GT July Enrichment

Parents/Guardians,
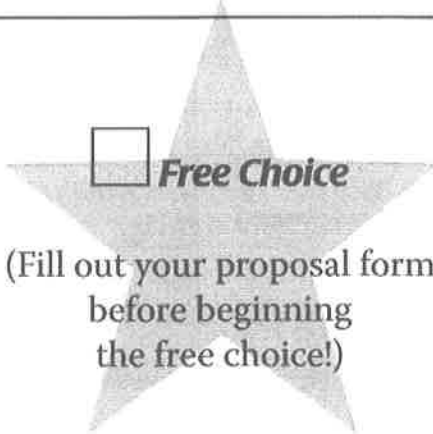
These ELA & Math resources will enrich and add depth to the thinking of your GT student through the summer because they encourage:

• Multiple pathways for solutions

• Analysis of word relationships and letters within words

• Backwards thinking (What doesn't belong?)

• Analogies

• Logic

• Creativity

• Student choice

• Multi-step problems

• Ranking (requiring analyzation)

• Analyzation of different number combinations to arrive at answers

• Error analysis

Until next time,

Your GT Coach

Name:_____

Nonfiction

☐ *Prepare a Speech* Choose one topic in science or social studies that interests you. After researching more information on the topic, prepare a speech for your class on your findings.	☐ *Create a Brochure* Think of your favorite pastime or hobby. Create a brochure that explains your hobby, why people might be interested in doing it, and how they could get involved.	☐ *Create a Collage* Using magazines, create a collage of pictures that represents your personality. Write a paragraph to describe the collage and why you chose the pictures.
☐ *Design a Model Bedroom* Develop a model of your dream bedroom. Write a few paragraphs to go with the model describing the details of your model.	☐ **Free Choice** (Fill out your proposal form before beginning the free choice!)	☐ *Create a Commercial* You have invented a new product. Create a commercial for your product. It should explain how to use the product and its benefits. Include a script with your commercial.
☐ *Create a Book Cover* Visit your library and find a book that discusses a hobby you enjoy. After reading the book, create a book cover that could be used for this book.	☐ *Write a Letter* Choose a book about a place you would like to visit. After reading the book, write a letter to your family describing your trip and the sights you visited.	☐ *Prepare a Research Paper* Choose a topic you would like to investigate further. Present your topic to your teacher for approval and prepare a research paper with the information you have found.

Check the boxes you plan to complete. They should form a tic-tac-toe across or down. All products are due by: _____.

Name:_____

Spelling/Vocabulary II—Word Building Menu

☐ **Create a Categorization Chart** Using all of your words for this week, categorize them into nouns, verbs, adjectives, and pronouns.	☐ **Create a Comic Strip** Using your creativity, create a comic strip that uses at least four of your words for this week.	☐ **Develop a Game** When you add prefixes and suffixes to words, you change their meaning. Create a flip card game that could add three prefixes and suffixes to your words. Record the new words you have created and their definitions.
☐ **Identify New Words** Using all of your words for this week, identify new words by adding prefixes and suffixes. Record the new words you have created and their definitions.	☐ **Free Choice** (Fill out your proposal form before beginning the free choice!)	☐ **Dissect a Word** Choose two of your weekly words. Looking at all of the letters, record all of the shorter words that could be made with these letters.
☐ **Write a Song** Write a song or rap using at least half of your weekly words. Be prepared to share it with your class.	☐ **Calculate a Word's Value** Using the word calculator below, calculate the value of three of your weekly words. Calculate the change after adding a prefix or suffix. Are there any words that could lose value because of spelling changes?	☐ **Changing Words** Using half of your weekly words, make a list that changes their parts of speech. Defend the change you made. For example, you could change *write* (verb) into *written* (adjective).

Check the boxes you plan to complete. They should form a tic-tac-toe across or down.
All products are due by: _____.

Word Calculator

A	B	C	D	E	F	G	H	I	J	K	L	M
4¢	5¢	2¢	3¢	4¢	6¢	9¢	1¢	7¢	10¢	8¢	2¢	5¢
N	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**
6¢	9¢	5¢	8¢	4¢	12¢	2¢	5¢	14¢	3¢	13¢	15¢	40¢

Word Play

Homophones	Synonyms	Antonyms	Multiple Meaning Words	Points for Each Level
☐ Complete the homophone brainstorming activity. (10 pts.) *(see next page)*	☐ Make a set of concentration cards for pairs of at least 10 synonyms. (10 pts.)	☐ Make a window pane of antonyms with at least 10 sets of words. (10 pts.)	☐ Using a dictionary, look up the word *run*. Make a poster showing pictures for at least half of the definitions for run. (15 pts.)	10–15 points
☐ Design a game for your classmates that tests their knowledge of homophones. (20 pts.)	☐ Create two word webs: one for the word *good*, and one for the word *nice*. Brainstorm synonyms for these words that could be used in your writing instead. (20 pts.)	☐ Design a worksheet for a student that tests their knowledge of antonyms. (20 pts.)	☐ Design a crossword puzzle with at least five multiple meaning words. (20 pts.)	20–25 points
☐ Create a poem using at least 10 different sets of homophones. (30 pts.)	☐ Write a funny yet descriptive story about a day in the life of a bug. Warning: You cannot use any of the words on the Banned List Chart at the bottom of this page. (30 pts.)	☐ Design your own children's 20-questions book based on antonyms. (30 pts.)	☐ Create a PowerPoint quiz that uses multiple meaning words and tests the reader's ability to identify their meanings. (30 pts.)	30 points
Free Choice (prior approval) **(25–50 pts.)**	**Free Choice** (prior approval) **(25–50 pts.)**	**Free Choice** (prior approval) **(25–50 pts.)**	**Free Choice** (prior approval) **(25–50 pts.)**	25–50 points
Total:	**Total:**	**Total:**	**Total:**	**Total Grade:**

Banned List of Words

good	bad	fun	like	said	hot
cold	happy	sad	mad	go	blue

Name:_____

Brainstorming Homophones

As you know, homophones are words that sound the same but have different spellings and meanings.

The Basics

Listed below is one word in a homophone pair. Write the other word in the pair.

Allowed	Packed
Beach	Pale
Days	Rain
Great	Road
Lane	Seen
Leek	Waste

The Challenge

Your challenge is to write three sentences using a pair of homophones from the table above in the same sentence.

Example: I heard the loud, thundering herd of elephants.
Write your own sentences below.

1. _____

_____

2. _____

_____

3. _____

_____

Name _____

Read the clues, then write the words.
<mark>Start at the bottom</mark> and climb to the top.

Done In
GT
Analyzations • Discussions
Evaluations • Applications

Wedding Words
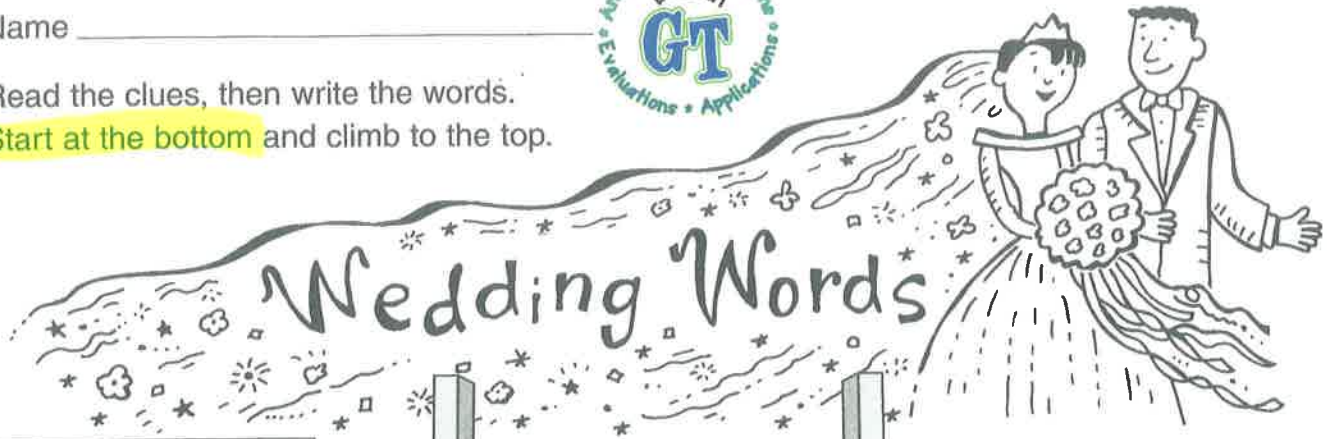
The partner of a bride.
Add one letter.

9 _ _ _ _ _

8 _ _ _ _

A section of a house or building.
Change one letter.

To go from place to place.
To wander.
Change one letter.

7 _ _ _ _ _

6 _ _ _ _

Another word for street or path.
Take away one letter, then add one.

To have ridden on something.
Add one letter.

5 _ _ _ _ _

4 _ _ _ _

A long, thin stick.
Change the vowel.

To remove something, as in "Get ___ of that junk."
Take away one letter.

3 _ _ _

2 _ _ _ _

To travel on an animal or in a vehicle.
Take away two letters.

To walk, taking large steps.
Take away the first letter, then add two.

1 _ _ _ _ _

b r i d e

60

Name _____

Read the clues, then write the words.
Start at the bottom and climb to the top.

Drinking Vessels

Something to drink from.
Take away two letters, then add one.

12 _ _ _ _

A device that raises or moves fluids.
Take away the first two letters, then add one.

11 _ _ _ _

To slouch or droop.
Take away the first letter, then add two.

10 _ _ _ _

To leap into the air.
Change the middle two letters.

9 _ _ _ _

A vehicle that is used in the army.
Change one letter.

8 _ _ _ _

The sound a car horn makes.
Change the last two letters.

7 _ _ _ _

A large, furry mammal.
Change one letter.

6 _ _ _ _

365 days.
Take away two letters, then add one.

5 _ _ _ _

A baking ingredient that makes bread rise.
Change one letter.

4 _ _ _ _

The smallest amount.
Add one letter.

3 _ _ _ _

Opposite of first.
Change one letter.

2 _ _ _ _

A word meaning _girl_.
Take away one letter.

1 _ _ _ _

g l a s s

Daily Word Ladders Grades 4–6   Scholastic Teaching Resources

Name _____

Read the clues, then write the words.

Auto Adventures

Something you drive.
Take away one letter.

— — — (9)

To attend to the needs of another.
Change one letter.

— — — — (8)

To challenge another person to do something risky.
Change one letter.

— — — — (7)

An appointment to meet at a specific time.
Change one letter.

— — — — (6)

Short form of "David."
Change one letter.

— — — — (5)

To jump or plunge into a body of water.
Take away two letters.

— — — — (4)

If you do this to traffic, you change its route.
Add one letter to the end.

— — — — (3)

One who dives into water.
Change one letter.

— — — — (2)

A body of flowing water.
Take away one letter.

— — — — (1)

d r i v e r

Name _____

Read the clues, then write the words.
Start at the bottom and climb to the top.

Quick Wit

10. Another word for bright or intelligent. **Add one letter.**
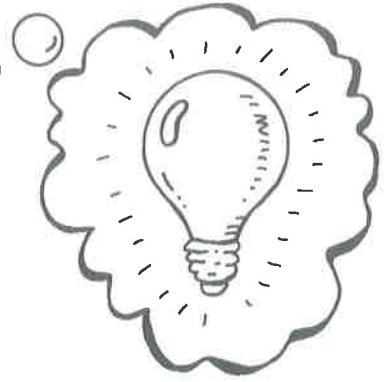
9. Another name for a store or market. **Change one letter.**

8. The red planet. **Add one letter.**

7. To hurt or destroy something. **Rearrange letters.**

6. A male sheep. **Change one letter.**

5. An old piece of cloth for cleaning. **Change one letter.**

4. A floor covering. **Change one letter.**

3. Another name for a tractor-trailer. **Take away two consonants.**

2. The opposite of left. **Take away one letter.**

1. A feeling of terror. **Change one letter.**
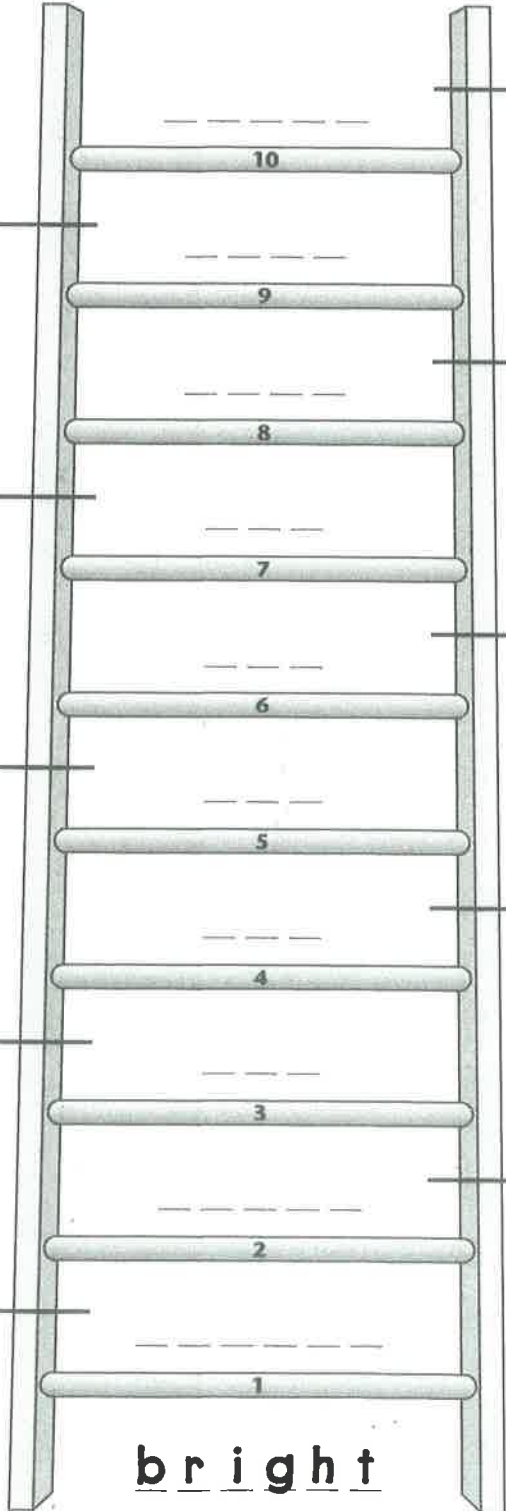
b r i g h t

Examining Similarities

Name _____

Picking Pairs

For each number, a line connects two things that go together. Find two other things that go together in the same way. Draw a line to connect them.

