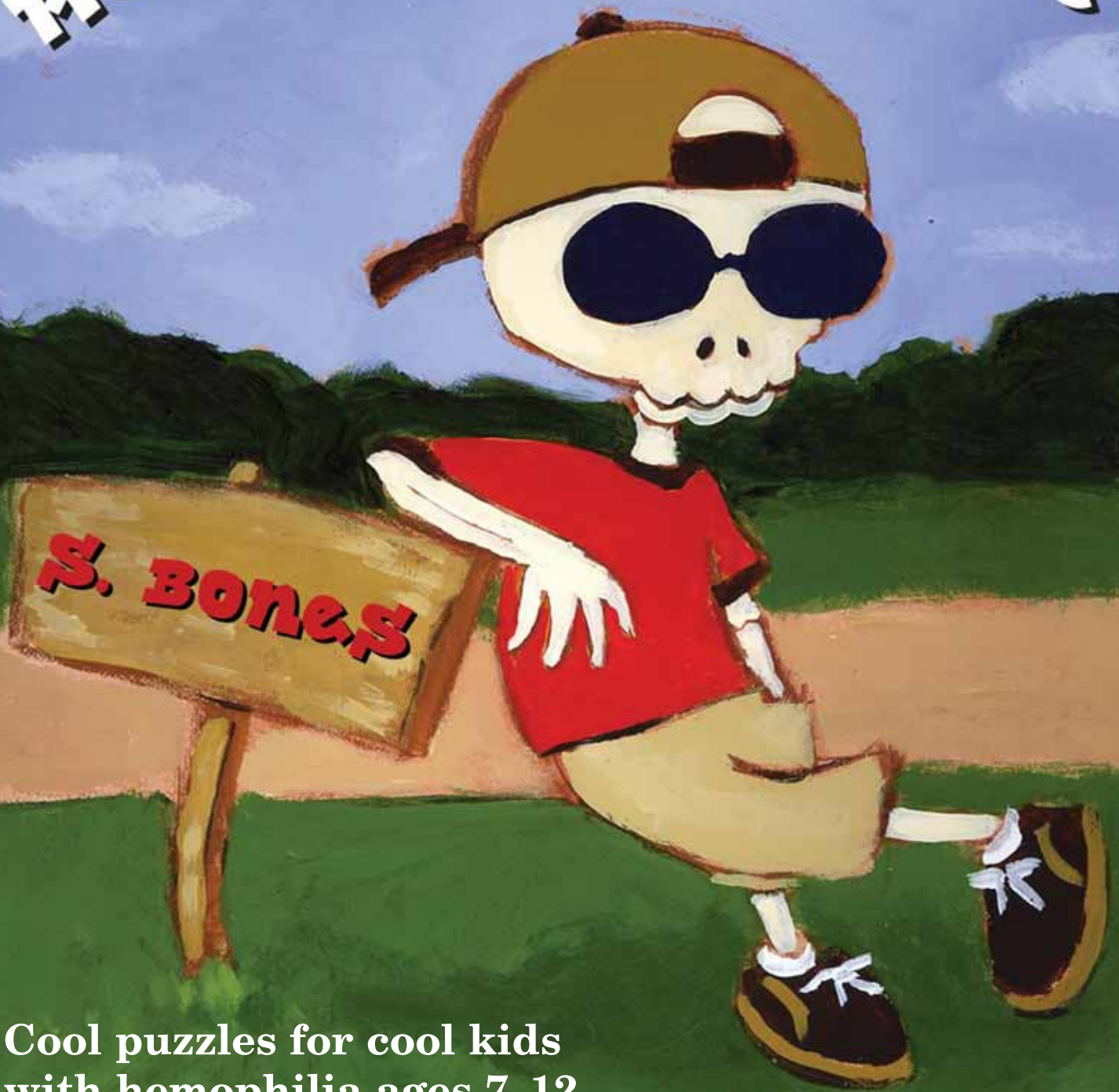


Hemophilia Logic



Cool puzzles for cool kids
with hemophilia ages 7-12

By Diane Horbacz
Illustrated by Jarrett Krosoczka

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LA Kelley Communications, Inc. is a worldwide leader in educational materials for patients and families with hemophilia. Visit us at **www.kelleycom.com** to see how we educate, empower and elevate the lives of people with bleeding disorders around the world.

Hemophilia Logic is based on the original *Hemophilia: It's Logical!* by Laureen A. Kelley © 1995.

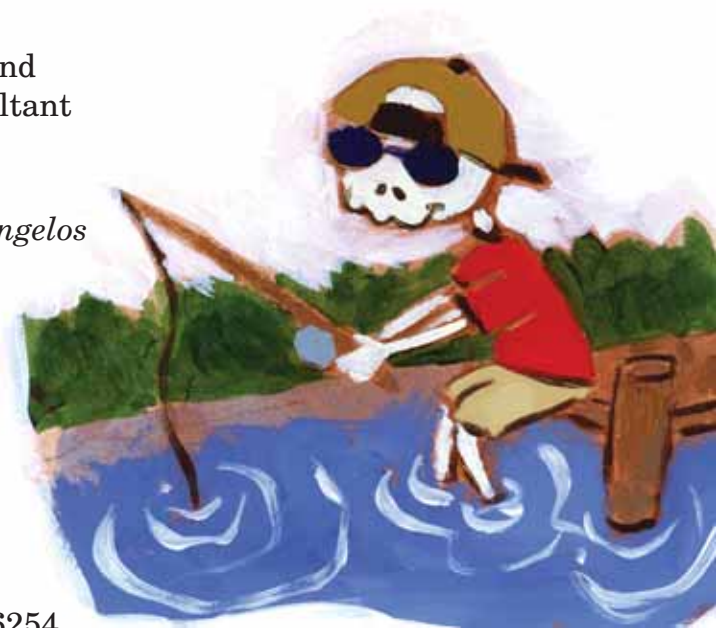
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US Price \$6.95



Development provided by a generous grant from the Factor Foundation of America. For more information, please visit www.factorfoundation.org

Wyeth

Printing and distribution funding provided by Wyeth Pharmaceuticals, a strong supporter of the hemophilia community. For additional information on Wyeth hemophilia products and programs, please visit www.hemophiliavillage.com

The information presented in this book was developed by the author and may not necessarily reflect the opinion of Wyeth.

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Introduction

Dear Parents,

Welcome to *Hemophilia Logic*, a book designed to assist you in teaching your child, age seven to twelve, about his or her bleeding disorder. As you and your child solve the puzzles in this book together, you'll be embarking on an incredible educational journey.

Each section is color coded to mark a particular theme, which is named at the bottom of each page. Begin by discussing and solving puzzles on **hemophilia vocabulary**. Then advance to **building independence**. After this, you will learn about **the body and blood**. Once you've mastered this section, you're ready to move on to specific topics such as **types of bleeds** and **inheritance**. When you arrive at the final pages, your focus will shift to **responsibility and learning for life**.

Make living with and learning about hemophilia a positive experience. Enjoy your journey through *Hemophilia Logic*!

Sincerely,

Diane Horbacz

Diane Horbacz, M.Ed.
Education Specialist



Meet Sherlock Bones

Dear Friends,

Hi! My name is Sherlock Bones. I'm going to be your guide through *Hemophilia Logic*. Did you know that the human body has 206 bones? To move our bones, we need help from our joints and muscles.

Bones meet together to form joints; muscles connect to bones to help us move. Keeping joints healthy and muscles strong is very important. When joints are healthy and muscles are strong, they do a better job of helping us stay active.

Inside your body, your bones, joints and muscles are growing! It's necessary for you to exercise often, eat nourishing foods and protect your body from harm.

If you have a bleeding disorder, it's especially important for you to keep your joints healthy and your muscles strong.

When you turn the page, you'll begin solving some really cool puzzles about hemophilia. For a few of them, you may need the help of my friend Slim, who is on the next page.

When you've finished solving all the puzzles, quiz your parents or another adult. See if they know as much as you have learned. If they don't know all the answers, you may need to teach them. You are now the expert!



