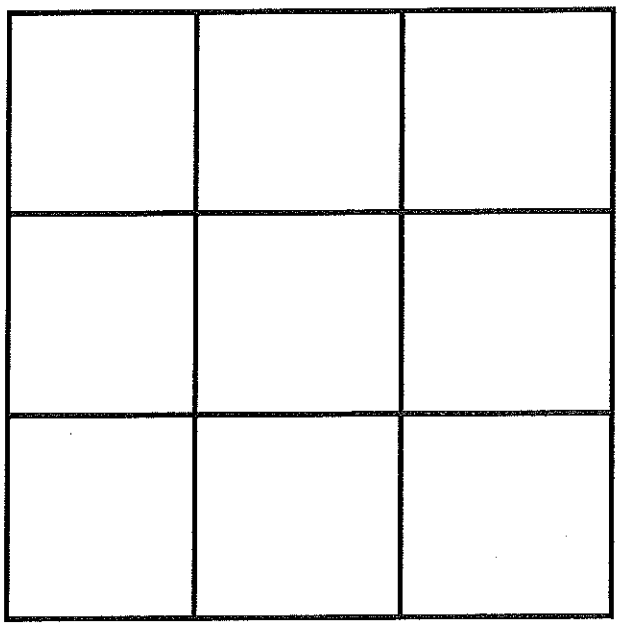
Bonny's Puzzle

Put numbers in the three shapes so that the number on each line is the sum of the two numbers at the end of the line.



Babette's Puzzle

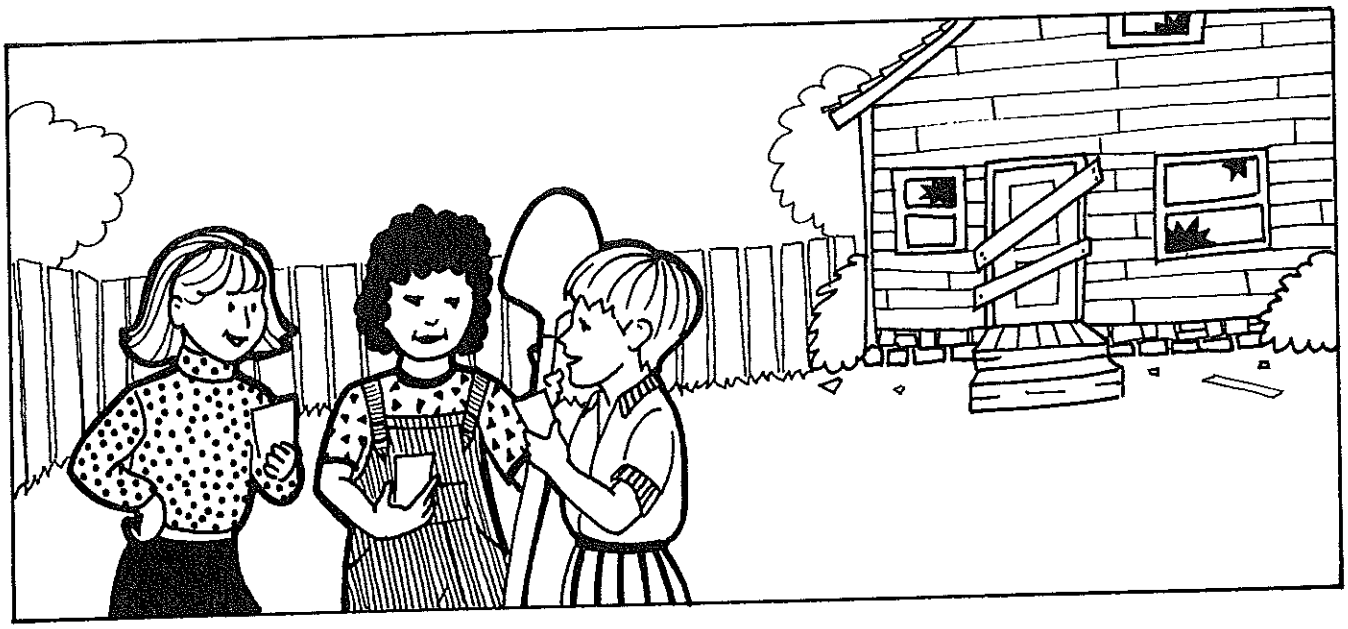
Put the numbers 3, 6, 9, 12, 15, 18, 21, 24, and 27 in the squares so that the sums of all rows, columns and diagonals are 45.