1. imaginary   number
   ban   make-believe
   allow   forbid

2. secret   midnight
   huge ——————— tiny
   solid   liquid

3. clap   permit
   prevent   applaud
   allow   pretend

4. terrier   retriever
   lime ——————— strawberry
   penguin   crowd

5. core   see
   time   hear
   here   corps

6. snake   mammal
   tiger   jungle
   skin   reptile

7. perfect ——————— flawless
   puppy   stare
   stroll   walk

8. chair   candle
   wick   soft
   cord   lamp

THINK!
Tell a partner how the pairs you matched go together.

11

Same Class

Is To

The first two underlined words in each sentence name things that are in the same group or class. Read the third underlined word. Complete each sentence with a word in the same class as the third underlined word.

Tip ✔

A queen is to a czar as baseball is to football.

Say to yourself: A queen and a czar are both rulers; baseball and football are both sports.
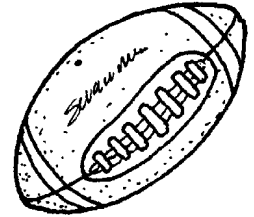
1. Cousin is to aunt as oval is to _____.
   Ⓐ egg   Ⓑ uncle   Ⓒ circle

2. A biography is to a novel as coffee is to _____.
   Ⓐ dark   Ⓑ tea   Ⓒ mystery

3. A peach is to an apricot as a jeep is to a _____.
   Ⓐ sedan   Ⓑ tire   Ⓒ plum

4. A quail is to a pigeon as a butterfly is to a _____.
   Ⓐ gnat   Ⓑ dove   Ⓒ flower

5. A diamond is to an emerald as a hurricane is to a _____.
   Ⓐ sunshine   Ⓑ ruby   Ⓒ tornado

6. A pencil is to a pen as a tailor is to a _____.
   Ⓐ crayon   Ⓑ shoemaker   Ⓒ thread

7. A redwood is to a maple as a pumpkin is to a _____.
   Ⓐ pineapple   Ⓑ beet   Ⓒ birch

8. A mop is to a broom as a museum is to a _____.
   Ⓐ library   Ⓑ painting   Ⓒ bucket

THINK!
Tell a partner what the groups for each word pair are.

Antonyms

Antonym Sentences

The first two underlined words in each sentence name antonyms. Complete each sentence with an antonym for the third underlined word.

Tip ✓

Smile is to frown as powerful is to weak.
Say to yourself: Smile is the opposite of frown, and powerful is the opposite of weak.

1. Valuable is to worthless as comic is to _____.
   - (A) funny
   - (B) tragic
   - (C) worthy

2. Professional is to amateur as bold is to _____.
   - (A) grin
   - (B) volunteer
   - (C) bashful

3. Low is to high as southeast is to _____.
   - (A) northwest
   - (B) southern
   - (C) north

4. Crowded is to empty as here is to _____.
   - (A) there
   - (B) where
   - (C) full

5. Forbid is to allow as win is to _____.
   - (A) lose
   - (B) permit
   - (C) won

6. Drowsy is to alert as antique is to _____.
   - (A) ready
   - (B) pretty
   - (C) modern

7. Occupied is to vacant as rough is to _____.
   - (A) old
   - (B) gentle
   - (C) new

8. Talkative is to silent as wise is to _____.
   - (A) smart
   - (B) chatty
   - (C) foolish

THINK!
Read your answers to a partner.
Explain why you chose them.

31
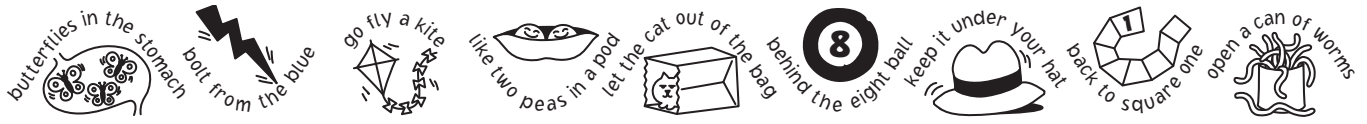
Busy as a Beaver:
A Little Book of Animal Idioms

The animal world is filled with creatures possessing unique traits. These traits sparked many idioms that we use to comment on the human experience. Using a twist on the little book format, your students can explore the meanings of these animal-related idioms.

What to Do

MATERIALS
- copy of the animal-related idioms (page 19)
- copies of the directions (page 22)
- white paper
- scissors
- hole puncher
- colored pencils

1. Post the list of animal-related idioms in a central place in your classroom.

2. Give students the opportunity to choose four animal-related idioms to illustrate and write about.

3. Distribute copies of the directions. Have students follow the directions to create their very own Little Book of Animal Idioms.

21
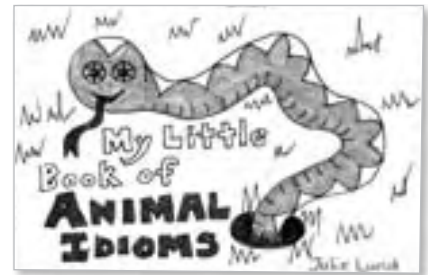
My Little Book of Animal Idioms

Follow the directions below to create a Little Book to help you explore the meanings of animal-related idioms.

Directions

Part I

1. Fold a sheet of paper in half widthwise.

2. Fold it in half again in the same direction.

3. Fold this long, narrow strip in half in the opposite direction.

4. Unfold the paper to the position at the end of step 1, and cut halfway along the center fold.
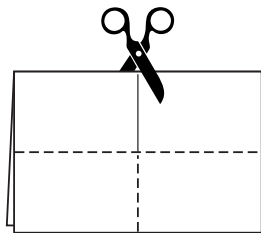
5. Unfold the paper completely. There should be a slit in the center of the paper where you made the cut.
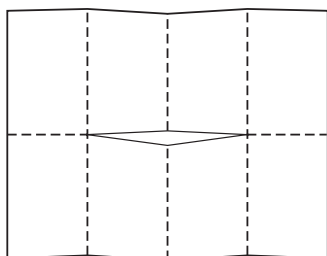
6. Fold the paper in half along the fold with the slit.

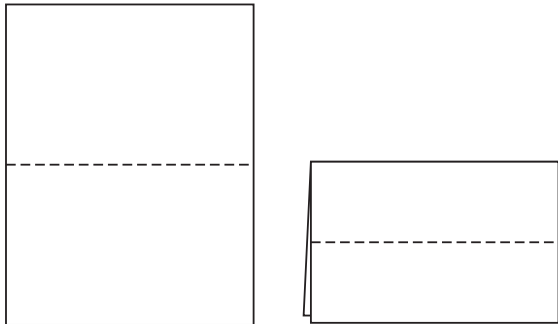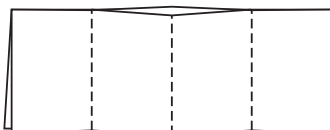7. Push in on the ends of the paper so the slit opens. Keep pushing until the center panels meet.
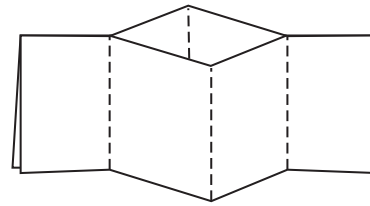
8. Fold the pages to one side to form a book, and crease the edges.

9. Use a hole-puncher to punch two eyeholes through the top three pages as shown.
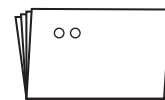
10. Use the eyeholes as a stencil to draw two circles on the last page of the book. These circles will be the eyes for the animals drawn on each of the pages of the little book. Color in the eyes.

Part II

Once you've created your book template, it's time to fill it in!

1. On each of the inside pages, draw an animal mentioned in three of the four idioms you chose, using the eyes you've created.

2. Under each animal, use creative lettering to write the idiom. On the page below each animal, write a few sentences that explain the meaning of the idiom.

3. On the cover, draw the animal related to the fourth idiom you chose. Personalize your book with a title. On the back cover of the little book, explain the idiom related to the cover illustration.

Animal-Related Idioms

- Ants in your pants
- As the crow flies
- Bats in your belfry
- Beat a dead horse
- Bee in your bonnet
- Bird in the hand is worth two in the bush
- Birds of a feather flock together
- Bug off
- Bull in a china shop
- Busy as a beaver/bee
- Butterflies in the stomach
- Buy a pig in a poke
- Cat got your tongue?
- Chicken feed
- Chickens come home to roost
- Clean as a hound's tooth
- Cold turkey
- Cook your goose
- Crocodile tears
- Dark-horse candidate
- Dead as a dodo
- Dead duck
- Dog days of summer
- Dog-eat-dog world
- Dog's life
- Don't count your chickens before they hatch
- Don't look a gift horse in the mouth
- Eager beaver
- Early bird catches the worm
- Eat crow

- Fat cat
- Fish or cut bait
- Fish out of water
- Fly in the ointment
- For the birds
- Get your goat
- Go to the dogs
- Have other fish to fry
- High horse
- Hold your horses
- Horse of a different color
- Kill the goose that lays the golden eggs
- Kill two birds with one stone
- Knee-high to a grasshopper
- Let sleeping dogs lie
- Let the cat out of the bag
- Live high off the hog
- Lock the barn door after the horse is out
- Look what the cat dragged in
- Mad as a wet hen
- Make a silk purse out of a sow's ear
- Monkey business
- More than one way to skin a cat
- No spring chicken
- Open a can of worms
- Play cat and mouse
- Poor as a church mouse
- Pull a rabbit out of a hat

- Put all your ducks in a row
- Put the cart before the horse
- Quiet as a mouse
- Raining cats and dogs
- Rat race
- Rats abandoning a sinking ship
- Red herring
- Scarce as hen's teeth
- Sick as a dog
- Sitting duck
- Smell a rat
- Snug as a bug in a rug
- Stir up a hornet's nest
- Straight from the horse's mouth
- Swan song
- Take the bull by the horns
- Throw a monkey wrench into the works
- Till the cows come home
- What's good for the goose is good for the gander
- When the cat's away, the mice will play
- White elephant
- Wild-goose chase
- Wolf in sheep's clothing
- You can lead a horse to water but you can't make him drink
- You can't teach an old dog new tricks

Logic With a Matrix

Using a matrix to organize information is a great way to solve certain logic problems. A matrix helps students isolate the information that is helpful in solving the problem and eliminate the information that is no longer needed. Logic problems that have three variables have a very different looking matrix. Without this visual representation, information is difficult to remember and consequently difficult for students to use.

The following is a teacher/students exchange from a fifth-grade classroom where students are solving the first problem in this section of the book.

Teacher: Today we are solving a different kind of logic problem and will use something called a matrix to help us solve it.

Show students the first problem and the matrix and ask them to tell you what they see.

Student: The matrix is like a square with different parts.

Student: There are names across the top of the matrix and different kinds of drinks along the side.

Student: The squares in the middle are empty.

Teacher: Will someone read the logic problem and then I'll read one clue at a time and we can use the matrix to solve it.

Have a student read the problem out loud and then read the first clue.

Student: What does it mean that Jamie and Sandy are good friends? What does that have to do with which drink they like best?

Teacher: Does anyone think they know how this clue helps us solve the problem?

Student: I think that it means that Jamie and Sandy can't be the people who like skim milk the best because they are friends with that person. So Jessie has to be the person who likes skim milk the best. Jamie and Sandy are good friends with Jessie who likes skim milk the best.

Teacher: Does that make sense to all of you? What can we put in the matrix to help us remember that it's Jessie who likes skim milk the best? We also need to put something in the matrix to help us remember that Sandy and Jamie do not like skim milk the best.

Student: You could put a check where Jessie and skim milk come together and then put an × in the same row under Sandy and Jamie.

Student: Or you could color in the place to show that Jessie is the skim-milk person and put an × under Sandy and Jamie.

Student: You also need to show that Jessie can't like any of the other drinks the best. So you'll need to draw ×'s underneath Jessie's name.

Teacher: Why don't I color in the place where it shows that Jessie likes skim milk the best?

Then it will be easy to see that Jessie is the skim-milk person. I'll put ×'s to show that no other person can have skim milk as their favorite drink, and to show that Jessie cannot like any of the other drinks as his favorite. The next clue says, **Sandy likes a beverage that has an odd number of letters.** Take ten seconds to think about this and then whisper what you think to your partner.

Once students have had this time, call on several students to share their ideas.

Student: Spring water and orange juice both have an odd number of letters. There's eleven letters in both of these drinks.

Teacher: So, what does that mean?

Student: It means that we still don't know which person likes which drink the best.

Teacher: OK. Let's read the next clue. **Jamie does not like fruit juices.** What does this clue tell us?

Student: This means that Jamie can't like orange juice. Orange juice is a fruit juice.

Teacher: So, what do I need to do on the matrix?

Student: You need to put an × where it shows Jamie and orange juice. Then you can color in where it shows Jamie and spring water. If he doesn't like orange juice the best, then he has to like spring water the best.

Teacher: OK. Now do we know which beverage Sandy likes the best?

Student: When you put an × under Jamie and orange juice that just leaves Sandy and orange juice. So, Sandy likes orange juice the best. Color in that square.

Teacher: Let's look at the matrix and see if it shows us who likes which beverage the best. You'll need to record your answers so it's easier to see them. Look over the matrix and reread the clues, checking to see that the answers make sense.

The 18 logic problems that follow include matrices for students to use to solve them.

Logic With a Matrix

Use the matrices to solve the problems.

5. Bernice, Florence, Walter, and Sharna collected data about the places where different classes of students liked to swim. Bernice surveyed the first-graders, Florence surveyed the second-graders, Walter surveyed the third-graders, and Sharna surveyed her classmates in fourth grade. Each grade level liked a different place to swim. The places were: the ocean, a lake, a swimming pool, and a pond. Use the clues to figure out which grade preferred which place to swim.
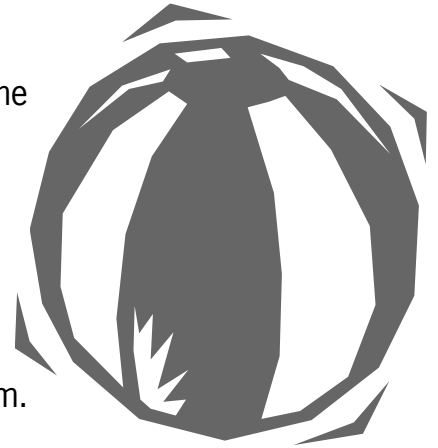
- Neither the oldest nor the youngest students preferred swimming in the ocean

- The students who liked swimming in the lake best, ate lunch each day with the third and second graders.