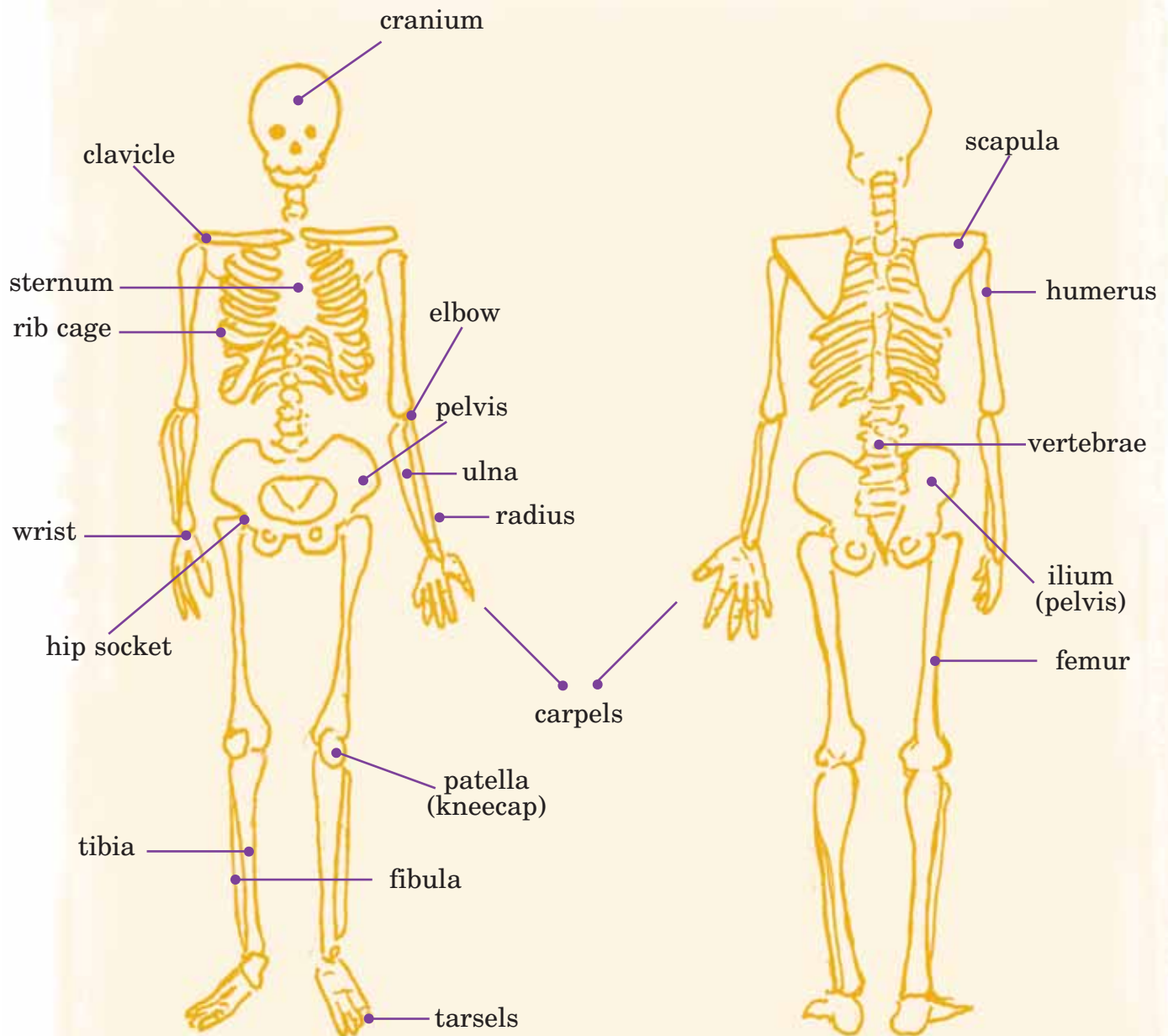
Your friend,

Sherlock Bones

Sherlock Bones

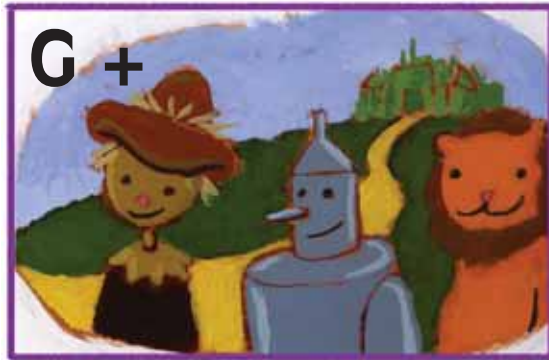
Now Meet Slim

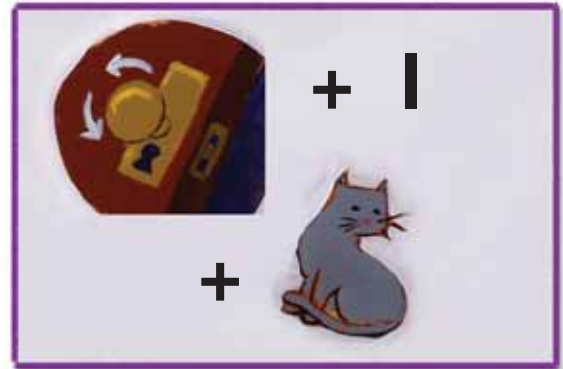
Bones are like a map of the human body. A joint is a place where two bones meet. Muscles are attached to bones to help us move. Look at Slim below to learn the names of different bones in the human body and find out how they fit together. Let Slim help you name the bones on pages 16 and 25!



Hemophilia Pict-o-Gram

Can you guess the hemophilia-related word that each rebus (pict-o-gram) represents? Sound out each word first using the clues in each rebus, then write the correct spelling in the blanks below.















Quiz a grown-up!

“What is another word for sterile?”

Word Find

Search the Word Find for the hemophilia-related vocabulary words.

☐ Hemophilia

☐ Blood

☐ Diluent

☐ Hematologist

☐ Port

☐ Factor Concentrate

☐ Peripheral

☐ Prophylaxis

☐ Infusion

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | E | M | O | P | H | I | L | I | A | F | E | A |
| E | M | P | E | R | I | P | H | E | R | A | L | S |
| M | I | B | L | O | O | D | I | G | U | C | L | O |
| A | P | Z | K | P | O | R | T | A | S | T | P | E |
| T | W | I | H | H | L | N | I | C | A | O | A | P |
| O | D | D | A | Y | F | A | C | E | T | R | O | R |
| L | P | D | D | L | R | K | G | A | R | C | L | A |
| O | E | V | A | A | M | I | C | A | R | O | N | T |
| G | E | K | P | X | V | E | E | D | E | N | W | B |
| I | Z | M | A | I | B | L | L | Y | I | C | D | V |
| S | I | S | T | S | S | M | F | U | R | E | A | P |
| T | X | A | W | S | T | Y | R | W | P | N | S | I |
| I | N | F | U | S | I | O | N | O | E | T | R | A |
| S | O | E | N | E | D | N | E | E | O | R | S | O |
| P | W | D | E | L | D | N | W | B | Y | A | E | B |
| S | B | E | D | B | E | O | D | K | S | T | E | Z |
| M | D | D | A | V | P | G | M | D | C | E | B | J |
| A | C | L | S | T | E | D | I | L | U | E | N | T |



Quiz a grown-up!

“What is a peripheral infusion?”

Prescription Puzzle

A prescription is a note from a doctor that gives permission to use certain medicines.

Dr. Coag U. Lation has written a prescription for your factor supplies, but the words are all mixed up. Unscramble the words to see what's written on the prescription.



Quiz a grown-up!

“What brand of factor do I use?”

Prophylaxis Supplies

Matt is on prophylaxis and infuses factor every other day. In June, his shots will be on **even**-numbered days (2nd, 4th, 6th, and so on). Put an **X** on the days when Matt needs to do his infusions. Next, calculate his prophylaxis supplies for the month.



Calculation Steps

1. Write the number of infusions Matt will have in the month of June: _____
2. Multiply each supply item by the number of infusions needed for the month.

| | | | | | | |
|--------------------------|---|----------------------|-----------|---|----------------------|-------------------------|
| 1 dose of factor | x | <input type="text"/> | infusions | = | <input type="text"/> | doses of factor |
| 1 10 cc syringe | x | <input type="text"/> | infusions | = | <input type="text"/> | syringes |
| 2 saline flushes | x | <input type="text"/> | infusions | = | <input type="text"/> | saline flushes |
| 1 heparin flush | x | <input type="text"/> | infusions | = | <input type="text"/> | heparin flushes |
| 1 ChloroPrep® stick | x | <input type="text"/> | infusions | = | <input type="text"/> | ChloroPrep® sticks |
| 1 pair of sterile gloves | x | <input type="text"/> | infusions | = | <input type="text"/> | pairs of sterile gloves |
| 1 gripper needle | x | <input type="text"/> | infusions | = | <input type="text"/> | gripper needles |
| 1 sterile field | x | <input type="text"/> | infusions | = | <input type="text"/> | sterile fields |



Quiz a grown-up!

“Where do we get our medical supplies?”

The Best Ways to Find a Vein

There are things you can do to find a vein for an infusion. Help the needle find a vein by answering the questions below. Find answers in the Word Bank.

Word Bank

☐ tourniquet

☐ warm

☐ fluids

Drink lots of _____.

Keep _____.

Use a _____.