Lesson 6

Treasure Hunt

Back to the House



Here are the three clues to find the treasure. Fill in the missing words. Refer to the map to find the place where the treasure is buried.

Babette's Clue

Back to my house and in the back _____ .

You'll find your last clue on a buried card.

Betty's Clue

Three is prime and so is _____ .

Start looking for the treasure by the bee _____.

Bonny's Clue

One space up and two spaces _____ .

If you search in the dark, bring a flash _____.

At what point will the treasure be found? (___, ___)

Lesson 7

Treasure Hunt

The Treasure

When the friends found only a card, they were disappointed until they read what was written on the card. It said:

> The money is in the bank. Finish this puzzle and take it to the bank to retrieve the treasure. Start in the middle and move from square to square. You can move to adjacent squares by moving up, down and sideways, but not diagonally. Try to make a path of eight squares with the largest numbers. Add the numbers in the squares and multiply the sum by 100. That will be the amount of the the treasure you will receive.

1	4	8	1	2	5	4	6	5	7	9
8	3	9	6	7	9	8	8	2	4	6
9	1	2	5	1	6	3	5	7	9	2
5	4	8	9	2	8	4	9	2	6	3
7	6	8	6	7	5	6	5	8	3	8
2	5	7	1	3	START HERE	4	3	2	4	7
5	2	3	8	4	9	1	9	3	1	9
1	8	1	7	6	2	3	7	6	8	2
4	3	4	7	4	8	5	1	8	9	1
2	7	1	5	2	6	3	6	5	7	4
3	6	2	1	5	7	1	4	3	8	2

If you were one of the treasure seekers, what is the most you could get? _____

How could this be divided between the three friends and the three granddaughters?

_____

_____

Answers

Lost Lottery Winner

Lesson 1, page 7

a. 1177 b. 66
c. 430 d. 50
e. 2775
lottery numbers are - 11, 6, 43, 5, 27

Lesson 2, page 8

Bernard - 17-2-28-43-5 Charlie - 6-50-27-44-15
Carrie - 1-7-33-11-27 Dedre - 6-43-50-13-40
Evan - 11-6-43-5-27 Justin - 6-11-16-21-26
Evan is the lottery winner.

Flowers for Miss Sneeze

Lesson 2, page 10

Lisa, Jason, Marilee, John

Lesson 3, page 11

Marilee - 1.8 mi west of school
John - .9 mi west of school
Jason - 1.5 mi east of school
Lisa - 2.3 mi east of school
John is bringing the flowers.

New Morning Message

Lesson 1, page 12

Robert - 5 Rhonda - 2
Rachael - 6 Ricky - 4
Randy - 1 Robin - 3
Randy is eliminated.

Lesson 2, page 13

Robert - 54 min Rhonda - 35 min
Rachael - 33 min Ricky - 20 min
Randy - 50 min. Robin - 33 min
Robert can be eliminated as a suspect.

Lesson 3, page 14

Rhonda - 35 Ricky - 39
Robin - 45 Rachael - 50
Rhonda did it.

Tomb Robbers

Lesson 1, page 15

Jacob - 25 Theresa - 35
Jules - 30 Bea - 26
Arthur - 18 George - 34
George Dunn can be eliminated as a suspect.

Lesson 2, page 16

Jacob - 8 shoe, 134 lb
Theresa - 7 shoe, 131 lb
Jules - 11 shoe, 156 lb
Bea - 9 shoe, 141 lb
Arthur - 8 shoe, 121 lb
Jules, Bea and Arthur can be eliminated as suspects.

Lesson 3, page 17

Jacob's Box - 240 in^2, 960 in3
Theresa's box - 240 in^2, 720 in^3
Theresa Rich is the thief.

Foreign Frogs

Lesson 1, page 18

Lois - 33 Bill - 72
Zeb - 86 Polly - 10
Sally - 63
Polly Wog can be eliminated.

Lessons 2, page 19

a. 5107 - **LOIS** b. 3504 - HOSE
c. 832 - **ZEB** d. 7718 - **BILL**
e. 8078 - BLOB f. 5317 - LIES
g. 5537 - LESS
Sally can be eliminated.

Lessons 3, page 20

Zeb - 4 birds and 3 frogs
Bill - 2 spiders and 2 frogs
Lois - 3 snakes and 3 frogs
Bill can be eliminated.