- The students Sharna surveyed like the lake the best.

- Second graders did not prefer the ocean or a swimming pool.

- The youngest children liked the pool the best.

	Bernice Grade 1	Florence Grade 2	Walter Grade 3	Sharna Grade 4
Ocean				
Lake				
Swimming Pool				
Pond				

6. Peter, Janice, Andrew, and Samuel love movies. One loves science-fiction films, one loves dramas, one loves comedies, and one loves westerns. Use the clues to figure out which person loves each type of movie.

- Andrew and Samuel don't like dramas.

- The girl loves science fiction.

- Andrew doesn't like westerns.

	Peter	Janice	Andrew	Samuel
Science Fiction				
Drama				
Comedy				
Westerns				

Logic With a Matrix

Use the matrices to solve the problems.

7. Marie, Brian, Sally, Freddie, and Patricia went on a bike trail together. Each one rode a different distance. The distances were: 5 kilometers, 7 kilometers, 10 kilometers, 11 kilometers, and 12 kilometers. Use the clues to figure out which person rode which distance.

- Brian and the boy who rode 11 kilometers are good friends.
- Sally rode exactly twice as many kilometers as Patricia.
- Marie rode 5 more kilometers than Brian.

	Marie	Brian	Sally	Freddie	Patricia
5 km					
7 km					
10 km					
11 km					
12 km					

8. Gordon, Candi, Nikki, and Stefanie each spent a different amount of time completing their homework the first week of school. One spent 5 hours and 20 minutes. One spent 4 hours and 40 minutes. One spent 3 hours and 45 minutes, and one spent 6 hours and 15 minutes. Use the clues to figure out how much time each person spent on their homework the first week of school.

- If you rounded the number of minutes that Gordon spent on his homework to the nearest hundred, it would be 300 minutes.
- Gordon spent more time than Nikki on homework.
- Stefanie spent 320 minutes on her homework.

	Gordon	Candi	Nikki	Stefanie
5 hours 20 min.				
4 hours 40 min.				
3 hours 45 min.				
6 hours 15 min.				

Logic With a Matrix

Use the matrices to solve the problems.

9. Five girls—Chau, Melinda, Hannah, Petra, and Benita—visited an amusement park. At the end of the day each said that they had a different favorite ride. These rides were named: Wild Grizzly, Tilt-a-Whirl, Mountain Climb, Swamp Coaster, and Ferris Wheel. Read the clues to figure out which ride was the favorite of each girl.

- Chau's favorite ride has 9 more letters in it than her first name.
- Melinda's favorite ride has 4 less letters than double the number of letters in her first name.
- Petra and Benita each love a ride that has 11 letters in its name.
- Benita's best friend loved the Ferris Wheel the best.

	Chau	Melinda	Hannah	Petra	Benita
Wild Grizzly					
Tilt-a-Whirl					
Mountain Climb					
Swamp Coaster					
Ferris Wheel					

10. Four friends talked about what they want to be when they become adults. Their names are Camille, Josie, Beth, and Mike. Each person wants to be something different. One wants to be an attorney, one wants to be an accountant, one wants to be a teacher, and one wants to work in a salon. Use the clues to figure out what each friend wants to become.
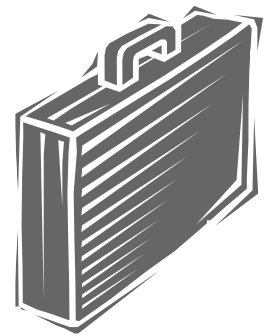
- The person who wants to become an accountant has the longest name.
- Josie and Mike were surprised when their friend said she wants to work in a salon.
- Josie doesn't want to work in a school.

	Camille	Josie	Beth	Mike
Attorney				
Accountant				
Teacher				
Salon				

Logic With a Matrix

Use the matrices to solve the problems.

11. *Charlie and the Chocolate Factory* by Roald Dahl, *Stuart Little* by E. B. White, *A Wrinkle in Time* by Madeline L'Engle, and *Tales of a Fourth Grade Nothing* by Judy Blume are the favorite books of Serena, Matthew, Jacob, and Dexter. Use the clues below to figure out which person loves which book.

- Matthew's favorite book is written by a female author.
- Neither Jacob nor Serena like books about animals.
- Serena's favorite book is also about her favorite food.
- Jacob hasn't read *A Swiftly Tilting Planet* which was also written by the author who wrote his favorite book.

	Serena	Matthew	Jacob	Dexter
Charlie and the Chocolate Factory				
Stuart Little				
A Wrinkle in Time				
Tales of a Fourth Grade Nothing				

12. Five children found out that their birthdays were all one day after a holiday. The children's names are Felicity, Monroe, Belinda, Wyatt, and Brook. Their birthdays are January 2, February 15, March 18, July 5, and December 26.

Use the clues below to figure out each person's birthday.

- Belinda's birthday is the only summer birthday.
- Felicity's birthday comes right before New Year's Eve.
- On his birthday, Wyatt's gifts are often wrapped in leftover Valentine's Day wrapping paper.
- Monroe was almost the first baby born in the New Year.

	Felicity	Monroe	Belinda	Wyatt	Brook
January 2					
February 15					
March 18					
July 5					
December 26					

Logic Using a Venn Diagram

Venn diagrams, developed by Englishman John Venn (1834–1923) are a powerful problem-solving tool allowing students to display attributes or information from two or three different sets. Teachers often use this visual representation when discussing the characters in a piece of literature or when making observations about things in science class. The Venn diagram logic problems that follow provide students with problems where they will have to add and/or subtract to figure out answers. In most cases the Venn diagram provides them with a means of seeing how the information from the problem will look.

The following is a teacher/students exchange from a sixth-grade classroom. This will help you see how to use these problems with your own students.

Teacher: Think of something you can say about this.

Show students the Venn diagram and ask them to describe what they see.

Student: There are two ovals that cross over each other.

Student: The ovals are empty.

Teacher: Has anyone ever used one of these before, or seen one of these?

Student: We use these to write characteristics of characters in a book. Sometimes two characters have characteristics that are the same and you write those in the middle part.

Student: The middle part means that the information is the same for both of the characters.

Teacher: Has anyone used these in any other classes?

Student: We used them in math class in third grade when we did data collection.

Teacher: So, this diagram has a special name. It's called a Venn diagram. It's actually named after a man named John Venn who used these to solve logic problems. We're going to use them to solve logic problems, too.

Show the first logic problem to the students and ask them to silently read the information that is given to them.

Teacher: Let's label the two ovals to help us organize the information from the problem. Think about what this *(Point to the first oval.)* might have as its label.

Student: You need to write the name of one of the favorite flavors of ice cream on top of each of the ovals.

Teacher: So, this loop will represent the students who like fudge swirl as their favorite flavor of ice cream and this oval will represent the students who like chocolate chip as their favorite flavor.

Add the labels.

Student: It says that 5 children only liked chocolate chip.

Teacher: Where should we write the number *5* to show that this amount of people only liked chocolate chip?

Student: You need to put it inside the loop that says *chocolate chip* in the part that doesn't overlap with the *fudge swirl* loop.

Teacher: How did you know that this would be the best place to put the *5?*

Student: The overlapping part would be for people who couldn't make up their mind, and they said that they liked both chocolate chip and fudge swirl the same.

Teacher: OK. Would someone read the next clue?

Student: 8 children only liked fudge ripple.

Teacher: So, where should we write the number *8?*

Student: The *8* needs to be inside the other loop in the part that doesn't overlap.

Student: 8 people liked only one kind of ice cream best.

Teacher: Would someone read the next statement?

Student: Some children liked them both the same.

Teacher: What do we know from this clue?

Student: We know that there needs to be a number in the middle, but we don't know what this number is yet.

Teacher: Let's look at the last clue and see if it helps us figure out how many students will need to go in the center. Would someone read the last clue?

Student: 22 children were surveyed.
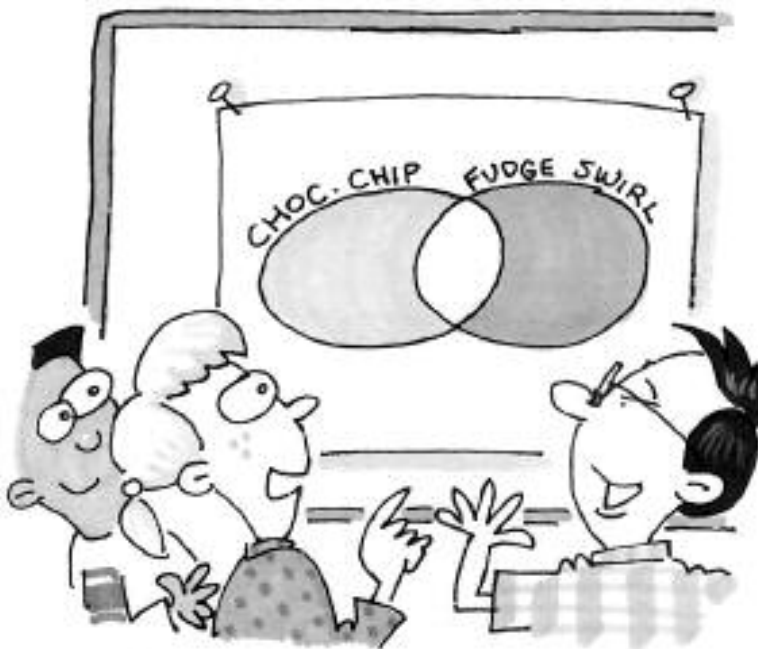
Teacher: Talk with your partner and take a minute to figure out how many people will go in the intersection of the two loops.

Give children a minute to do this. After someone has given an answer be sure to ask them how they figured out the answer they shared.

Student: The number *9* has to go in the center.

Teacher: Did anyone get a different answer?

Teacher: How do you know that *9* is the correct amount?

Student: If you add the 5 and the 8 that equals 13. But the last clue says that a total of 22 students were surveyed. So, I subtracted 13 from 22 and that equals 9. So, 9 students liked both chocolate chip and fudge swirl the same.

The following Venn diagram problems can be used as a "warm-up" before beginning mathematics class or they can be used as independent work or paired work for students.

Logic Posters, Problems & Puzzles © Honi J. Bamberger, Scholastic Teaching Resources

Logic Using a Venn Diagram

Use the Venn diagrams to display the results in each problem.

5. Preparing for their class graduation party, 68 students voted on what food they wanted to serve. The choices they selected were pizza, subs, and hamburgers. Some students chose more than one food.

- 20 people picked only pizza but 36 people picked pizza.
- 29 people wanted subs.
- 4 of the students picked all three things.
- 11 students wanted burgers and subs.
- 7 students wanted subs and pizza.
- 30 people picked burgers.

pizza   **subs**

hamburgers
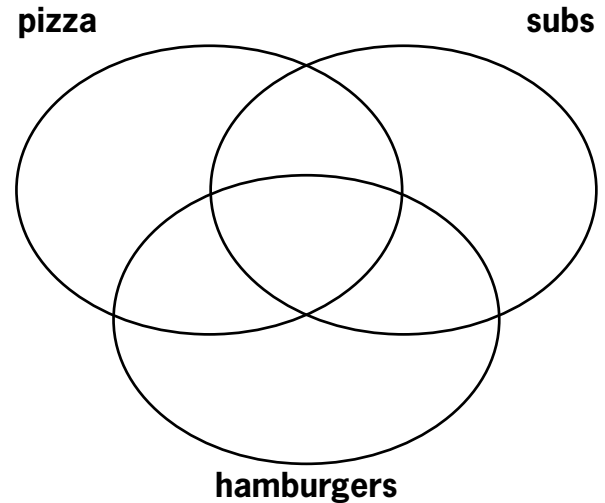
6. 100 dentists were surveyed about the toothpaste they recommended to their patients. The toothpastes were Sureshine, Mint-o, and Blast. Some of the dentists picked more than one toothpaste.

- 20 dentists recommended all three toothpastes.
- 30 recommended both Sureshine and Mint-o.
- 15 recommended only Mint-o.
- Mint-o was recommended by a total of 47 dentists.
- 26 recommended Sureshine and Blast.
- A total of 50 dentists recommended Sureshine.

Sureshine   **Mint-o**

Blast
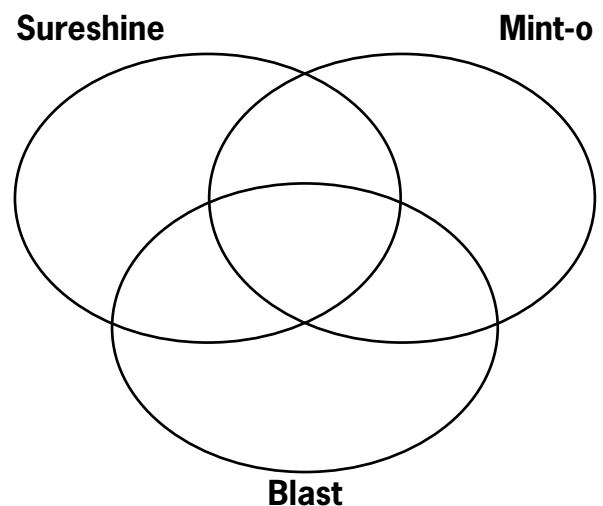
Logic Using a Venn Diagram

Use the Venn diagrams to display these results and answer the questions.

7. When asked which method of transportation 43 New Yorkers had used when traveling to Washington, D.C., in the last year, the following data was collected.