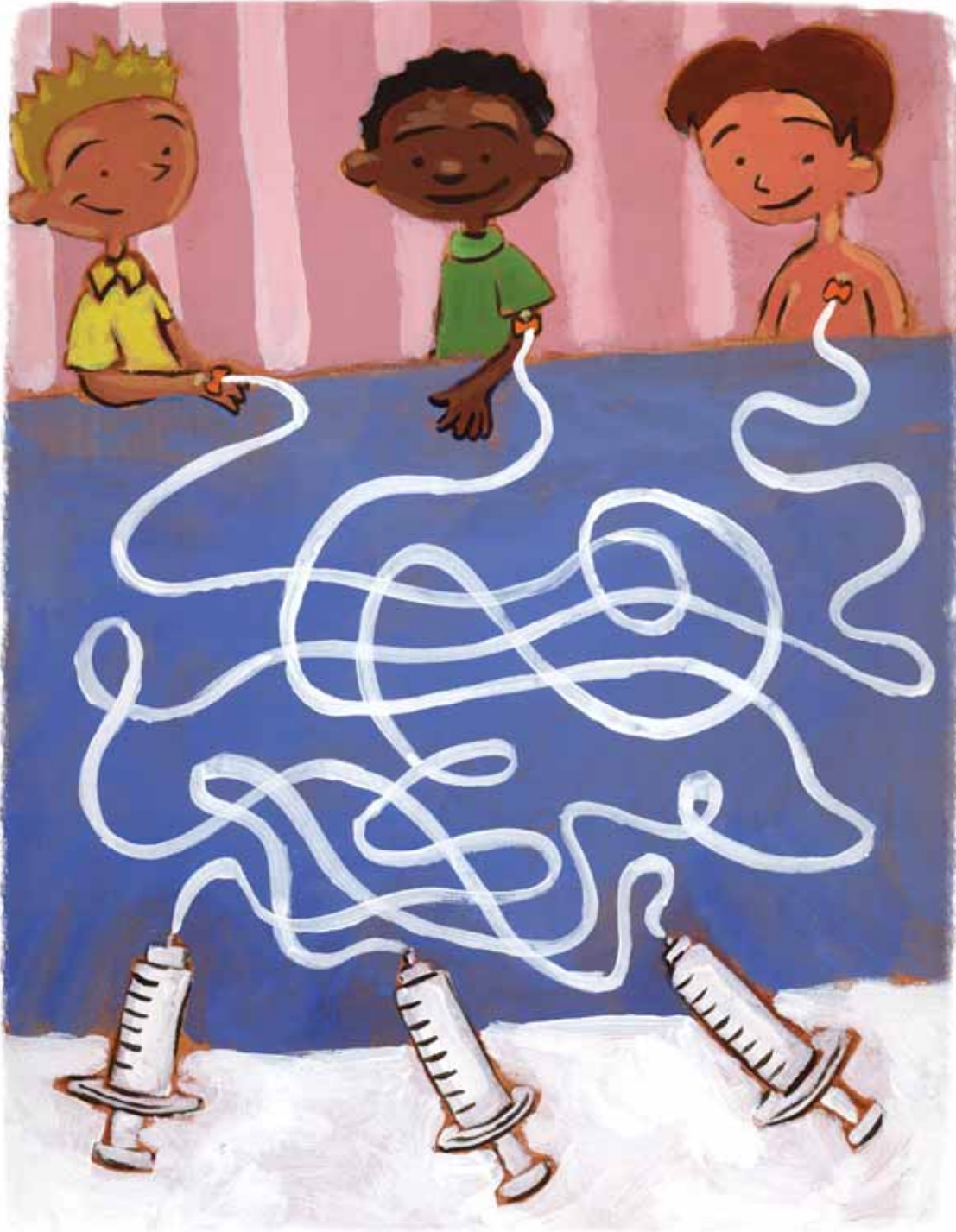


Quiz a grown-up!

“How does warmth make your veins more visible?”

Stuck Up

Which person is getting factor from which syringe? Follow the tubing from each syringe to the correct person with hemophilia.



Quiz a grown-up!

“What is a port?”

Let's Self-Infuse

Learning to self-infuse is a big accomplishment. Put the eight steps below in the correct order to complete an infusion.



Mix factor.



Wash bacteria and germs from your hands.



Access a vein.



Secure a tourniquet.



Pull factor into a syringe using a filter needle.



Clean the injection site with alcohol.



Infuse factor.



Clean the factor bottle top with alcohol.

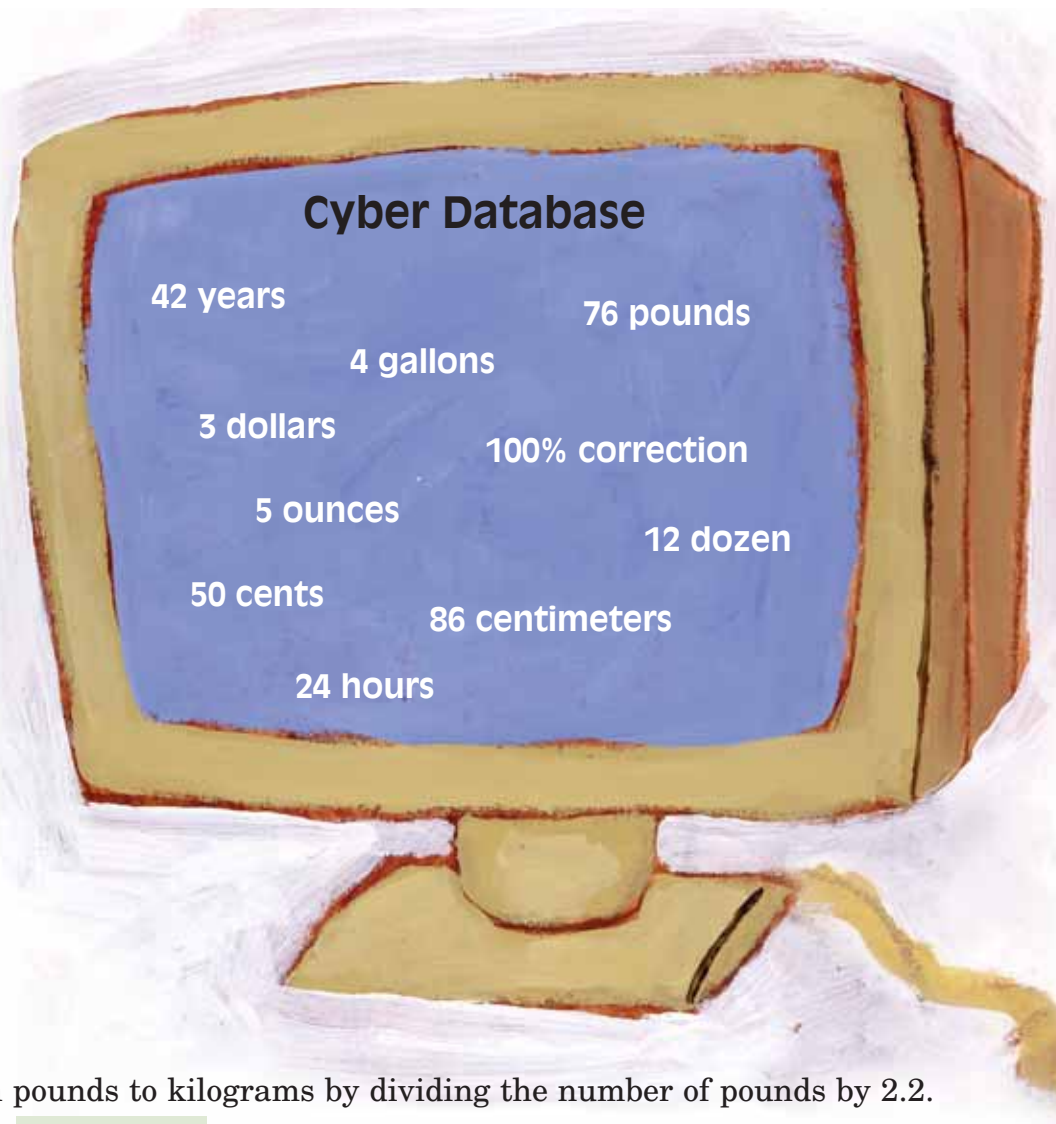


Quiz a grown-up!

“What is a filter needle?”

Cyber Ace

There's a bleed in
Jim's joint! How much
factor does he need?
Travel into the Cyber
Database and calculate
the missing data below
to determine how
much factor Jim needs.
Use a calculator to
help you.



1. Convert Jim's weight from pounds to kilograms by dividing the number of pounds by 2.2.

$$\boxed{} \text{ pounds} \div 2.2 = \boxed{} \text{ kilograms.}$$

2. Multiply Jim's weight in kilograms (from step 1) by the percentage of factor correction he needs.

$$\boxed{} \text{ kilograms} \times \boxed{} \text{ correction needed} = \boxed{} \text{ units.}$$

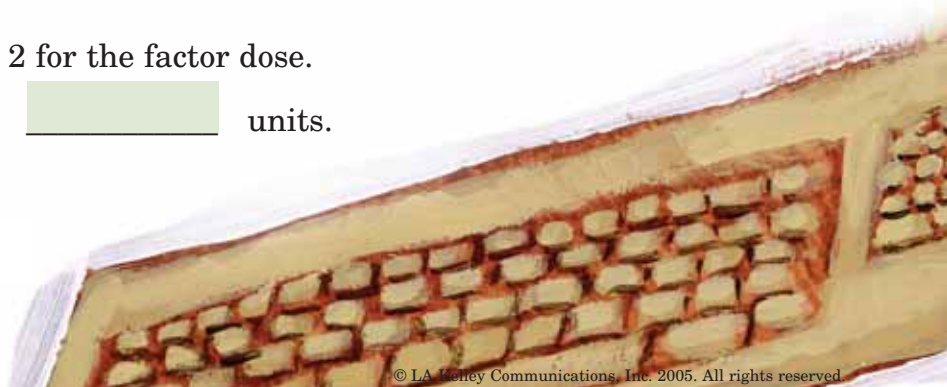
3. Divide your answer (from step 2) by 2 for the factor dose.

$$\boxed{} \text{ units} \div 2 = \boxed{} \text{ units.}$$



Quiz a grown-up!