Lesson 4, page 21

frogs 1, 2, and 6 together weigh 8 kilograms; Lois

Mr. Bag's Inheritance

Lesson 1, 2, 3, pages 22-24

Lana	17	5'6"	93401	May
Bernice	23	5'3"	83400	February
Clara	29	5'8"	10439	November
Dora	20	5'2"	70439	September

Lesson 4, page 25

Bernice will inherit the money.
No matter what number students choose, the inheritance will be $50,000. Bernice would get $20,000 and each of the other three women would get $10,000.

Mistake at the ATM

Lesson 1, page 26

balance should be $12,172.18
Total was $7,172.18
Missing money was $5,000.00

Lesson 2, page 27

Adam - 1:25 PM Barney - 1:45 PM
Camille - some time between 1:00 and 4:00 PM, an exact time cannot be determined.
Miss Take - 1:40 PM Mark - 1:45 and 2:15 PM
No one can be eliminated.

Mistake at the ATM

Lesson 3, page 28

Adam - $675.50
Barney - $109.20
Camille - $832.67
Miss Take - $221.40
Mark - $3,344.50
Adam can be eliminated as a suspect.

Lesson 4, page 29

Mark - 125, 130, 120 - receipt for coins
Barney - 55, 89, 144 - receipt for car down payment
Camille - 78, 156, 158 - charge slip
Miss Take - 128, 256, 512 - safe deposit key
Miss Take took the extra money. She kept $352.60 in cash, put $3397.00 in the safe deposit box, and deposited $1250.40 in her bank account on Wednesday.
Barney took $500.00 out of his account and used it as a down payment on his car.
Camille bought her television and stereo on credit.
Mark sold two coins and got $5000.00, which he deposited in his account.

Lost in Bonkers

Lesson 1, page 30

Bonkers is 80 miles east of Sundown.

Lesson 2, page 31

a. (0,11)
b. (8,11)
c. (9, 3)
d. (9, 7)
e. (8, 7)
f. (8, 14)
g. (2, 14)
h. (2, 8)
i. (12, 8)
See graph on page 64.

Lesson 3, page 32

prime numbers = 11, 13, 17; 13 Oak Street

Lesson 4, page 33

26, 29, 58, 61, 122, 125, 250, 253
See maze on page 64.

Pirate Flag

Lesson 2, page 34

Montgomery - 175
Jonathan - 160
Alexander - 180
Beatrice - 170
Tom - 150
Alexander can be eliminated as a suspect.

Lesson 3, page 35

Montgomery - 5'4"
Jonathan - 5'7"
Alexander - 5'6"
Beatrice - 5'1"
Tom - 5'3"
Beatrice can be eliminated as a suspect.

Lesson 4, page 36

A. 112
E. 34
G. 904
H. 72
I. 15
L. 1352
M. 1795
N. 56
R. 26
S. 170
T. 197
Y. 312
My name has eighteen letters.
Tom Swain can be eliminated.

Lesson 5, page 37

Number on the card - 793
Montgomery's address - 395
Jonathan's address - 793
Jonathan is the culprit.

Slim's Silver

Lesson 1, page 39

Charleston - Kansas City
700 miles
Kansas City - Wichita
150 miles
Wichita - Denver
450 miles
Denver - Salt Lake City
350 miles
Salt Lake City - Virginia City
450 miles
Total miles = 2100
42 days
No, he would arrive on March 18th.

Lesson 2, page 40

7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98
from Virginia City go south to Carson City silver field to find my claim

Lesson 3, page 42

A - 775
B - 825
C - 1600
D - 400
E - 2400
F - 2400
G - 2,000
H - 850
I - 800
J - 1550
K - 400
C, G, H, I, J

Lesson 4, page 43

C - 160
G - 240
H - 130
I - 140
J - 170
Claim is I.

Lesson 5, page 44

42 days
Carson City
Claim I
23 bars
$12,650

The Loose Caboose

Lesson 1, page 45

1. 50 mi
2. 100 mi
3. 70 mi
4. 25 mi
5. 50 mi
6. 50 mi

Lesson 2, page 46

switch 1	2 hours	10:00 AM
Halfway	4 hours	12:00 noon
switch 3	5 hours	1:00 PM
tunnel	6 hours	2:00 PM
Prospect	8 hours	4:00 PM

The caboose was unlatched at the tunnel.