- 31 people said that they had traveled by train.
- 9 people said they had traveled by plane and train.
- 7 people said they had driven and gone by train.
- 4 people said they had only traveled by car.
- A total of 17 people said plane.
- Only 11 people said automobile.
- No one said they'd traveled by plane, train, and automobile.

car   **train**
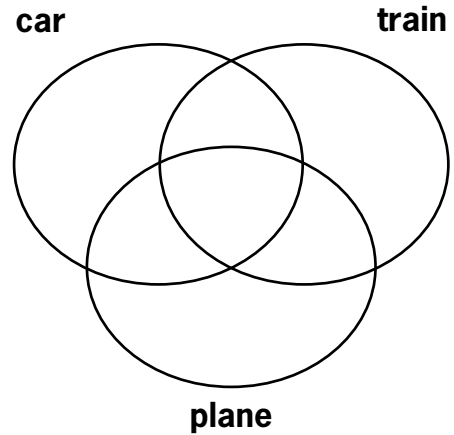
plane

How many people said only train? _____

How many people said only plane? _____

How many people said only car? _____

Did anyone say plane and auto? _____

8. 200 students responded to a survey about desserts they liked.

- 20 people said just pie.
- 11 people said only ice cream.
- 31 people liked cake, pie, and ice cream equally.
- 59 people said when given a choice, they'd pick either cake or pie.
- 110 people liked cake with 8 people saying they like cake only.

pie   **cake**
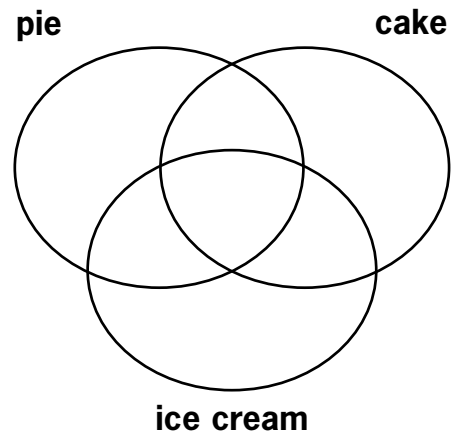
ice cream

How many people said ice cream and pie? _____

How many people said both cake and ice cream? _____

Date _____

Name _____

Math

Get the Scoop!

It's the annual ice cream scooping contest where people compete to see who can stack the most scoops of ice cream. Last year's winner, Darby, had 24 scoops! How did this year's participants do? Use the clues to find out. Then write the winner's name in the blank below.
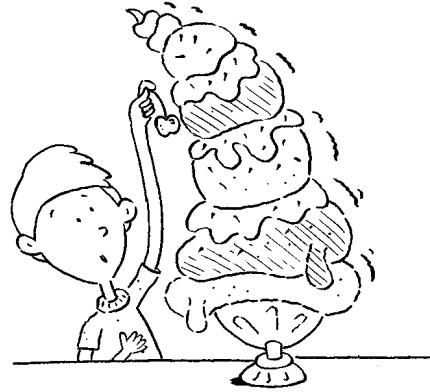
Participants	Clues	Number of scoops
1. Zaura	one scoop chocolate chip, two caramel swirl, four raspberry	
2. Ellis	twelve scoops cookie dough, half as many mint chocolate chip	
3. Clara	six scoops banana, twice as many fudge swirl	
4. Darby	three scoops vanilla, four times as many chocolate	
5. Chang	five scoops strawberry, half as many raspberry as Zaura	
6. Thelma	20 scoops rocky road, one-fourth as many butter pecan, and one-fifth as many cookies and cream as butter pecan	
7. Deon	half as many banana as Clara, one-third mint chocolate chip as banana, and ten times caramel swirl as mint chocolate chip	
8. Gabriela	twelve scoops vanilla, two-thirds that amount of cinnamon stick, and three times as many super fudge chunk as cinnamon stick	

This year's super scooper is _____!

Date _____

Name _____

Reaching the Top

It takes more than climbing skills to reach the top of these ladders! Our climbers need to know how to do math. In order to climb to the next rung, each equation must be correct. Check our climbers' math to see who climbed the highest.

1.

23 x 56 = 1,288

412 + 963 = 1,375

586 ÷ 8 = 86

764 − 413 = 351

88 + 89 = 177

105 ÷ 7 = 15

36 ÷ 9 = 4

16 x 3 = 48

Paula

3.

15,376 ÷ 62 = 248

39 x 81 = 4,733

836 − 463 = 373

259 ÷ 3 = 65

45 x 11 = 495

616 ÷ 77 = 8

76 ÷ 19 = 4

91 − 49 = 42

Malik

2.

1,644 ÷ 68 = 34

98 x 13 = 1,274

217 + 508 = 725

870 − 96 = 774

15 x 16 = 240

121 − 85 = 36

57 ÷ 19 = 3

47 x 4 = 188

José

4.

352 + 871 = 1,423

1,272 ÷ 86 = 20

900 − 675 = 380

271 x 2 = 378

64 − 48 = 15

1,088 ÷ 17 = 64

32 x 34 = 1,088

14 + 18 = 32

Audrey

Who climbed the highest? _____

Date _____

Name _____

Number Patterns

Pyramid Challenge

Each "pyramid" below is missing some "bricks." To plug the holes, you'll need to figure out the number pattern in each pyramid's sequence of numbers. Start at the top and read left to right, writing in the missing numbers that complete each sequence on the correct bricks. Describe the pattern on the lines provided.

1.

		4			
	9	14	19		
24	29		39	44	
49		59	64	69	74

_____
_____
_____
_____

2.

	7	9	16		
18	25	27		36	
43		52	54	61	63

_____
_____
_____
_____

3.

	88				
	82	79			
76	73		67	64	
	58		52		46	43

_____
_____
_____
_____

4.

	31				
30		35			
41	40		45	51	
50		55		60	66

_____
_____
_____
_____
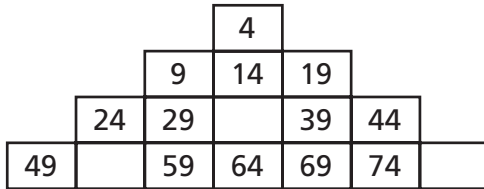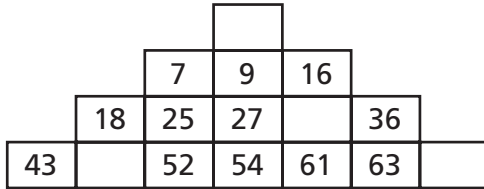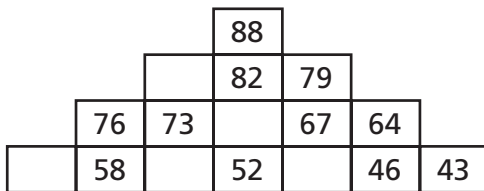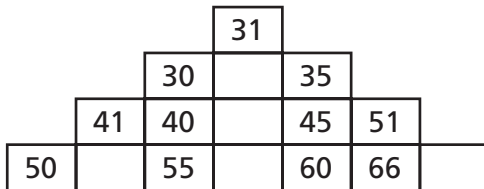
YOUR TURN

Try this bonus challenge and see if you can figure out the number pattern. (Hint: It doesn't involve addition or subtraction.)

		12			
	3	24	6		
48	12		24	192	
384	96		192	1536	

_____
_____
_____
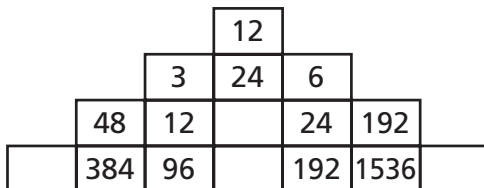
Comparing Numbers

STRENGTH in Numbers

Everyone knows there are 26 letters in the alphabet. Letter a is the first, b is the second, c is the third, and so on. Below are several statements concerning numbers. Write whether each statement is true or false by changing each letter of each word to their number equivalent in the alphabet and adding them together. We've done the first one for you.

Greater than or less than?	Do the math	True or false?
1. six > zero	s i x z e r o $19 + 9 + 24 > 26 + 5 + 18 + 15$ $(52 > 64)$	false
2. nine > seven		
3. two > one		
4. twelve > eight		
5. eighty > sixty		
6. fifty > thirteen		
7. thirty-one > twenty-one		
8. seventy-four > forty-seven		

YOUR TURN

Create three "greater than" statements using the word form of numbers and ask a classmate, friend, or family member to determine if they're true or false.

Prime Numbers

Prime Time for Prime Numbers

Prime time is a television term meaning the period between 8 P.M. and 11 P.M.—the time when the most people watch TV. Ed is doing research on television quality so he must watch a lot of TV. This is his TV-watching schedule for next week. Circle the shows that are both on a prime number channel and shown during prime time. Channels are listed in boldface after the shows.

A prime number is greater than 1 and cannot be evenly divided by any other number besides 1 and itself. For example, 11 is a prime number because any other number besides 1 and 11 cannot evenly divide it. The number 12 is not a prime number because, besides 1 and 12, it can be evenly divided by 2, 3, 4, and 6.

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
7 P.M.	Circle of Riches **8**	Friendly Neighbors **13**	Peril **59**	Twist City **18**	Relatives Rumble **4**	Toodles **22**	Judge Julie **68**
8 P.M.	Everybody Leaves Richard **3**	The Sullivans **14**	Hippy Daze **62**	Just Tell Me **43**	Who Wants to Be a Matador **51**	Shipwreck **73**	Doherty, Utah Baker **7**
9 P.M.	WWF—World Whispering Federation **89**	Charlie Tulip **9**	The Not Very Late Show **85**	Little Horse on the Prairie **29**	10/10 **1**	Cotton Puff Girls **56**	America's Most Washed **47**
10 P.M.	RSVP Yellow **97**	Danger! **41**	Fries to Order **2**	The West Park **54**	South Wing **16**	The Penny Poppy Show **21**	38 Minutes **38**
11 P.M.	News at Eleven **5**	America's Most Boring Home Videos **59**	Wednesday Night Prerecorded **61**	When Snowmen Attack **49**	Inside the Actor's Locker **31**	The Price Is High **6**	The Y-Factors **100**

YOUR TURN

Make a list all the prime numbers under 100 on the back of this page.

Date _____

Name _____

Money Matters

The stores on the chart below have sold out of two products. If they could reorder only one of the two that they're missing at this time, which one should they choose? Do the math based on the sales information provided from each store. Tell which item each store should reorder and explain why.

Stuff Mart

SAVE
$
NOW!

Store	Product 1/ price	Product 1/ average daily sales	Product 2/ price	Product 2/ average daily sales	Which should they reorder?
1. Gretehen's General Store	dishwasher detergent/ $2.99	10	raisin flakes cereal/ $3.19	8	detergent (10 x 2.99 = $29.90; 8 x 3.19 = $25.52)
2. The Emporium	chocolate bar/$0.60	18	gum/ $0.49	21	
3. One-Stop Shop	apples/ $0.25	30	bananas/ $0.25	28	
4. Mr. Deals	pasta/ $1.09	12	soup/ $0.89	10	
5. Grocer Green	lettuce/ $1.00	26	cucumbers/ $0.69	30	
6. Stuff Mart	batteries/ $3.99	15	light bulbs/ $2.09	23	
7. Sports World	soccer shirts/ $15.75	7	running shoes/ $31.50	4	
8. Try & Buy	baby blue party dress/ $65.00	3	navy blue silk tie/ $27.00	7	

Answer Key for Enrichment Resources

The answers are arranged in the same order as they appear in the packet. The highlighted pages are the answers for your grade's enrichment activities.

Word Ladder Answer Key

Fried Snacks, page 51
french, trench, wrench, wren, renew, newer, fewer, fee, free, fry

Candlelight, page 52
candle, handle, hand, hard, shard, share, hare, fare, flare, flame

Car Trouble, page 53
flat, inflate, late, slate, tales, tiles, tile, time, tide, tire

Play Date, page 54
play, plan, plane, plates, staple, stable, able, amble, ramble, rumble, humble, hum, chum

Beautiful Day, page 55
blue, clue, glue, glee, flee, flea, flew, fly, sly, sky

Ruling the Roost, page 56
rooster, roost, roast, toast, coast, cast, cat, hat, hit, chick, chicken

New and Not-So-New, page 57
new, few, dew, sew, sow, now, how, show, shown, own, owl, old

Midday Meal, page 58
lunch, launch, laundry, dry, day, say, sap, sip, sipper, supper

Growing Up, page 59
short, shore, shoe, show, slow, plow, blow, below, belong, long

Wedding Words, page 60
bride, stride, ride, rid, rod, rode, road, roam, room, groom

Friendship, page 61
friend, end, send, sent, set, bet, but, cut, cute, chute, chum

Rub-a-Dub-Dub, page 62
scrub, rub, rib, crib, cob, rob, throb, broth, both, bath

Underwater, page 63
dive, dime, chime, chimp, champ, ham, hum, hub, cub, Cuba, scuba

Hear This, page 64
scream, cream, cram, cramp, ramp, ram, rat, rot, trot, trout, shout

Brainy Bird, page 65
eagle, beagle, bagel, bugle, bungle, bundle, candle, handle, hand, Hank, hack, hawk

Itchy and Scratchy, page 66
itch, inch, pinch, punch, lunch, hunch, hutch, hitch, pitch, patch, catch, scratch

Drinking Vessels, page 67
glass, lass, last, least, yeast, year, bear, beep, jeep, jump, slump, pump, cup

Good Books, page 68
story, store, ore, chore, core, bore, bone, boo, book

Land of the Free, page 69
liberty, tribe, bride, pride, ride, rid, red, read, reed, freed, freedom

Corny!, page 70
maize, maze, made, jade, jab, job, cob, con, coin, corn

School Days, page 71
school, cool, coal, cola, cold, scold, sold, hold, hole, home

Jobs for Grownups, page 72
teacher, teach, each, ache, acre, care, pare, parent

Answers

page 8 1. Dogs 2. Weather 3. Drinks 4. Parts of the Face 5. Meats 6. Liquid Measurements 7. Landforms 8. Geometric Figures

page 9 1. inform (topple) 2. stamen (macaw) 3. pond (inform) 4. temple (stamen) 5. macaw (temple) 6. topple (pond)

page 10 Answers may vary. Possible: 1. They both sail in the air. 2. They both keep time. 3. You can read them both for the news. 4. They are both musical instruments with keys. 5. They are both enclosed bodies of water. 6. Cars can drive on both. 7. You can sleep on them. 8. You wear them on your head.