"What dosage of factor do
I use for an infusion?"



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Your Independence Quiz

Test your level of independence. See how well you can answer the questions below. Complete each sentence using words from the Word Bank.

Word Bank

- ☐ nourishing
- ☐ wash your hands
- ☐ athlete
- ☐ transfer
- ☐ travel pack
- ☐ swimming
- ☐ muscles
- ☐ gloves
- ☐ life
- ☐ pitcher
- ☐ hematologist
- ☐ medical tag
- ☐ factor

1. A _____ needle is used to mix factor and diluent.
2. A _____ worn around the neck or wrist can help save your _____.
3. _____ is an excellent sport to strengthen _____ and protect joints.
4. An _____ should always do warm-up exercises before playing a game.
5. A _____ with hemophilia often infuses _____ before a baseball game.
6. Your _____ can give you advice about hemophilia treatment.
7. To prevent infection, _____ and wear sterile _____.
8. Eat _____ food to keep your body in good physical condition.
9. A _____ stores infusion products when you go on a trip.



Quiz a grown-up!

“What is the name of my hematologist?”

Hemophilia Explanation

One day your best friend asks you about hemophilia. Unscramble the sentences below to see what question he might ask, and how you might respond. Write your answers inside the correct bubbles.



Top bubble:

is hemophilia what?

Bottom bubble:

missing protein a I'm blood my in is that bleeding needed stop to



Quiz a grown-up!

“What is hemophilia?”

Who Wants to be a Safety Millionaire?

Circle the correct answer and record your winnings in the prize box on the next page. See if you can become a safety millionaire!

\$10

1. Before any sport or physical activity, you should always...

A: Stretch

B: Take a shower

C: Take a nap

D: Clean your room



\$100

2. When riding a bike, you must always...

A: Wear a T-shirt

B: Wear a helmet

C: Sing really loud

D: Chew bubble gum



\$1,000

3. Which two items can save your life in a car accident?

A: Seat belt and CD player

B: Air bag and CD player

C: Seat belt and air bag

D: CD player and anti-lock brakes



\$10,000

4. After an infusion, you should throw any used needles in...

A: The garbage

B: A plastic bag

C: A Sharps® container

D: The recycling bin

\$100,000

5. When riding a bike, which safety item is NOT required?

A: Knee pads

B: Elbow pads

C: Helmet

D: Seat belt



\$1,000,000

6. Which safety equipment is used to protect your lower legs?

A: Heel cups

B: Rubber stoppers

C: Shin guards

D: Knee pads

Millionaire Score Card

6 ♦ **\$1 MILLION**

5 ♦ **\$100,000**

4 ♦ **\$10,000**

3 ♦ **\$1,000**

2 ♦ **\$100**

1 ♦ **\$10**



Quiz a grown-up!

“Was it a law to wear a helmet while riding a bike 20 years ago?”

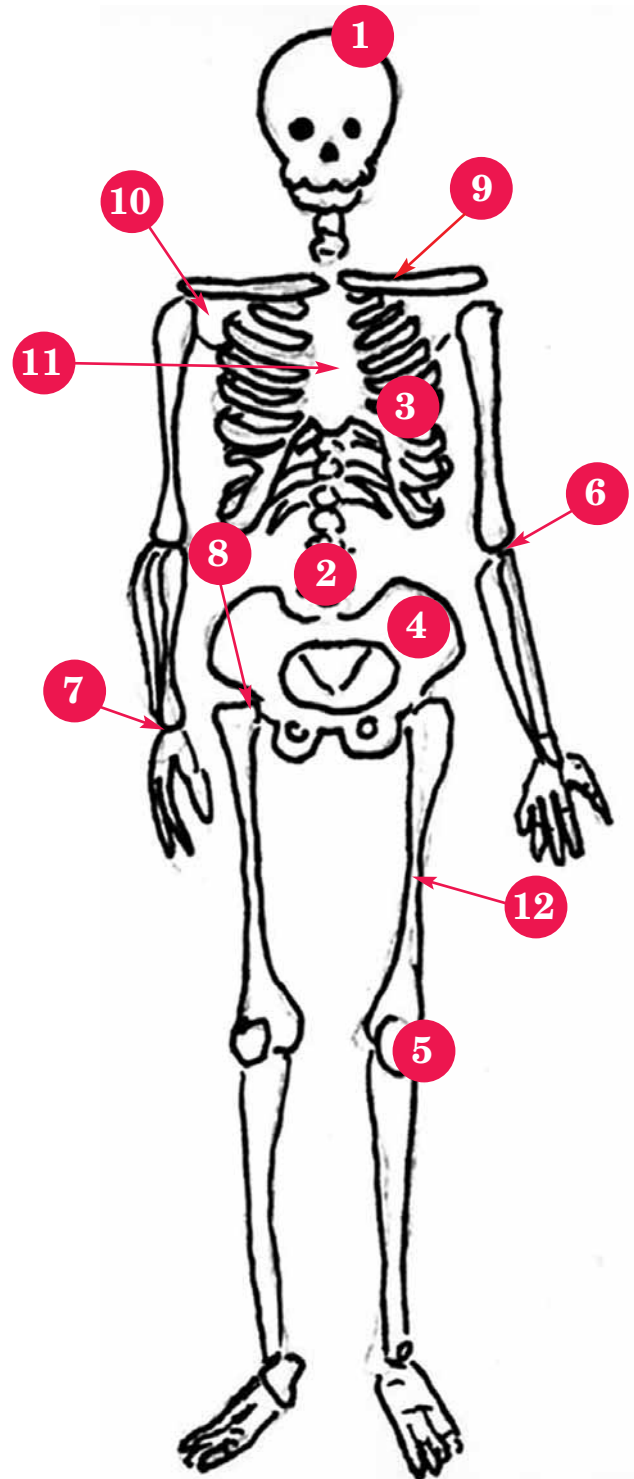


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Body Bones

Can you identify the numbered parts on the skeleton? Write the number of the corresponding name of the bone or joint in the circles below. Ask Slim on page 3 to help!

- ☐ Wrist
- ☐ Pelvis
- ☐ Sternum
- ☐ Patella
- ☐ Clavicle
- ☐ Cranium
- ☐ Vertebrae
- ☐ Scapula
- ☐ Rib Cage
- ☐ Elbow
- ☐ Femur
- ☐ Hip Socket



Quiz a grown-up!

“What is the space between two bones called?”

Recipe for Blood

Blood is made up of different parts. Use the code to decipher all the ingredients found in your blood.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |  |
| A | D | E | H | I | L | M | O | S | T | W |

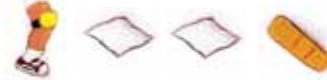
P



W



B



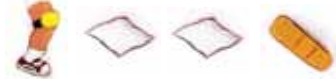
C



R



B



C



P



Quiz a grown-up!

“Which part of your blood contains factors?”

Coagulate!

Coagulation is the process by which your blood forms a clot to stop bleeding.

Number the pictures in the correct order to show how blood clots.



Clotting factors form a fibrin net.



Platelet plug is formed.



Clot is formed.



A cut or a tear in the blood vessel.



Vasoconstriction: blood vessels tighten.



Bleeding.



Quiz a grown-up!

“Which step in the clotting process is difficult for a person with hemophilia?”

Hemophilia or Not?

A fibrin net (or clot) is the final step in coagulation (or blood clotting). There are 13 clotting factors in the blood that work in order, as a team, to make the fibrin net. A person with hemophilia is missing one of the 13 factors. Without all the factors working together, a fibrin net will not be formed properly. Circle the hands that are missing a piece of the fibrin net to find out who has hemophilia and who does not.



Quiz a grown-up!

“How many factors are required to form a fibrin net?”

What Type of Hemophilia?

When you have hemophilia, one of your 13 factors is missing or doesn't work properly. All of your factors must work together to form an effective clot. It's like making a row of dominos fall over: each one knocks down the next one. If one of the dominos is missing, then they won't all work together to knock each other down and complete the game. If one of your factors is missing, then they can't all work together to make a clot and stop the bleed.

Which boy below is missing a factor? Count the dominos in front of each boy from left to right to determine which number clotting factor is missing, and what type of hemophilia he has. (For example, a missing number eight means he has factor VIII deficiency.) Write the number representing the missing factor in each box. Which boy does not have hemophilia?



Quiz a grown-up!

“Is factor VIII deficiency known as hemophilia A or B?”