Lesson 3, page 47

Pete and Paul

Lesson 4, page 48

Pete - 8:00-10:00, 10:30-12:30, 1:00-3:00, 3:30-5:30
Paul - 8:00-10:30, 11:30-2:00, 3:00 -5:30
Pete was working at 2:00 p.m.

Lesson 5, page 49

2 7 6
9 5 1
4 3 8
45 pieces of gold
$5,400.00

Jewel's Jewels

Lesson 1, page 50

1, 1, 2, 3, 5, 8, **13**, 21, **34**, 55, **89**, 144
combination = 13 - 34 - 89

Lesson 2, page 51

diamonds	25	10	15
rubies	50	20	30
emeralds	30	10	20
sapphires	20	5	15

Lesson 3, page 52

Walter, Max and Amelia

Lesson 4, page 53

Walter	9	8
Amelia	8	6
Max	9	9

Walter is the thief.

Lesson 5, page 54

First put three of the bags on one side of the balance and three of the bags on the other side. Next select the three bags that are lighter than the other three bags. Take any two of these three bags and put them on the balance. If one of the bags is lighter than the other bag, you know that this bag contains the fake jewels. If the two bags balance (are the same weight), you know that the third bag has the fake jewels.

Treasure Hunt

Lesson 1, page 55

numbers that match up are:

.5 and 1/2	.25 and 25/100
.8 and 8/10	2/5 and 4/10

Lesson 2, page 56

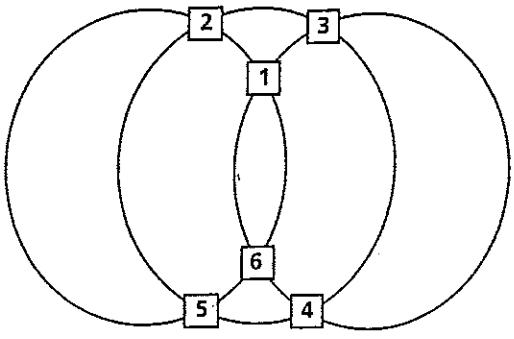
dog house (4, 3)	bird house (10, 2)
apple tree (6,12)	swing (8,7)
bee hive (2, 9)	wheel (12, 9)

Lesson 3, page 57

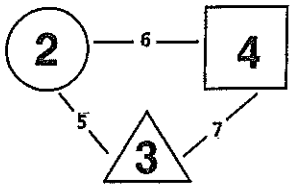
1089 Old Crow Lane

Lesson 4, page 58

Several combinations are possible.
One answer is



Lesson 5, page 59.



Several answers are possible. One correct solution is:

6	21	18
27	15	3
12	9	24

Lesson 6, page 60

Babette - yard, card
Betty - five, hive
Bonny - right, light
treasure - (4, 10)

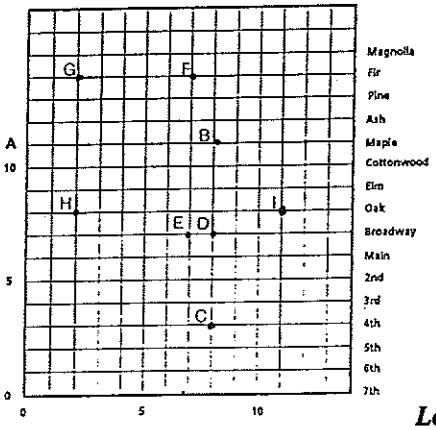
Lesson 7, page 61

You may choose to accept any answers that students come up with since the way the problem is worded, it does not indicate that there is one correct solution, only that the treasure will be determined by the sum of the numbers selected. The two following solutions have a total of 56 and, therefore, the treasure would be $5,600.00

1	4	8	1	2	5	4	6	5	7	9
8	3	9	6	7	9	8	8	2	4	6
9	1	2	5	1	6	3	5	7	9	2
5	4	8	9	2	8	4	9	2	6	3
7	6	8	6	7	5	6	5	8	3	8
2	5	7	1	3	START HERE	4	3	2	4	7
5	2	3	8	4	9	1	9	3	1	9
1	8	1	7	6	2	3	7	6	8	2
4	3	4	7	4	8	5	1	8	9	1
2	7	1	5	2	6	3	6	5	7	4
3	6	2	1	5	7	1	4	3	8	2

Lost in Bonkers

Lesson 2, pg. 31



Lesson 4, pg. 33