Examining Similarities

page 11 1. imaginary/make-believe 2. solid/liquid 3. allow/permit 4. terrier/retriever 5. here/hear 6. snake/reptile 7. stroll/walk 8. cord/lamp

page 12 1. E, 2. I, 3. F, 4. H, 5. A, 6. B, 7. J, 8. D, 9. G, 10. C

page 13 1. C, 2. A, 3. A, 4. C, 5. B, 6. C, 7. B, 8. A

page 14 1. C, 2. B, 3. A, 4. A, 5. C, 6. B, 7. B, 8. A

page 15 1. apple 2. hoe 3. goat 4. train 5. peninsula 6. mumps 7. lobster 8. period

page 16 1. C, 2. C, 3. B, 4. A, 5. C, 6. B, 7. C, 8. C

page 17 1. – 5. Students should note that in each analogy, the first item in the word pair is a part of the second item.

page 18 1. B, 2. A, 3. C, 4. A, 5. C, 6. A, 7. B, 8. B

page 19 1. A, 2. C, 3. B, 4. B, 5. B, 6. B, 7. A, 8. A

page 20 1. gas station 2. bird 3. skate 4. legislature 5. elevator 6. brood 7. castle 8. constellation

page 21 1. A, 2. C, 3. C, 4. A, 5. B, 6. B, 7. B, 8. B

page 22 1. B same class 2. C part/whole 3. C same class 4. B same class 5. A part/whole 6. B part/whole 7. C same class 8. C part/whole

page 23 1. numerous 2. rapidly 3. exotic 4. species 5. predator 6. emerge

page 24 1. A, 2. A, 3. C, 4. B, 5. A, 6. B, 7. C, 8. C

page 25 1. A, 2. B, 3. B, 4. B, 5. C, 6. A, 7. A, 8. B

page 26 1. state 2. consider 3. alter 4. tote 5. require 6. pleased 7. assist 8. kids

page 27 1. C, 2. C, 3. B, 4. A, 5. A, 6. B, 7. A, 8. C

page 28 1. B synonyms 2. A same class

3. B part/whole 4. C synonyms 5. C part/whole 6. B same class 7. A synonyms 8. C part/whole

page 29 1. dawn 2. late 3. hot 4. clean 5. down 6. good-bye

page 30 1. B, 2. C, 3. A, 4. A, 5. C, 6. B, 7. C, 8. B

page 31 1. B, 2. C, 3. A, 4. A, 5. A, 6. C, 7. B, 8. C

page 32 1. carelessness 2. bright 3. never 4. nonsense 5. complete 6. late 7. evening 8. include

page 33 1. C, 2. C, 3. A, 4. B, 5. A, 6. A, 7. B, 8. B

page 34 1. B part/whole 2. A synonyms 3. A antonyms 4. C same class 5. B synonyms 6. B antonyms 7. A part/whole 8. C antonyms

page 35 1. mane 2. grown 3. seen 4. two 5. whole 6. know 7. plain 8. flower 9. road 10. won 11. steal 12. hear 13. see 14. ant 15. through 16. dear

page 36 1. C, 2. A, 3. B, 4. C, 5. B, 6. A, 7. C, 8. B

page 37 1. C, 2. A, 3. A, 4. C, 5. B, 6. C, 7. A, 8. B

page 38 1. lessen 2. hoarse 3. wade 4. wring 5. would 6. peace 7. raise 8. pause

page 39 1. C, 2. A, 3. C, 4. A, 5. C, 6. C, 7. B, 8. A

page 40 1. B homophones 2. A antonyms 3. C same class 4. B homophones 5. C part/whole 6. A synonyms 7. B antonyms 8. C homophones

page 41 1. brown, purple 2. oak, spruce 3. swimming, soccer 4. violinist, drummer 5. poppy, iris 6. wrench, screwdriver 7. grape, watermelon 8. hill, valley

page 42 1. B, 2. A, 3. A, 4. C, 5. C, 6. C, 7. A, 8. B

page 43 1. B, 2. A, 3. A, 4. C, 5. B, 6. C, 7. B, 8. C

page 44 1. family 2. storm 3. rock 4. container 5. insect 6. fuel 7. river 8. musician

page 45 1. A, 2. B, 3. C, 4. B, 5. A, 6. B, 7. C, 8. A

page 46 1. A class and example 2. B synonyms 3. C same class 4. C antonyms 5. B homophones 6. C synonyms 7. A part/whole 8. B antonyms

page 47 1. A same class 2. C part/whole 3. B homophones 4. A antonyms 5. B same class 6. C class and example 7. B synonyms 8. A part/whole

48
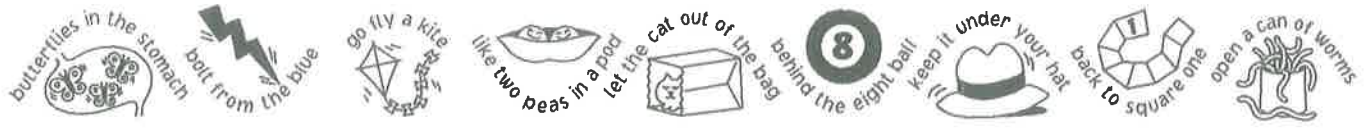
Glossary for Little Book of Animal Idioms

The following is an alphabetical list of all the idioms mentioned in this book. Many of the meanings come from the *Scholastic Dictionary of Idioms* by Marvin Terban (Scholastic, 1996), which features over six hundred idioms, their meanings, and their origins.

A

Add fuel to the fire to make a bad situation worse; to do or say something that causes more trouble, makes someone angrier

Air your dirty laundry in public to talk about your private disagreements or embarrassing matters in public, usually while quarreling

Albatross around your neck a very difficult burden that you can't get rid of or a reminder of something you did that was wrong

All ears eager to listen; sharply attentive; curious

All thumbs awkward and clumsy, especially with the hands

Ants in your pants extreme restlessness; overactivity

Apple of your eye a person or thing that is greatly loved, treasured, and adored

As the crow flies by the shortest and most direct route; measured in a straight, direct line between two places

Asleep at the switch not attending to one's job or failing to react quickly; not being alert

At the end of your rope at the limit of your ability, endurance, or patience to do something

B

Babe in the woods a person who is inexperienced; a naive, trusting person

Back to square one return to the beginning because of a failure to accomplish the desired result

Backseat driver a bossy person who tells another person what to do; a person who gives unwanted advice and directions

Bark is worse than your bite the way a person sounds is much more frightening than the way she or he acts; the threat is often worse than the action taken

Barking up the wrong tree to direct your attention or efforts toward the wrong person or thing; to have the wrong idea about something

Bats in your belfry a person who has crazy ideas or acts irrationally

Beat a dead horse to pursue a useless goal; to continue fighting a battle which has been lost; to keep arguing a point which has already been decided

Beauty is in the eye of the beholder there is no standard for beauty, so what one person likes or sees in someone or something is not necessarily what others see; different people have different opinions

Bee in your bonnet a crazy idea; an obsession with an idea

Beggars can't be choosers needy people have to take whatever they can get and cannot be concerned about the quality if they cannot afford to buy it for themselves

Behind the eight ball in trouble or out of luck; in a difficult position or in a bad situation with little hope of winning

Below par unsatisfactory; below expectations

Better half either partner in marriage

Between a rock and a hard place being in a very tight spot and faced with a difficult decision

Bird in the hand is worth two in the bush what you already have is better than what you might or might not get in the future; a guarantee is worth more than a promise

Birds of a feather flock together people who have things in common, such as interests and ideas, usually hang out together; people who are alike often become friends

Bite off more than you can chew to take on a task that is more than you can accomplish; to be greedy, overconfident, or too ambitious by taking on more jobs or responsibilities than you can deal with at one time

Bite the bullet prepare for an unpleasant experience; brace yourself to endure with courage something painful but necessary

Bite the dust to die; to fall in defeat; to fail to succeed

Bite the hand that feeds you to turn against someone who helps you; to do harm to someone who does good things for you

Black sheep of the family the most unsuccessful, least admirable member of a family or similar group; a disgraced person

Bleeding heart an extremely softhearted person who feels compassion or pity towards all people, including those who may not deserve sympathy

Blood is thicker than water one can expect more kindness from a family member than from a stranger; a person will do more for a relative than for anyone else

Blow your stack see *Hit the roof*

Blue blood of high or noble birth; an aristocrat; from the upper class of society

Bolt from the blue something sudden, unexpected, and shocking

Born with a silver spoon in your mouth born to wealth, comfort, and privilege

Bowl of cherries a wonderful, pleasant situation or position; an easy, comfortable life

Bring down the house to get an audience to clap enthusiastically or laugh loudly

Bug off to leave someone alone; go away; stop annoying someone

Bull in a china shop a clumsy person who deals too roughly with a delicate situation; a rough person who is near breakable things; a tactless person who says or does something that angers people or upsets their plans

Burn the candle at both ends to overwork yourself mentally or physically and until you're exhausted

Burn the midnight oil to stay up very late at night studying or working

Burn your bridges behind you to make a decision you cannot change; to commit oneself to a course of action

Burn yourself out to exhaust yourself by overworking physically or mentally

Bury your head in the sand to ignore danger by pretending you don't see it; to hide from obvious signs of danger

Busy as a beaver working very hard; extremely industrious

Busy as a bee see *Busy as a beaver*

Butter someone up to flatter someone; to try to get a favor by praising someone

Butterflies in the stomach a fluttery feeling in the stomach, usually caused by nervousness

Button your lip to stop talking; be quiet

Buy a pig in a poke to buy something without seeing or examining it

By the skin of your teeth by an extremely narrow margin; with practically no room to spare; just barely

C

Call it a day to stop work for the day; to bring a project to an end for the time being

Call the shots to make the decisions; to be in charge; to give orders

Can't see the forest for the trees to overlook the overall situation because of a focus on small details; to be so involved in details that you miss the whole picture

Cast the first stone to be the first to attack, blame, or criticize someone; to lead accusers against a wrongdoer

Cat got your tongue? Is there a reason that you're not speaking?

Catch someone red-handed to catch someone in the act of doing something wrong

Chew the fat to have a friendly, informal talk; to chat in a relaxed way
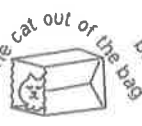
Chew up the scenery to overact; to exaggerate your emotions

Chicken feed a very small or insignificant amount of money

Chickens come home to roost words or actions come back to haunt a person; evil acts will return to plague the doer

Chip off the old block a child who resembles a parent in behavior, looks, or abilities

Clean as a hound's tooth completely free from dirt; perfectly neat (also *Clean as a whistle*)

Climb the walls to be frustrated or anxious during a challenging situation; to be unable to endure

Cold turkey the sudden stopping of any habit

Come up smelling like a rose to get out of a possibly embarrassing or disgraceful situation without hurting your reputation, and maybe even improving it

Cook your goose to put an end to; to ruin someone's plans

Cool as a cucumber very calm; not nervous or emotional

Cost an arm and a leg very expensive; high-priced, though possibly not worth the cost

Crocodile tears fake tears; false grief

Cross that bridge when you come to it don't predict problems until they actually happen; don't worry about future events now; don't deal with a difficulty until you have to

Cut off your nose to spite your face to injure yourself out of anger toward another; to make a situation worse for yourself when angry with someone

D

Dark-horse candidate a contestant about whom little is known and who wins unexpectedly

Dead as a dodo totally dead or hopeless; without a chance of success (also *Dead as a doornail*)

Dead duck a person who is ruined; a person or project unlikely to continue or survive

Dog days of summer the hottest and most humid days of summer, usually much of July and August

Dog-eat-dog world a way of life marked by fierce competition in which people compete ruthlessly for survival or success

Dog's life a bleak, harsh, terrible existence without much happiness or freedom

Don't count your chickens before they hatch don't count on profits before you earn them or have them in hand

Don't look a gift horse in the mouth don't complain if a gift is not perfect; take what you've been given without criticism or emphasis on its worth

Down in the mouth sad and depressed (also *Down in the dumps*)

Down the drain lost forever; wasted

Down the hatch swallow a drink in one gulp

Down-to-the-wire running out of time; at the very last minute

Dressed to the nines wearing fashionable clothing; dressed to attract attention

Drive you up the wall to make someone angry or confused; to make somebody very annoyed or frustrated

Drop you like a hot potato to get rid of something or somebody as quickly as possible

E

Eager beaver see *Busy as a beaver*

Early bird catches the worm a person who gets up early and starts a project ahead of others has the best chance of accomplishing his or her goal

Eat crow to be forced to do something very disagreeable; to acknowledge a mistake or defeat

Eat your heart out to feel extremely unhappy about a hopeless situation; to make yourself sick with grief and worry

Eat your words to have to take back what you said; to admit humbly that you were wrong

Elbow grease hard, energetic manual labor

Eleventh hour at the latest possible time, just before the absolute deadline

Every cloud has a silver lining there is something good in every bad situation

Everything but the kitchen sink practically everything there is; every possible object whether needed or not

Eye for an eye and a tooth for a tooth revenge or punishment exactly like the original crime or offense

Eyes in the back of your head ability to sense what is happening outside one's field of vision; ability to know what happens when one's back is turned

F

Face the music to endure the consequences of one's actions; to take what you have coming to you

Fat cat a wealthy person; a rich benefactor

Feel your oats to be in high spirits, energetic; to act in a proud way

Field day to have unlimited opportunities; to have it all your own way; to go all out and experience success at something

Fifth wheel an unneeded, extra person

Fish or cut bait do one thing or another, but stop delaying; make a choice; act now or give someone else a turn

Fish out of water a person who is out of his or her usual place; someone who doesn't fit in or is helpless in a situation

Fly by the seat of your pants to do something by instinct and feel without any earlier experience or instruction

Fly in the ointment a small annoyance that spoils an otherwise pleasant situation

Foam at the mouth to be uncontrollably furious, like a mad dog

Follow your nose to go straight ahead in the same direction

For the birds worthless; useless; stupid

Forty winks a short nap

Four corners of the Earth from all over the planet; all parts of a place

From soup to nuts the whole thing from beginning to end

Full of beans lively, happy and energetic, high-spirited

Full of hot air being foolish and talking nonsense; pompous; vain

G

Get a kick out of something to enjoy doing something; to get a thrill out of something

Get the pink slip to be fired

Get under your skin to bother or upset someone

Get your goat to annoy very badly; to make a person angry

Get your walking papers to be fired

Give me five to slap a person's hand as a hearty greeting or a sign of solid agreement

Give your eyeteeth for something to want something very badly; to be willing to give up something valuable to get something else

Go against the grain to oppose natural tendencies; to oppose a person's wishes or feelings; to cause anger

Go along for the ride to watch but not take part in an activity; to keep someone company

Go bananas to be or go crazy

Go climb a tree go away; leave; stop bothering me

Go fly a kite see *Go climb a tree*

Go fry an egg see *Go climb a tree*

Go jump in a lake see *Go climb a tree*

Go over like a lead balloon to fail miserably

Go over with a fine-tooth comb to search with great care or attention

Go to the dogs to decline in looks or health; to be ruined or destroyed; to ruin oneself
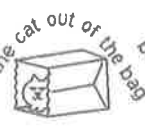
Go yellow to act cowardly

Gone to pot become ruined; to get worse and worse

Goody-two-shoes a person who thinks he or she is perfect and tries to be

Green thumb having a special talent for making flowers and green plants grow well

Green with envy extremely jealous

H

Hand-to-mouth existence to spend your salary as fast as it's earned without saving any for the future

Hard nut to crack a problem that's very difficult to understand or solve; a difficult person

Have other fish to fry to have other things to do; to not bother with one thing because you have more important things to accomplish

Have your cake and eat it too to spend or use something up but still have it; to have two things when you must choose one

Have your heart in your mouth to be extremely frightened about something

Head and shoulders above someone far superior; much better than

Head in the clouds absent-minded; daydreaming; lost in thought

Heart's in the right place to be well-meaning and kindhearted; to have good intentions even though mistakes occur

High horse acting superior and arrogant as if you were better than other people

Hit below the belt to use unfair tactics or be unsportsmanlike

Hit the books study school assignments carefully; prepare for classes by reading and doing homework

Hit the road to begin a journey, to leave

Hit the roof to lose your temper suddenly; to become violently angry

Hit the spot to fully satisfy and refresh, especially with food or drink

Hold your horses slow down; wait a minute; be patient

Hold your tongue struggle not to say something you want to say

Horse of a different color a different matter altogether; something from a different nature from that being noticed

Hot under the collar very angry; upset

I

If at first you don't succeed, try, try again don't give up; if you make a mistake you should keep working at it until you are successful

If the shoe fits, wear it If a remark applies to you, you should admit that it is true.