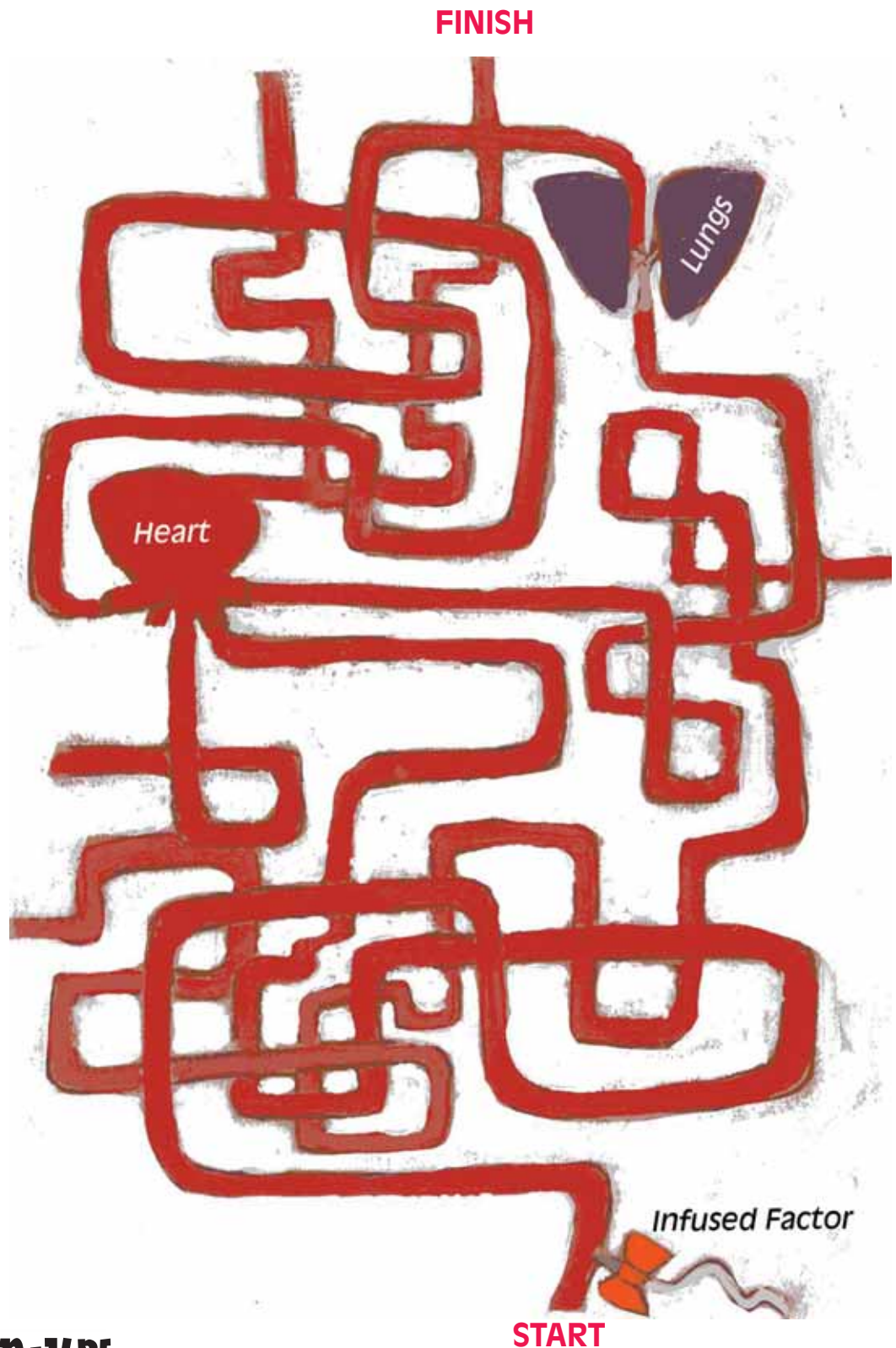
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Where Does Factor Go?

Following the steps below, draw a line from the infusion site **(START)** throughout the maze to the bleeding site **(FINISH)**.

When factor is infused into your vein, it takes a little trip before it reaches the site of your bleed:

1. Factor is infused into a vein. Factor travels to your heart.
2. The heart pumps blood and factor to your lungs to absorb oxygen.
3. The blood and factor go back to your heart.
4. The heart pumps the blood and factor to all parts of your body, including the site of your bleed.



Quiz a grown-up!

“Why does the heart pump blood to the lungs?”

Inside Out

When you have an **internal bleed**, you bleed *inside* the body. You can't see the bleeding, but you can feel it. If you don't infuse factor, the bleed site will swell. Joint or muscle bleeds are the most common types of internal bleeds. When you have an **external bleed**, you bleed *outside* the body. If you don't infuse factor, you will continue to bleed. Cuts and scratches are the most common types of external bleeds.

Classify the bleeds below. Write "internal" or "external" next to each bleed. Use the illustration to help you locate each bleed.

| Type of Bleed | Internal or External? |
|---------------|-----------------------|
| Ankle Joint | _____ |
| Knee Joint | _____ |
| Cut | _____ |
| Hip | _____ |
| Calf | _____ |
| Elbow | _____ |
| Scratch | _____ |
| Shoulder | _____ |
| Forearm | _____ |



Quiz a grown-up!

"What is an internal bleed?"

Type of Bleed

A **spontaneous bleed** happens with no known cause.

An **injury-related bleed** occurs after an accident, strenuous activity or significant impact to an area of the body.

Are the bleeds below most likely spontaneous or injury-related? Write **S** for spontaneous or **I** for injury-related in the boxes.

1. I fell on my knees in gym class.

I have a bleed in my left knee.

2. I spent the day playing cards and board games with my friends.

I have a bleed in my right ankle.

3. I fell off my skateboard while trying a new stunt.

I have a bleed in my wrist.

4. I spent the afternoon reading a good book on the beach.

I have a bleed in my thigh.



Quiz a grown-up!

“What is a spontaneous bleed?”

Millennium Puzzle

Help superhero Factoid fight the evil N-Zymos and help the bleeding joint heal. Use Millennium Puzzle power to identify four ways after infusing to recover from a bleed. The first letter of each answer is already there to help you solve each puzzle.



To relax and take it easy

R _ _ _

To make cold; rhymes with nice

I _ _

To apply pressure

C _ _ _ _ _ _ _ _ _

To raise up high

E _ _ _ _ _

Now go back and circle the first letter of each puzzle answer.

Write the letters in the boxes below. What did you spell?

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|



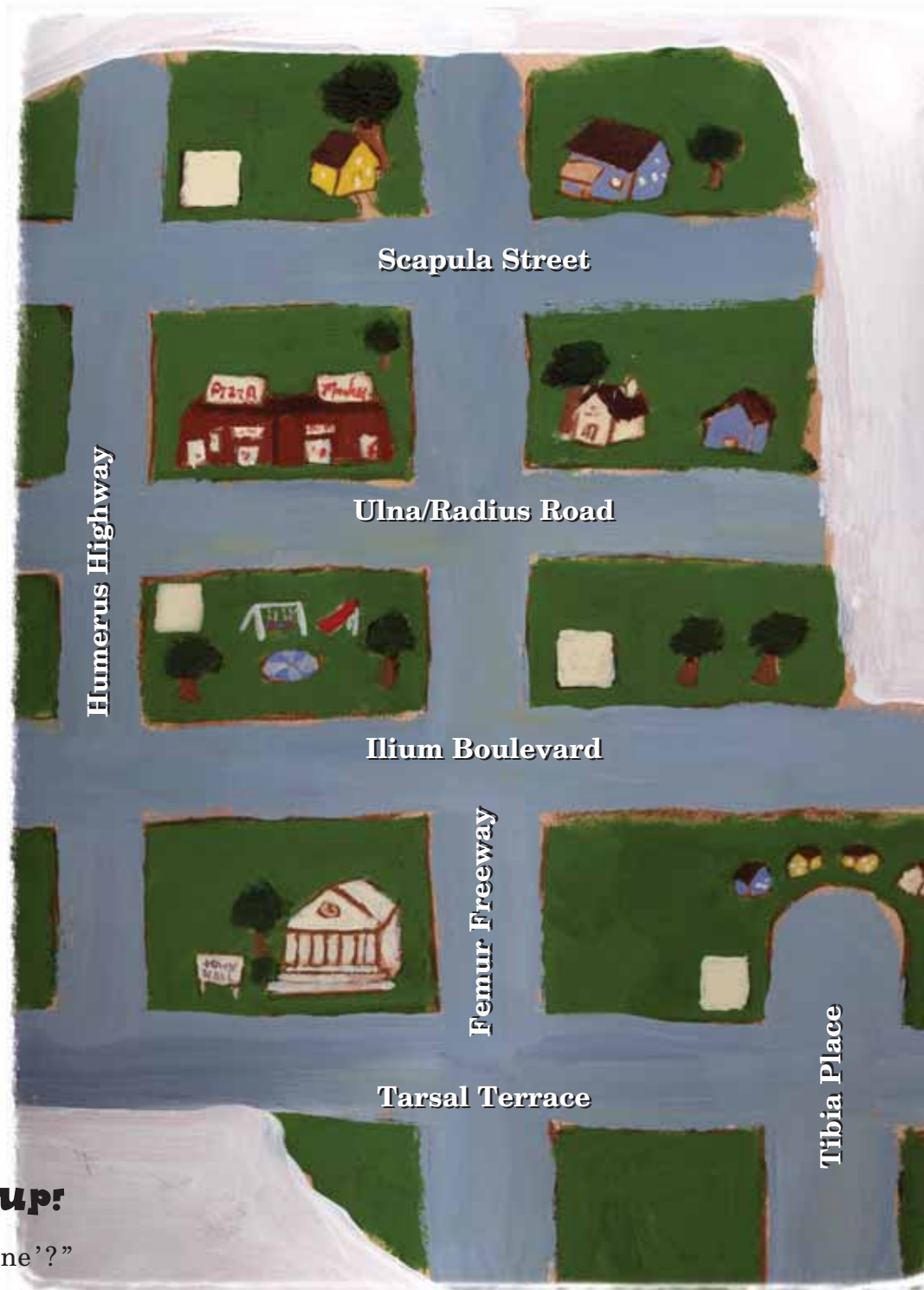
Quiz a grown-up!

“What does R.I.C.E stand for?”

Joint Junction

A joint is the place where two bones meet. In the town of Joint Junction, the main streets are named after bones. Each corner represents a joint. Travel through the streets of Joint Junction and number the corners (joints) using the directions below. Use Slim on page 3 to help.

1. Swollen Shoulder is on the corner of Scapula Street and Humerus Highway.
2. Enlarged Elbow is on the corner of Humerus Highway and Ulna/Radius Road.
3. Hot Hip is on the corner of Ilium Boulevard and Femur Freeway.
4. Aching Ankle is on the corner of Tibia Place and Tarsal Terrace.



QUIZ A GROWN-UP!

“What is the ‘funny bone’?”

How Much Factor?

The amount of factor in your blood indicates your factor severity level.



No hemophilia

50% — 200% factor level



Mild hemophilia

6% — 49% factor level



Moderate hemophilia

1% — 5% factor level



Severe hemophilia

less than 1% factor level

Which severity level do these boys have? Put an **X** in the appropriate box below to show each boy's diagnosis.

| | No hemophilia | Mild | Moderate | Severe |
|---------------------------|------------------|------|----------|--------|
| Ali has 8% factor | | | | |
| Dillon has 74% factor | | | | |
| Stephanos has 29% factor | | | | |
| Zack has 2% factor | | | | |
| Christopher has 0% factor | | | | |
| Pedro has .5% factor | | | | |
| Alex has 4% factor | | | | |



Quiz a grown-up!

“Which organ is responsible for processing blood and making factor?”

It's All in the Genes

Can you find hemophilia in a pair of “jeans?” No, but our **genes** determine hemophilia!

Genes are complex chemical units in the body that transmit characteristics and traits from parents to their children. What’s another word for receiving traits from past generations?

Solve the crossword questions to find the answer, using the Word Bank to help you.

Word Bank

☐ DNA

☐ hemophilia

☐ hair

☐ eyes

☐ skin

☐ trait

☐ height

1. Your ____ ____ ____ covers and protects your body. It gets burned if you sit in the sun!
2. Deoxyribonucleic acid is a molecule made up of chemicals that store genetic information. What three letters that stand for this acid, which is often called the body’s “blueprint?” ____ ____
3. You have ____ ____ ____ ____ ____ if your blood is missing factor VIII or IX.
4. A pair of ____ ____ ____ allows you to see, and can be blue or brown or green.
5. Your ____ ____ ____ grows out of your skin. It covers your head, and can be curly or straight.
6. Your ____ ____ ____ ____ measures how tall you are.
7. Brown eyes are an inherited ____ ____ ____ ____ .

Use the letters from the blue boxes above to complete the sentence below.

You traits from your ancestors: your grandmother, your grandfather, and even your great-great-great-great-great grandmother!

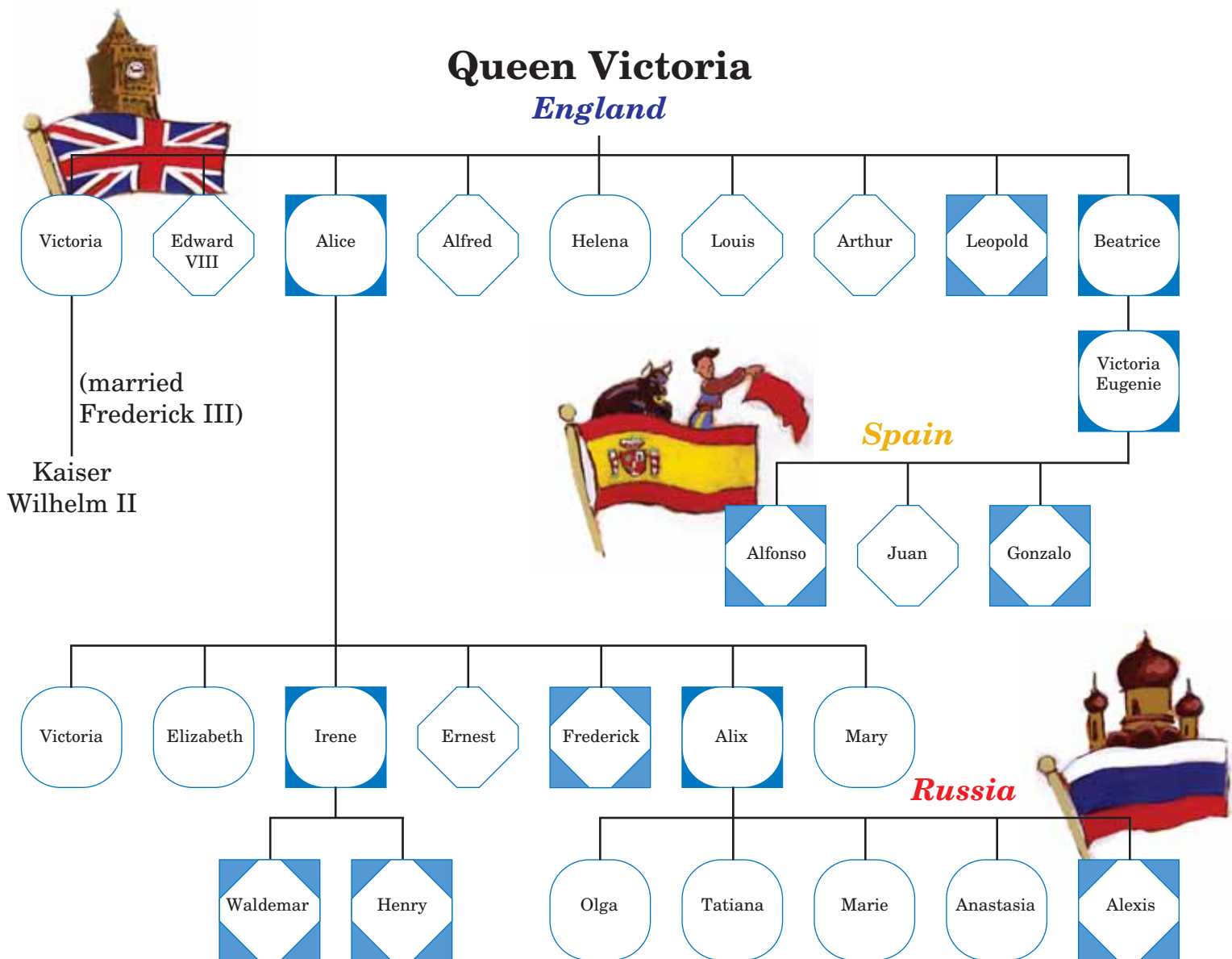


Quiz a grown-up!

“How many cells are in the human body?”

Queen Victoria's Family

Queen Victoria was one of the most famous monarchs of England. She ruled for 64 years, longer than any other monarch. Victoria is also famous for being a carrier of hemophilia. Because some of her descendants – all princes – had hemophilia, hemophilia earned the misleading nickname “the royal disease.”



KEY

| | | | |
|--------|------------------------------|------|----------------------|
| | | | |
| Female | Female carrier of hemophilia | Male | Male with hemophilia |



Quiz a grown-up!

“How did hemophilia earn the misleading nickname ‘the royal disease’?”

Queen Victoria had nine children.

1. How many daughters did she have?

2. How many of her daughters were carriers?

3. How many sons did she have?

4. How many of her sons had hemophilia?



Queen Victoria's daughter, Alice, had seven children.

5. Did Alice have a son with hemophilia?

Two of Alice's daughters were carriers.

6. What were their names?

Waldemar and Henry were two great-grandsons of Queen Victoria.

7. Did they have hemophilia?

Queen Victoria's youngest daughter, Beatrice, was a carrier. Beatrice married into the Spanish royal family and eventually had three grandsons: two had hemophilia.