In a pickle see *Behind the eight ball*

In hot water in serious trouble or in an embarrassing situation with someone of authority

In the doghouse in disgrace or dislike; facing punishment

In the driver's seat in control; in the position of authority

In the pink in excellent health physically and emotionally

It takes two to tango two people are required to accomplish this deed

J

Jump down your throat to talk or scream at someone in a sudden, angry way

Jump on the bandwagon to become part of the newest activity because many other people are

K

Keep something under your hat to keep something secret

Keep your ear to the ground to pay attention and be well-informed

Keep your fingers crossed to wish for good luck and success for someone or something

Keep your head above water to earn enough to stay out of debt and avoid financial ruin; to do just enough to keep up with all of one's responsibilities

Keep your nose to the grindstone to force oneself to work hard all the time; to always keep busy

Kill the goose that lays the golden eggs to spoil or destroy something good out of stupidity, greed, or impatience

Kill two birds with one stone to do two things by one action; to get two results with just one effort

Knee-high to a grasshopper very young and, therefore, very short

59

L

Laugh out of the other side of your mouth to be made to feel sorrow, annoyance, or disappointment after you felt happy; to cry at a change in luck after experiencing some happiness

Lay an egg to give an embarrassing performance

Leave no stone unturned to make all possible efforts to carry out a task or search for someone or something

Lend an ear to listen and pay attention to

Let sleeping dogs lie to not make trouble if you don't have to; to not make someone angry by stirring up trouble

Let the cat out of the bag to give away a secret

Like two peas in a pod identical; alike in looks and behavior

Little pitchers have big ears little children, listening to the conversations of older people, often hear and understand a lot more than people give them credit for

Live high off the hog to live in a rich style and own lots of expensive things

Lock the barn door after the horse is out to take careful precautions to do the right thing after it is too late

Long in the tooth old; aged

Look down your nose at someone to think of and treat people as if they were lower in quality or ability

Look what the cat dragged in a person who looks disheveled; the arrival of an unwanted person

M

Mad as a wet hen very upset; extremely angry; ready to fight

Make a mountain out of a molehill to turn a small, unimportant issue into a big, important one; to exaggerate the importance of something

Make a silk purse out of a sow's ear to create something valuable or beautiful out of something practically worthless or ugly

Make hay while the sun shines to make the best of a limited opportunity

Make it by a nose to succeed at the very last moment

Make waves to cause trouble; to upset matters; to create a disturbance

Make your mouth water to look so attractive and desirable that it makes you want to have it very much; to want to eat or drink something that looks or smells delicious

Monkey business silliness or fooling around; dishonest or illegal activities; idiotic pranks

More than meets the eye there are hidden facts that can't be seen or understood right away

More than one way to skin a cat there are several different ways of reaching the same goal

N

Name is mud the person is in trouble, possibly doomed and worthless

Need something like a hole in the head to have no need for something at all

Need something like a third leg see *Need something like a hole in the head*

Needle in a haystack something hard or impossible to find; anything hopeless (in a search)

No skin off your nose of totally no concern to you whatsoever; it doesn't matter to you one way or the other

No spring chicken not young anymore

O

Off the beaten track (path) not well-known or used; an unfamiliar location; unusual; different

Off the top of your head stating something quickly and without thinking hard about it

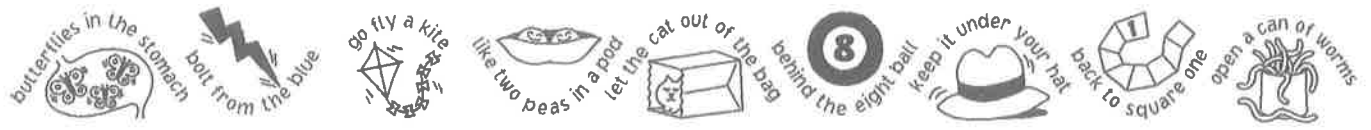**Off-the-wall** shocking; very unusual

Off your rocker crazy; silly, foolish; not thinking correctly

Old wives' tale a superstition; a belief or practice not based on fact

On cloud nine blissfully happy; joyous

On pins and needles waiting anxiously for something; extremely nervous; in great suspense

On the ball alert; effective; skillful; knowledgeable

On top of the world feeling extremely happy

Once bitten, twice shy when something bad happens to you, you will think twice before putting yourself in the same situation

Once in a blue moon almost never; very seldom; hardly ever

One good turn deserves another one good deed should be paid back with another

One-horse town a place with few comforts and activities; a dull rural town

One-track mind always thinking about only one subject

Open a can of worms to cause trouble; to set unpleasant events in motion

Out in left field unusual; crazy; totally wrong

Out of sight, out of mind if you don't see something for a long time, you'll eventually stop thinking about it

Out of the clear blue sky suddenly and without any warning; totally unexpectedly

Out of the frying pan and into the fire from a bad situation into one that is worse

Out of the mouths of babes children can unexpectedly say very intelligent things

Out of the woods safe from trouble or danger

Out on a limb taking a chance; in a dangerous position from which it is hard to withdraw or change

Over a barrel helpless; in someone's power; at a disadvantage

Over the hill past one's prime; unable to function as one used to; too old

Over your head a risky situation that will lead to certain failure; beyond your ability to understand something

P

Pay through the nose to pay too much for something

People who live in glass houses shouldn't throw stones you should not criticize others if you are just as bad as they are

Picture is worth a thousand words to actually see or experience something is much better than to merely have it described to you

Pie in the sky something not possible; an unrealistic hope

Play both ends against the middle to pit two opponents against each other in such a way as to benefit yourself; to use each of two sides for your own purpose

Play cat and mouse to fool or tease someone by pretending to let her or him go free and then catching her or him again

Play second fiddle to be a follower; to be in an inferior position

Play with fire to take an unnecessary and dangerous risk; to court danger

Poor as a church mouse very poor; poverty-stricken

Pot calling the kettle black the person criticizing another person's faults is guilty of the same faults himself or herself

Power behind the throne the actual, but unrecognized, person in charge

Pull a rabbit out of a hat to produce something that is needed as if by magic; to unexpectedly find a solution to a problem

Pull the wool over your eyes to fool, deceive, or trick someone

Pull your leg to tease or fool someone; to jokingly try to lie to somebody

Pull yourself together to regain control over one's emotions and become calm after being very upset

Put all your ducks in a row to organize or finish things before moving on to something else

Put the cart before the horse to do things in the wrong order

Put your money where your mouth is to be willing to bet on or invest your money in something you support or believe in

Q

Quick on the draw ready, alert, and quick to respond or react; mentally fast; quick to grasp information; touchy, sensitive

Quiet as a mouse silent or still; making very little noise; saying nothing; hushed, subdued

R

Raining cats and dogs to rain very heavily; to pour

Raise the roof to be very angry, complain loudly, and make trouble

Rat race a fierce, unending, stressful competition in business or society

Rats abandoning a sinking ship disloyal people who desert a failing enterprise before it's too late

Read between the lines to discern the true, hidden meaning or fact in any document or action

Red-carpet treatment great respect and hospitality given to someone important; special treatment

Red herring something deliberately misleading to divert your attention from the main subject; something irrelevant that confuses an issue

Red-letter day a day remembered as especially happy and significant

Red tape excessive formality and time-consuming, rigid adherence to rules and regulations

Right off the bat immediately, spontaneously, and without delay

Rock the boat to make trouble and disrupt a stable situation; to risk spoiling a plan; to create a disturbance

Rome was not built in a day a difficult or important goal or task cannot be achieved quickly or all at once

Rotten apple spoils the barrel one bad person or thing may spoil an entire group

Rub the wrong way to annoy and irritate someone; to handle someone insensitively

Run circles around someone to easily do something far better than someone else

Run off at the mouth to talk too much; to talk nonstop

S

Save for a rainy day to save for a time of need; to put something away for the future

Saved by the bell rescued at the last possible moment from an embarrassing or dangerous situation

Scarce as hen's teeth very, very rare or totally nonexistent

See eye to eye to agree fully; to have the same opinion

See a pink elephant to get so drunk you see things that don't exist

Sell like hotcakes to sell quickly, effortlessly, and in quantity

Seventh heaven being in an emotional state of extreme happiness

Shake a leg to hurry up; to go faster; to speed up

Shoot the breeze see *Chew the fat*

Sick as a dog very sick; suffering miserably without an ailment

Sight for sore eyes a most welcome, unexpected sight; a pleasant surprise

Sink or swim to fail or succeed by one's own efforts without anyone's help or interference

Sitting duck someone or something likely to be attacked and unable to put up a defense

Six of one and a half dozen of the other one and the same; nothing to choose between; equal

Skate on thin ice to take a big chance; to risk danger; to start out on a hazardous course of action

Skeleton in your closet a shameful and shocking secret that people try to keep hidden

Smell a rat to be suspicious; to feel that something is wrong

Smell something fishy see *Smell a rat*

Snug as a bug in a rug cozy and comfortable; safe and secure

Spare the rod and spoil the child to physically punish children when they misbehave so they'll learn to behave properly in the future

Spill the beans to give away a secret to someone who is not supposed to know it

Spitting image a perfect resemblance; an exact likeness

Still waters run deep somebody can be more knowledgeable or emotional than he or she first appears to be; a silent person may be intelligent

Stir up a hornet's nest to make many people furious; to cause trouble
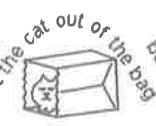
Straight from the horse's mouth directly from the person or place that is the most reliable source or the best authority

Straighten up and fly right to stop behaving foolishly and start acting serious

Strike a happy medium to find a compromise to a problem; to find a sensible solution midway between two opposite desires

Strike while the iron is hot to act at the most favorable time or moment to get the best results; to take advantage of favorable conditions

Swallow hook, line, and sinker to believe a story completely without questioning it; to be very gullible

Swan song the final, farewell performance of an actor or singer; one's last words or actions

Sweep you off your feet to make a favorable impression; to affect with strong emotion or enthusiasm; to overcome someone with feelings of love or happiness so strong that he or she can't resist you

T

Take a backseat to be in an inferior position; to take second place to another person who is in control

Take someone under your wing to help, guide, or protect someone

Take the bull by the horns to act bravely in a troublesome situation; to face up to a difficult challenge by taking decisive action

That's the way the ball bounces that's the way life is; that's fate; things sometimes turn out a certain way and you can't do anything about it

That's the way the cookie crumbles see *That's the way the ball bounces*

Throw a monkey wrench into the works to interfere with a smoothly running operation; to upset something in progress

Throw the baby out with the bathwater to lose or throw out something valuable or useful when getting rid of something that is useless

Throw the book at someone to punish severely for breaking rules or the law; to give the maximum penalty

Tickled pink to be very amused or pleased; to be delighted, entertained, or extremely happy

Till the cows come home for a long, long time

Too many cooks spoil the broth a project is set back rather than helped by too many organizers; the more people who work on one project, the worse it will turn out

Top banana the leading comedian in a variety show; a boss

Touch and go very risky, uncertain, or critical

Touch something with a ten-foot pole to avoid at all costs; to stay far away from a difficult problem

True-blue very loyal, dependable, and faithful

Turn up your nose at someone to regard something with haughtiness; to be snobby; to show that someone or something is not good enough for you

Two-faced false; dishonest

Two's company, three's a crowd when you would like to do something with just one other person, a third participant would be unwelcome

U

Up a creek without a paddle in deep trouble and unable to do anything about it; in serious trouble

Up against the wall in big trouble; in a difficult or desperate situation

Upset the applecart to spoil or interfere with a plan; to obstruct progress; to mess everything up by surprise or accident

W

Walk on eggs to be very cautious; to proceed warily

Walking on air to be exuberantly happy, excited, and joyful

Watched pot never boils when waiting anxiously or impatiently for something to happen, it seems to take much longer

Water under the bridge something that happened in the past; it's too late to worry about something that already happened

Wear your heart on your sleeve to show one's emotions and feelings openly

Wet behind the ears young, inexperienced, and immature

What's good for the goose is good for the gander a rule or method of treatment that applies to one person or group must also apply to others, especially your mate

When the cat's away, the mice will play when the person in charge is absent, people will usually do as they please and take advantage of the freedom

Where there's smoke, there's fire there is always a basis for a rumor, no matter how untrue it appears; suspicious things usually mean that something is wrong

White elephant any possession that is useless, unwanted, or costs a lot of money to keep

Wild-goose chase a useless or hopeless search, especially because something does not exist or can't be found

Wolf in sheep's clothing somebody who appears to be harmless but is really dangerous

Word of mouth by one person telling another; by speaking, rather than writing

Y

You can lead a horse to water but you can't make him drink you can encourage, but not force, someone to do something

You can't teach an old dog new tricks people who find it difficult or impossible to change their ways or adjust to new ideas

Z

Zipper your mouth see *Button your lip*

Answers

Page 51
1. Bite the bullet
2. Wild-goose chase
3. Everything but the kitchen sink
4. Up the creek without a paddle
5. Go over with a fine-tooth comb
6. Don't open a can of worms
7. On cloud nine
8. Butterflies in the stomach
9. If at first you don't succeed, try, try again
10. Let the cat out of the bag
11. Chip off the old block
12. Make hay while the sun shines

Page 52
1. Hit the roof
2. In the driver's seat
3. Shoot the breeze
4. Don't count your chickens before they've hatched
5. Go fly a kite
6. Rock the boat
7. Bats in your belfry
8. Cost an arm and a leg
9. Take a backseat
10. Go against the grain
11. That's the way the ball bounces
12. Out of the clear blue sky

Page 53
1. fry an egg
2. skin a cat
3. hatch
4. spoil the broth
5. run deep
6. eat it too
7. make him drink
8. fly right
9. come to it
10. swim
11. throw stones
12. spoil the child
13. come home
14. spite your face
15. be choosers

Page 54
1. 6
2. 9
3. 1
4. 8
5. 40
6. 1
7. 2
8. ½
9. 2
10. 4
11. 5
12. 9
13. 1
14. 10
15. 2
16. 11
17. 5
18. 1,000
19. 2
20. 1

21. 0.25
22. 0.9
23. 0.178
24. 0.48
25. 0.067

Arithmetic Logic

1. $4 + 3 - 2 + 1 = 6$
2. $(9 \times 2) \div 6 + 1 = 4$ or
   $(9 + 2) - 6 - 1 = 4$
3. $(7 + 9) \div 4 - 3 = 1$
4. $[(8 \div 4) \times 3] - 4 = 2$
5. $(1 \times 2) + 4 + 3 = 9$
6. $[(3 + 8) - 7] \times 2 = 8$
7. $12 \times 3 \div 9 + 8 = 12$
8. $[(15 \div 3) - 4] \times 7 = 7$ or
   $[(15 + 3) - 4] - 7 = 7$
9. $1 + 4 + 6 - 8 = 3$
10. $2 \times 2 \times 2 - 2 = 6$
11. $(40 + 10) \times 2 - 30 = 70$
12. $20 - 10 + 60 + 20 = 90$
13. $90 \div 2 \div 5 + 1 = 10$
14. $60 \div 4 + 5 - 5 = 15$
15. $6 \times 5 \times 2 - 10 = 50$
16. $12 + 8 + 20 - 5 = 35$
17. $55 \times 2 - 10 + 20 = 120$
18. $75 - 25 + 15 - 10 = 55$
19. $80 \div 8 \times 2 \times 2 = 40$
20. $10 \times 10 \div 20 + 15 = 20$
21. $(136 - 20) \times 2 - 100 = 132$
22. $51 \div 3 + 12 - 1 = 28$
23. $164 \div 4 \times 2 + 27 = 109$
24. $88 \times 2 \div 4 - 10 = 34$
25. $100 \div 5 + 35 - 7 = 48$
26. $(0.75 - 0.30) \times 2 + 0.10 = 1.00$
27. $\frac{1}{2} - \frac{1}{6} + \frac{1}{5} = \frac{8}{15}$
28. $2 \times \frac{9}{10} - 1\frac{1}{3} = \frac{7}{15}$
29. $4 \times 0.25 + 0.10 - \frac{1}{2} = 0.6$
30. $[(\frac{2}{3} + \frac{1}{2}) - \frac{1}{4}] \times 2 = 1\frac{5}{6}$
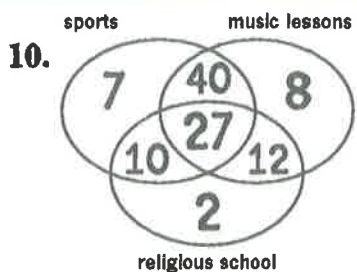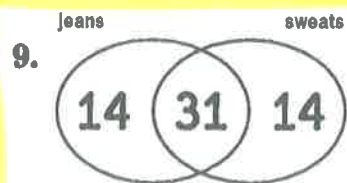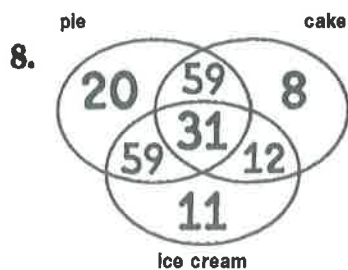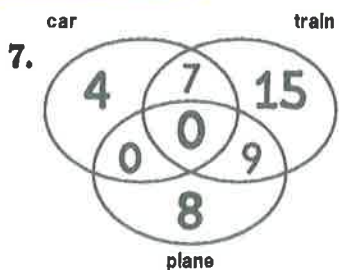
Logic with a Matrix

1. Jessie: skim milk; Sandy: orange juice; Jamie: spring water
2. MaryBeth: python; Elizabeth: parrot; Beth: chameleon
3. Melissa: problem about Warren; John: problem about Matilda; Chau: problem about Evelyn
4. Doug: Ms. Carr; Matt: Mr. London; Jonah: Dr. Saunders; Jenny: Ms. Parsons
5. Grade 1: swimming pool; Grade 2: pond; Grade 3: ocean; Grade 4: lake
6. Peter: drama; Janice: science fiction; Andrew: comedy; Samuel: westerns
7. Marie: 12 km; Brian: 7 km; Sally: 10 km; Freddy: 11 km; Patricia: 5 km
8. Gordon: 4 hours, 40 minutes; Nikki: 3 hours, 45 minutes; Candi: 6 hours, 15 minutes; Stefanie: 5 hours, 20 minutes
9. Chau: Mountain Climb; Melinda: Tilt-a-Whirl; Hannah: Swamp Coaster; Petra: Ferris Wheel; Benita: Wild Grizzly
10. Camille: accountant; Josie: attorney; Beth: salon; Mike: teacher
11. Serena: *Charlie and the Chocolate Factory;* Matthew: *Tales of a Fourth Grade Nothing;* Jacob: *A Wrinkle in Time;* Dexter: *Stuart Little*
12. Felicity: December 26; Monroe: January 2; Belinda: July 5; Wyatt: February 15; Brook: March 18
13. Brian: 4782 + 999; Henry: 1644 + 777; Ernest: 827 + 699; Chrisopher: 508 + 948; Peter: 479 + 1356.
14. Julie: 6 times; Kim: 9 times; J. M.: 11 times; Robbie: 2 times; Matthew: 7 times; David: 5 times
15. Mikhael: 523-8199; Sondrah: 356-1178; Charleen: 631-2140; Yolanda: 817-3624
16. Kevin: Sport, can stand on only two legs with the other two in the air; Earl: Bozo,

can jump over a barrel; Marvin: Harry, can jump through a hoop

17. Wanda: blue, Georgetown University; Rita: green, Brown University; Barb: red, Washington University; Greta: white, Rhode Island State University

18. First week: Baltimore; second week: Atlanta; third week: Charlotte; fourth week: Washington; fifth week: Omaha; sixth week: Kansas City; seventh week: Seattle; eighth week: Denver

Logic Using a Venn Diagram

1.
chocolate chip · fudge swirl

5 · 9 · 8

2.
soccer · basketball

19 · 16 · 25 · 8 · 7 · 11 · 26
softball

3.
dogs · cats

12 · 2 · 8 · 7 · 12 · 6 · 3
fish

4.
beach · sleepover camp

11 · 11 · 16 · 1 · 2 · 5 · 4
hiking in the mountains

5.
pizza · subs

20 · 3 · 15 · 9 · 4 · 7 · 10
hamburgers

6.
Sureshine · Mint-o

14 · 10 · 15 · 6 · 20 · 2 · 33
Blast

7.
car · train

4 · 7 · 15 · 0 · 0 · 9 · 8
plane

8.
pie · cake

20 · 59 · 8 · 59 · 31 · 12 · 11
ice cream

9.
jeans · sweats

14 · 31 · 14

10.
sports · music lessons

7 · 40 · 8 · 10 · 27 · 12 · 2
religious school
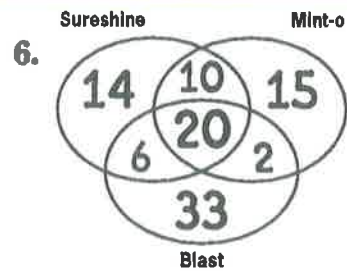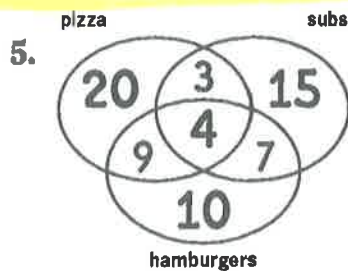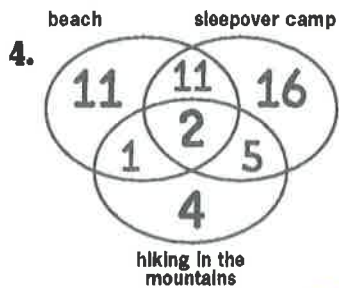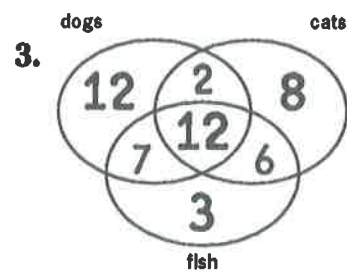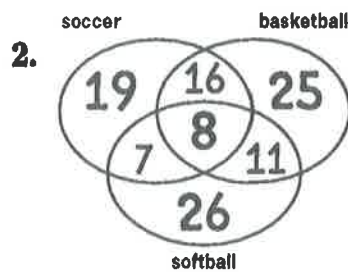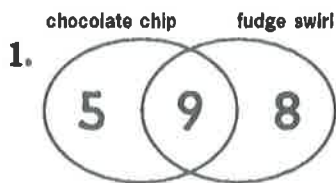
Answers

2. 12, ÷
3. 38, –
4. 64, x
5. 256, x
6. 166, +
7. 378, –
8. 480, ÷
9. 29, ÷

PAGE 19: *Meanie Genie*

Jake and **Daniela** should be circled *yes* because all their answers were correct! Cecilia is no, because she got the third equation wrong. 30 – 10 ÷ 2 = 25 (not 10).

PAGE 20: *Get the Scoop!*

1. Zaura—7 scoops
2. Ellis—18 scoops
3. Clara—18 scoops
4. Darby—15 scoops
5. Chang—7 scoops
6. Thelma—26 scoops
7. Deon—14 scoops
8. Gabriela—44 scoops

Gabriela is the new champion!

PAGE 21: *The Number Shuffle*

2. 390 + 876 = **1,266**
3. 486 + **1,266** = **1,752**
4. **1,752** – 654 = **1,098**
5. **1,098** x 3 = **3,294**
6. 6,402 – **3,294** = **3,108**
7. 59 + 150 = **209**
8. 150 – 79 = **71**
9. 639 + **71** = **710**
10. **710** – 560 = **150**
11. **150** ÷ 30 = **5**
12. 85 – **5** = **80**

PAGE 22: *A-Maze-ing!*

START					
18 + 0	54 + 3	32 ÷	36 +	48 +	98 +
42 +	9 x 2	20 +	12 x	54 +	9 –
19÷	4 + 14	19 +	15 –	4 x	22 +
25 +	108 + 6	21 – 3	38 +	16 –	96 +
15 –	0 x	18 – 0	36 + 2	36 – 18	100 +
3 –	26 +	78 +	8 x	2 x 9	14 x
7 x	28 +	24 +	56 ÷	199 – 181	17 –
64 +	92 +	12 –	44 +	18 x 1	702 + 39
10 x	36 x	30 +	11 x	146 ÷	3 x 6
					FINISH

PAGE 23: *Lights, Camera, Action!*

1. 100   101   (102)   106
2. 63   (36)   26   16
3. 129   188   208   (192)
4. (5)   6   18   4
5. 80   (82)   83   85
6. 199   145   (198)   186
7. 80   (82)   83   85

---

8. (294)   298   268   283
9. 5,243   5,657   (5,776)   6,557
10. 1,772   (1,773)   1,779   1,777
11. 3,333   3,395   (3,325)   3,345
12. 116   118   113   (114)

Your Turn 53

PAGE 24: *Reaching the Top*

1. 586 ÷ 8 does not equal 86
2. 1,644 ÷ 68 does not equal 34
3. 259 ÷ 3 does not equal 65
4. 64 – 48 does not equal 15

José climbed the highest.

PAGE 25: *Harvest Riddle*

1. 64,8 (addition 72, subtraction 56, multiplication 512, division 8)
2. 18,3 (addition 21, subtraction 15, multiplication 54, division 6)
3. 35,7 (addition 42, subtraction 28, multiplication 245, division 5)
4. 6,0 (addition 6, subtraction 6, multiplication 0, division 0)

60	9	258	130	1
12	56	15	512	182
19	54	79	6	14
25	5	28	72	76
168	8	44	245	954
201	42	0	21	26
55	87	4	34	51

A harvestman, otherwise known as a daddy longlegs, is an arachnid that has 8 legs.