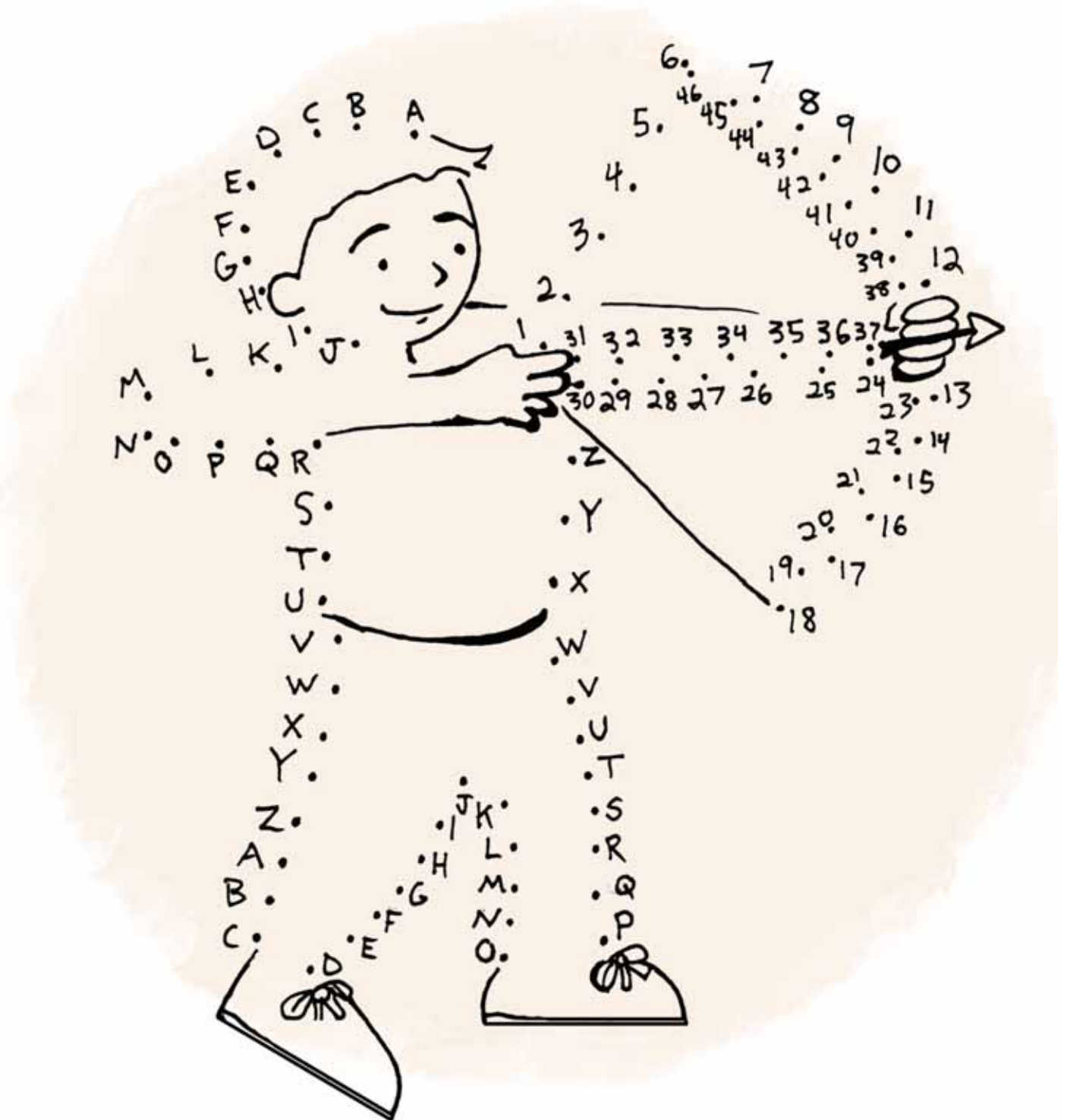
8. What were their names?

Queen Victoria's granddaughter, Alix, was also a carrier. She married into the Russian royal family and had five children. She passed on the hemophilia gene to her youngest child, who became known as the famous prince who had hemophilia.

9. What was his name?

Take a Shot

Connect the dots to find a sport that many children enjoy at hemophilia summer camps.



Quiz a grown-up!

“Where can kids with hemophilia go during the summer to have lots of fun with other kids with hemophilia?”

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The Sports Page

There are 16 sports named in the puzzle below. Use the Word Bank to find them all.



| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| B | O | S | A | S | K | S | T | E | N | M |
| N | F | C | R | O | Q | U | E | T | E | P |
| L | L | U | V | C | W | R | S | A | L | E |
| L | O | B | U | C | R | F | X | R | J | Y |
| A | G | A | D | E | F | I | R | A | E | L |
| B | N | D | R | R | G | N | I | K | I | B |
| T | I | I | H | C | P | G | C | S | O | A |
| E | H | V | O | D | H | O | T | W | P | S |
| K | S | I | N | I | H | E | L | T | U | E |
| S | I | N | N | E | T | I | R | O | G | B |
| A | F | G | W | J | N | O | N | Y | M | A |
| B | O | X | E | G | N | I | I | K | S | L |
| Q | U | E | F | O | O | T | B | A | L | L |



*Put an **X** on the sports that you consider the most dangerous for someone with hemophilia. Now circle the sports that you like to do!*

Word Bank

- | | |
|----------------------------------|------------------------------------|
| <input type="radio"/> Baseball | <input type="radio"/> Golf |
| <input type="radio"/> Soccer | <input type="radio"/> Skiing |
| <input type="radio"/> Tennis | <input type="radio"/> Football |
| <input type="radio"/> Fishing | <input type="radio"/> Croquet |
| <input type="radio"/> Karate | <input type="radio"/> Hockey |
| <input type="radio"/> Bowling | <input type="radio"/> Archery |
| <input type="radio"/> Basketball | <input type="radio"/> Scuba Diving |
| <input type="radio"/> Biking | <input type="radio"/> Surfing |



Quiz a grown-up!

"Can you name two rough contact sports not recommended for people with hemophilia?"

Get Caught in the Web!



A “website” is a place on the computer internet where you can find lots of information about hemophilia. Website address names end in different suffixes, usually three letters. The suffix can sometimes tell you who made the website. In the “web” to the left, you’ll find common suffixes found in website addresses. See if you can figure out what each suffix means. Write your answers in the correct spaces below.

| | |
|-------------------------|--|
| Government | |
| Education | |
| Companies | |
| Military | |
| Network Companies | |
| Nonprofit Organizations | |



Quiz a grown-up!

“Name a helpful website where you can find information about hemophilia.”

Answers



Answers to "Quiz a Grown-Up!"

| Page | Question | Answer |
|------|---|---|
| 4 | What is another name for sterile? | Clean. |
| 5 | What is a peripheral infusion? | An infusion done externally through a vein. |
| 6 | What brand of factor do I use? | (Answers will vary.) |
| 7 | Where do we get our medical supplies? | (Answers will vary.) |
| 8 | How does warmth make your veins more visible? | Warmth helps your veins swell and come closer to the surface of your skin. |
| 9 | What is a port? | A small medical device that looks like a little drum. It's attached to a vein inside the body and is used to ease the infusion of factor. |
| 10 | What is a filter needle? | A special needle attached to a syringe, used to screen out any unwanted particles when factor is drawn from the factor bottle into the syringe. |
| 11 | What dosage of factor do I need for an infusion? | (Answers will vary.) |
| 12 | What is the name of my hematologist? | (Answers will vary.) |
| 13 | What is hemophilia? | A bleeding disorder in which one of the proteins necessary for blood to clot is missing or deficient. |
| 14 | Was it a law to wear a helmet while riding a bike 20 years ago? | No. |
| 16 | What is the space between two bones called? | A joint. |
| 17 | Which part of your blood contains factor? | Plasma. |
| 18 | Which step in the clotting process is difficult for a person with hemophilia? | Forming a fibrin net. |
| 19 | How many factors are required to form a fibrin net? | Thirteen factors. |
| 20 | Is factor VIII deficiency known as hemophilia A or hemophilia B? | Hemophilia A. |
| 21 | Why does the heart pump blood to the lungs? | To pick up oxygen. |

| Page | Question | Answer |
|------|--|--|
| 22 | What is an internal bleed? | A bleed that occurs inside the body, as in a muscle, joint or soft tissue. |
| 23 | What is a spontaneous bleed? | A bleed that occurs with no apparent cause and not as the result of an injury. |
| 24 | What does R.I.C.E. stand for? | Rest, Ice, Compression, Elevation. |
| 25 | What is the “funny bone?” | The “funny bone” is what we call the nerve located inside the elbow. |
| 26 | Which organ is responsible for processing blood and making factor? | The liver. |
| 27 | How many cells are in the human body? | About three trillion. |
| 28 | How did hemophilia earn the misleading nickname “the royal disease?” | Hemophilia is sometimes called “the royal disease” because many descendants of Queen Victoria of England inherited it. But hemophilia is not limited to royalty. It affects about 400,000 people worldwide, both rich and poor. |
| 30 | Where can kids with hemophilia go during the summer to have lots of fun with other kids with hemophilia? | Camp. |
| 31 | Can you name two rough contact sports not recommended for people with hemophilia? | Some examples are football, hockey and boxing. |
| 32 | Name a helpful website where you can find information about hemophilia. | <p>There are many great websites. Here are a few examples:</p> <p><i>National Hemophilia Foundation</i> www.hemophilia.org</p> <p><i>LA Kelley Communications, Inc.</i> www.kelleycom.com</p> <p><i>Canadian Hemophilia Society</i> www.hemophilia.ca</p> <p><i>Hemophilia Federation of America</i> www.hemophiliafed.org</p> |

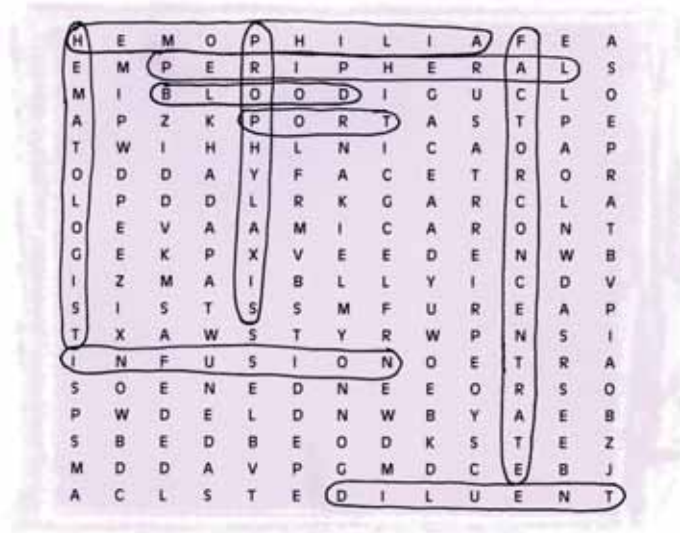
Answers to Puzzles

pages 4-11

Page 4

GAUZE, TOURNIQUET, BANDAGE,
HOSPITAL, STERILE, BUTTERFLY NEEDLE

Page 5



Page 6

1. FACTOR
2. FILTER NEEDLE
3. ALCOHOL
4. GAUZE
5. SYRINGE
6. SHARPS CONTAINER
7. TOURNIQUET
8. TRANSFER NEEDLE

Page 7

1. 15
2. 15, 15
15, 15
15, 30
15, 15
15, 15
15, 15
15, 15
15, 15
15, 15



Page 8

Drinks lots of **fluids**.
Keep **warm**.
Use a **tourniquet**.

Page 9



Page 10

1. Wash bacteria and germs from your hands.
2. Clean the factor bottle top with alcohol.
3. Mix factor.
4. Pull factor into a syringe using a filter needle.
5. Secure a tourniquet.
6. Clean the injection site with alcohol.
7. Access a vein.
8. Infuse factor.

Page 11

1. $76 \text{ pounds} \div 2.2 = 34.5 \text{ kilograms}$.
2. $34.5 \text{ kilograms} \times 100\% \text{ correction needed} = 3,450 \text{ units}$.
3. $3,450 \text{ units} \div 2 = 1,725 \text{ units}$.

Answers to Puzzles

pages 12-20

Page 12

1. transfer
2. medical tag, life
3. swimming, muscles
4. athlete
5. pitcher, factor
6. hematologist
7. wash your hands, gloves
8. nourishing
9. travel pack

Page 13

Top bubble: What is hemophilia?

Bottom bubble: I'm missing a protein in my blood that is needed to stop bleeding.

Page 14-15

1. A
2. B
3. C
4. C
5. D
6. C

Page 16



Page 17

| |
|-------------------|
| Platelets |
| White Blood Cells |
| Red Blood Cells |
| Plasma |

Page 18

1. A cut or a tear in the blood vessel.
2. Bleeding.
3. Vasoconstriction: blood vessels tighten.
4. Platelet plug is formed.
5. Clotting factors form a fibrin net.
6. Clot is formed.

Page 19



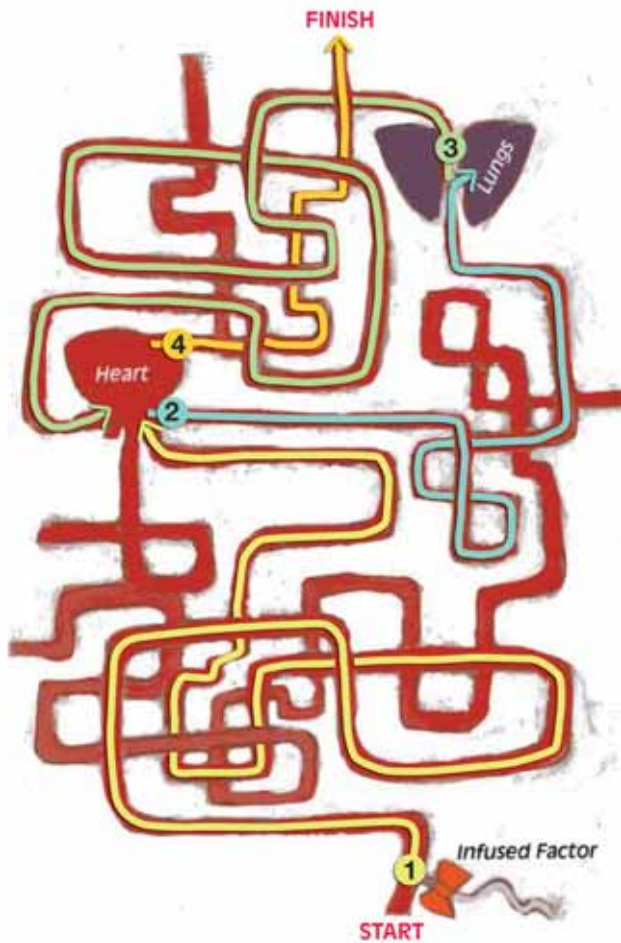
Page 20

(from left to right)
8, 9, 7, No hemophilia

Answers to Puzzles

pages 21-25

Page 21



Page 22

Type of Bleed

Ankle Joint
Knee Joint
Cut
Hip
Calf
Elbow
Scratch
Shoulder
Forearm

Internal or External?

internal
internal
external
internal
internal
external
internal
internal

Page 23

1. I
2. S
3. I
4. S

Page 24

Rest

Ice

Compression

Elevate

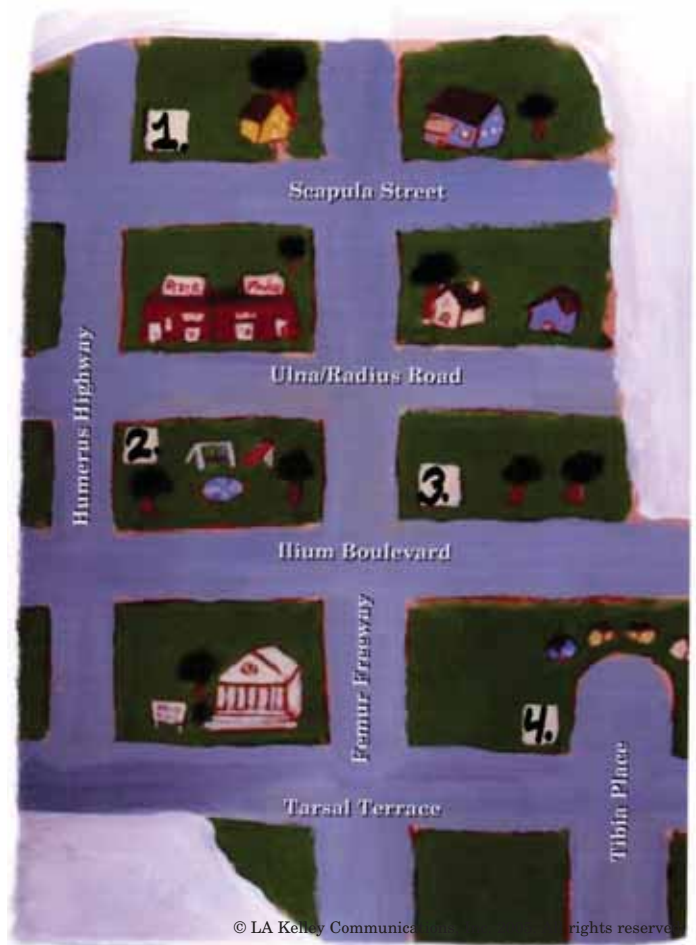
R

I

C

E

Page 25



pages 26-32

Page 30

A cartoon drawing of a boy holding a bow and arrow. The letters of the alphabet are arranged along his body and the bow. The letters on his head are A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. The letters on his bow are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

Page 31

- B N L A B T E K S A B Q
 O F L O G I F O U
 S C U B D I N C W E
 A R V C W R F I R G N I I K S
 S O Q U E T A R A E I H E I I K S
 N E L J A E I B P U G M A L L
 M P E Y L L B S E B A L L

Page 32

| | |
|-------------------------|------|
| Government | .gov |
| Education | .edu |
| Companies | .com |
| Military | .mil |
| Network Companies | .net |
| Nonprofit Organizations | .org |

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About the Author

Diane Horbacz graduated from Seton Hall University with a degree in psychology. She specialized in child psychology and the use of play therapy with chronically ill children. Diane earned a master's degree in special education from William Paterson University, where she studied behavior management and emotional disorders. Diane's extensive professional background includes teaching children with special needs at various age levels.

Diane currently works as an Education Specialist for Hemophilia Health Services, where she created and directs a pediatric program called *Karing for Kids*. Diane is also the creator of "Kids' Workshops," interactive educational workshops geared toward teaching children about their bleeding disorder. She is the author of several books, including *I Have Hemophilia and I am Special*, *Infusion Time*, *My Brother is Getting a New Port*, *Factor Fun*, and *If You Wear a MedicAlert®*.

Diane resides in Ocean, New Jersey with her husband Gary and her three children: Matthew, Justin and Erin. Matthew and Justin have severe hemophilia.



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