PAGE 26: *Three's a Charm*

	Evenly spaced trio	How many apart from one another?
2.	29, 36, 43	7
3.	18, 34, 50	16
4.	11, 46, 81	35
5.	63, 142, 221	79
6.	37, 58, 79	21
7.	13, 64, 115	51
8.	2,218; 2,323; 2,428	105

PAGE 27: *Find the Bookend*

	Which number belongs?	Beginning or end?	Description of pattern
2.	0	beginning	increases by 5
3.	3	beginning	increases by 5
4.	36	end	increases by 2, then 6, then 2, then 6, and so on
5.	27	end	decreases by 4
6.	123	beginning	decreases by 7
7.	7	end	+2, –1
8.	105	end	decreases by 1, increases by 8
9.	33	beginning	number added increases by one each time
10.	50	end	numbers decrease by half

PAGE 28: *Abracadabra!*

Group 1: All numbers have the exact same digits (in different orders), except these: 625 (Set A); 3,441 (Set B); 4,596 (Set C); 28,076 (Set D)

Group 2: All numbers are in reverse order, except these: 89 (Set A); 954 (Set B); 2,310 (Set C); 56,432 (Set D)

Group 3: The third digit is twice the first digit, except these: 170 (Set A); 781 (Set B); 172 (Set C); 201 (Set D)

PAGE 29: *Pyramid Challenge*

1. increases by 5 (missing numbers: 34, 54, 79)
2. increases by 7, then 2, then repeats (missing numbers: 0, 34, 45, 70)
3. decreases by 3 (missing numbers: 85, 70, 61, 55, 49)
4. decreases by 1, increases by 6, then repeats (missing numbers: 36, 46, 56, 61, 65)

Your Turn Pattern is ÷ 4, x 8, ÷ 4, x 8, etc. (missing numbers: 96, 48, 768, 384)

PAGE 30: *Think Ahead*

	A	B
2.	88	89
3.	222	234
4.	444	456
5.	77	789
6.	1,111	1,234
7.	3,333	2,345
8.	6,666	6,789
9.	8,888	8,910
10.	11,111	12,345

PAGE 31: *Hit the Road*

2. (1)27 = 27 ÷ 9 = 3
3. (2)63 = 63 ÷ 9 = 7
4. 1,3(9)5 = 135 ÷ 9 = 15
5. 1,(8)80 = 180 ÷ 9 = 20
6. 3,(2)06 = 306 ÷ 9 = 34
7. 5,(3)85 = 585 ÷ 9 = 65
8. 2(0),151 = 2,151 ÷ 9 = 239
9. 28,53(1) = 2,853 ÷ 9 = 317
10. (9)4,122 = 4,122 ÷ 9 = 458

Your Turn All the digits in a number evenly divisible by 9 (or a multiple of 9), add up to 9 (or a multiple of 9. E.g., 2,151 ÷ 9 = 239 and 2 + 1 + 5 + 1 = 9

PAGE 32: *Sum Good Facts*

1. 4 + 8 = 12
2. 12 + 36 = 48
3. 27 + 32 = 59
4. 63 + 27 = 90
5. 45 + 72 = 117, in 1931
6. 12 + 48 + 90 = 150

Answers

PAGE 33: *STRENGTH in Numbers*

1=A	6=F	11=K	16=P	21=U	26=Z
2=B	7=G	12=L1	17=Q	22=V	
3=C	8=H	3=M	18=R	23=W	
4=D	9=I	14=N	19=S	24=X	
5=E	10=J	15=O	20=T	25=Y	

2. $14 + 9 + 14 + 5 > 19 + 5 + 22 + 5 + 14$ (42 > 65?) false
3. $20 + 23 + 15 > 15 + 14 + 5$ (58 > 34?) true
4. $20 + 23 + 5 + 12 + 22 + 5 > 5 + 9 + 7 + 8 + 20$ (87 > 49?) true
5. $5 + 9 + 7 + 8 + 20 + 25 > 19 + 9 + 24 + 20 + 25$ (74 > 97?) false
6. $6 + 9 + 6 + 20 + 25 > 20 + 8 + 9 + 18 + 20 + 5 + 5 + 14$ (66 > 99?) false
7. $20 + 8 + 9 + 18 + 20 + 25 + 15 + 14 + 5 > 20 + 23 + 5 + 14 + 20 + 25 + 15 + 14 + 5$ (134 >141?) false
8. $19 + 5 + 22 + 5 + 14 + 20 + 25 + 6 + 15 + 21 + 18 > 6 + 15 + 18 + 20 + 25 + 19 + 5 + 22 + 5 + 14$ (170 > 149?) true

PAGE 34: *Prime Time for Prime Numbers*

8 P.M.: Everybody Leaves Richard **3**; Just Tell Me **43**; Shipwreck **73**; Doherty, Utah Baker **7**
9 P.M.: WWF—World Whispering Federation **89**; Little Horse on the Prairie **29**; America's Most Washed **47**
10 P.M.: RSVP Yellow **97**; Danger **41**; Fries to Order **2**
Your Turn 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

PAGE 35: *Little Number, BIG Impact*

2. 6^3 7. 3^7
3. 8^2 8. 11^4
4. 9^3 9. 25^3
5. 2^6 10. 47^3
6. 4^5

PAGE 36: *Tic-Tac-Decimal*

2.
2.0	3.1	1.7
6.2	3.5	(6.8)
5.4	2.1	1.2

3.
6.3	9.3	(18.9)
13.9	7.1	12.3
5.6	2.5	3.5

4.
12.3	(43.4)	16.7
13.4	15.1	14.9
41.5	8.6	36.8

5.
20.9	11.7	30.6
3.5	(65.9)	8.2
5.0	5.4	17.1

6.
10.2	9.7	.33
3.4	.29	.5
.46	2.1	(1.09)

PAGE 37: *Defying Physics*

2.
	6.5	
	.7	1.4	3.0
.17	(6)	.89	.22	.12

3.
	11.99	
	6.1	2.0	(41)
.18	1.6	.2	1.35	.1

4.
	7.15	
	(5.1)	.7	.32
4.3	.34	.3	.75	.44

5.
		6.55		
	.98	38	34	
	.115	.27	(1.30)	20	30
.23	.432	56	.01	1.1	1.23	.4

6.
		16.5		
	.45	.675	1.4	
	2.13	33	.18	.02	4.1
(18)	.09	1.3	.77	945	3.2	.88

PAGE 38: *Puzzle Time*

PAGE 39: *Time for a Laugh*

2. (L) 2.38   6. (O) 5.67   10. (V) 53.7
3. (E) 5.52   7. (N) 4.65   11. (H) 0.08
4. (V) 0.21   8. (S) 4.4   12. (E) 20.53
5. (W) 4.4   9. (T) 0.25

Riddle Answer:

T	W	E	L	V	E		M	O	N	T	H	S
1	5	3	2	4	12		10	6	7	9	11	8

PAGE 40: *Get Cracking!*

Number of pieces =
2. $\frac{1}{5}$ weight
3. $\frac{1}{4}$ of square footage
4. $\frac{1}{3}$ age
5. $\frac{3}{4}$ size of monitor in inches
6. $\frac{3}{5}$ of height
7. $\frac{7}{8}$ of size
8. $\frac{2}{3}$ number of panes overall

PAGE 41: *Balloon Journey*

2. yellow traveled 580 + 435 = 1,015 miles
3. purple traveled 234 + 156 = 390 miles
4. green traveled 702 + 546 = 1,248 miles
5. orange traveled 693 + 594 = 1,287 miles
6. blue traveled 714 + 119 = 833 miles
7. **white traveled the farthest:** 820 + 656 = 1,476 miles
8. black traveled 368 + 322 = 690 miles
9. pink traveled 125 + 50 = 175 miles
10. silver traveled 600 + 100 = 700 miles

PAGE 42: *Fraction Action*

The answer is $\frac{1}{3}$.

Start →	24	72	108	144	216	648
						822
						852
1,512	1,500	1,392	1,296	1,200	1,050	924
1,776						
1,806						
1,920	2,028	2,061	2,343	2,586	3,435	4,356
						Finish

$\frac{1}{8}$ is out

$\frac{1}{4}$ is out

$\frac{1}{6}$ is out

PAGE 43: *Out of This World*

1. LCD = 45, 14, 42, 36, 20; PLUTO
2. LCD = 48, 56, 45, 36, 42, 48, 56; NEPTUNE
3. LCD = 10, 12, 36, 42, 60, 48; SATURN

PAGE 44: *Improper Ages*

Algie—$5\frac{1}{2}$ Elbie—12
Rusie—$3\frac{4}{9}$ Matia—$2\frac{1}{2}$
Oma—$3\frac{3}{5}$ Hecta—$4\frac{6}{11}$
Newtie—$3\frac{1}{2}$ Octo—$4\frac{1}{2}$
Lola—$7\frac{1}{2}$ Velo—$6\frac{1}{2}$

The oldest citizen is Elbie who is 12.
The youngest is Matia who is $2\frac{1}{2}$.
In two years Algie will be $\frac{15}{2}$ on Numerdenominaria and $7\frac{1}{2}$ on Earth.

PAGE 45: *Everything Must Go!*

	Evenly divisible by	Price after sale
2.	22, 29	$350
3.	14	$525
4.	12, 15, 20	$520
5.	12, 15, 20	$560
6.	27	$408
7.	20	$310
8.	13	$780

Dry 'N White 1400

PAGE 46: *Get With the Team*

	Total votes	Percentage that voted yes	Did it pass?
2.	17	45%.	No
3.	29	76%	Yes
4.	31	82%	Yes

Answers

PAGE 47: *Dino Bone Zone*

Percentage of skeleton that is complete

2. 249/480 bones = 52% complete   6
3. 10/18 bones = 55% complete   5
4. 185/445 bones = 42% complete   7
5. 56/455 bones = 12% complete   8
6. 356/377 bones = 94% complete   1
7. 297/351 = 85% complete   3
8. 176/271 = 65% complete   4

PAGE 48: *Milk Money*

2. Jacob—14 days ($10.95 ÷ .80)
3. Louis—50 days ($17.50 ÷ .35)
4. Molly—50 days ($20.00 ÷ .40)
5. Ralph—106 days ($26.47 ÷ .25)
6. Rosita—120 days ($59.99 ÷ .50)
7. Tyrone—21 days ($15.75 ÷.75)
8. Karen—217 days ($65.00 ÷ .30)

PAGE 49: *Money Matters*

2. chocolate ($10.80) more than gum ($10.29)
3. apples ($7.50) more than bananas ($7.00)
4. pasta ($13.08) more than soup ($8.90)
5. lettuce ($26.00) more than cucumbers ($20.70)
6. batteries ($59.85) more than bulbs ($48.07)
7. running shoes ($126.00) is more than shirts ($110.25)
8. party dresses ($195.00) is more than ties ($189.00)

PAGE 50: *Find Your Way Out*

One kilometer is 1,000 meters, which is a little less than a mile (.62 of a mile, to be exact.) The total number of meters walked must be divided by 50, because the explorers will drop one item every 50 meters.

1. Jesse—yes; 3 km = 3,000 meters
3,000 ÷ 50 = 60 items needed
2. Warner—no; 2 km = 2,000 meters
2,000 ÷ 50 = 40 items needed
3. Mara—yes; 2.5 km = 2,500 meters
2,500 ÷ 50 = 50 items needed
4. Brianne—yes; 1,000 meters
1,000 ÷ 50 = 20 items needed
5. Sylvia—no; 4 km = 4,000 meters
4,000 ÷ 50 = 80 items needed
6. Tomas—no; 7 km = 7,000 meters
7,000 ÷ 50 = 140 items needed
7. Alex—yes; 1.25 km = 1,250 meters
1,250 ÷ 50 = 25 items needed
8. Jud—no; 2.75 = 2,750 meters
2,750 ÷ 50 = 55 items needed
9. Nathan—no; 1.5 km = 1,500 ÷ 50 = 30 items needed
10. Livia—no; 3.5 km = 3,500 ÷ 50 = 70 items needed

PAGE 51: *Guess Your Best*

2. 56?8   5. 79?62
3. 96?14   6. 47?57
4. 3?162

PAGE 52: *Mark and Darcy's Game*

1. 15, 18
2. 15, 17, 18 or 20, 15, 15
3. 25 twice; or 20, 30; or 15, 35
4. no, the highest he could get in 3 tosses with no bull's eye is 120
5. yes, because no two numbers on this board could add up to 95
6. 17, 27, 37 or 33, 33, 15

PAGE 53: *On the Wall*

1. five years from 2000–2005
2. 2001: Sandra; 2002: Sandra; 2004: Noah
3. 2000: Sandra; 2003: Alison; 2005: Nick
4. Sandra
5. ten inches
6. Nick
7. eight inches
8. Sandra grew seven inches from 2000 to 2001.
9. Nick and Alison. Nick didn't grow from 2000 to 2001 or from 2004 to 2005. Alison didn't grow from 2002 to 2003.
10. Sandra because she grew the most, 16 inches, in five years.

PAGE 54: *Speed Readers*

1. 16 chapters over 7 days
2. Scott, Thursday
3. Grant, Tuesday
4. Barry, 9, Thursday
5. Monday, Grant
6. Grant, Sunday
7. Lois, 10
8. Barry, Saturday
9. Tuesday, 7
10. Monday, 22

PAGE 55: *Think Inside the Box*

Key: full = a, three-fourths = b, half = c, one-fourth = d, not begun = e

1.

e	b
b	a

b. one
c. two
d. none (to be half made, exactly two of the four lines of the box must be there)
e. none
f. one

2.

d	a	d	c
d	c	b	d
c	c	b	d
c	c	a	b

a. sixteen
b. two
c. three
d. six
e. five
f. None

PAGE 56: *In Search of Numbers*

1. 2   3. 74   5. 456
2. 13   4. 86   6. 108

PAGE 57: *Alien Phenomenon*

	Total number of hands	Inside or outside the asteroid belt
2. Sunev	3	inside
3. Rucremy	4	inside
4. Smar	7	outside
5. Retipuj	5	outside
6. Rutans	1	inside
7. Sunaru	2	inside
8. Enutpen	6	outside
9. Otulp	7	inside

PAGE 58: *One-Hit Wonder*

1. 1992   6. 1988
2. 1983   7. 1995
3. none   8. none
4. 1984, 1986   9. 1990
5. none

Answer: 1989

PAGE 59: *Break the Code!*

The code (Rebmun number = Earth number):

0 = 5	2 = 3	4 = 1	6 = 2	8 = 7
1 = 6	3 = 9	5 = 8	7 = 0	9 = 4

2. 9 + 0 = 9
3. 4 + 4 = 8
4. 1 + 6 = 7
5. 0 + 0 = 0
6. 4 + 3 = 7
7. 5 + 2 = 7
8. 8 + 1 = 9
9. 2 + 0 = 2
10. 8 + 8 = 16

PAGE 60: *Oops, Wrong Number*

1. 852-4419
2. 541-1632
3. 352-3911
4. 288-2648
5. 666-6667
6. 650-7997
7. 235-5799
8. 415-4444
9. 723-1651
10. 453-4231