My name is



### Decode the Message Using the Alphabet.

<u>23</u> <u>8</u> <u>9</u> <u>12</u> <u>5</u> <u>21</u> <u>19</u> <u>9</u> <u>14</u> <u>7</u> <u>3</u> <u>15</u> <u>13</u> <u>16</u> <u>21</u> <u>20</u> <u>5</u> <u>18</u> <u>19</u>

9 19 5 22 5 18 25 15 14 5 19

<u>18 5 19 16 15 14 19 9 2 9 12 9 20 25</u>







# Sentence Menders - Spelling

Rewrite the sentences below to make them correct. Read the words closely. Some words may not be spelled correctly.

1.	Two or mor computer systems that are gruped together is caled a network.
2.	A router is a hardware devise that transfers data to the corect netwerk.
3.	A broadcast sends, or transmits, a mesage too many users at once.
4.	A hub is a networck devise that conects multiple computers or other devices together.
5.	An organisation's private netwerk is called an Intranet.

# Word Scrambles

Grace CyBear needs your help to unscramble the words below.

When the words are clear, read the definitions to understand what the computer words mean.

(HINT: For help with some of the scrambled words, review the "Sentence Menders" on page 2.)



1.	WTNOERK	Happens when two or more computer systems that are grouped together share information, software and hardware.
2.	COTRSBAAD	A process of transmitting the same message to multiple users simultaneously without the need for acknowledgment from users.
3.	AITNRNTE	An organization's private network.
4.	UBH	A network device that is a common connection point for devices in a network.
5.	BDAWIDTHN	The volume of information that can pass through a network for a given period of time.
6.	RROTUE	A hardware device that transfers data packets to the appropriate networks
7.	TPTHS	An Internet Protocol used for secure communication over a computer network.
8.		A computer or program that provides other computers with access to shared data files over a network.

# Cursive Quotes

Copy the quotations, or quotes, in cursive writing.
"But what we all have to learn is that we can't do everything ourselves."—Vint Cerf
"No computer is ever going to ask a new, reasonable question. It takes trained people to do that."—Grace Hopper
"Machines take me by surprise with great frequency." —Alan Turing

▶ NOW TRY THIS: Using research tools available to you, find out more about each person quoted above. Hint: Vint Cerf, Grace Hopper and Alan Turing each have connections to technology.

### Internet Terms

Vint CyBear loves to surf the Internet to find new games to play or watch music videos. When he cannot remember a website address he recently visited, Vint will review the Internet browser's history to find it.

The Internet can remember his browsing history because it tracks his online activity with cookies. Internet cookies leave electronic bread crumbs everywhere he visits.

With his parent's permission, Vint also likes to upload copies of music he has created onto social media websites so that his friends can hear what he has created! He also likes to download his favorite music to listen to later.

Can you identify the correct Internet definitions below? Circle the correct answer.

### **BROWSER**

- A) An Internet service that helps you search for information on the Web.
- B) A program that lets you find, see, and hear material on Web pages.
- C) The leader of a turtle-like race.

### COOKIE

- A) A piece of information about your visit to a specific website that may be recorded to your computer.
- B) A sweet treat.
- C) A popular file format for images on the Internet.

### **SURFING**

- A) The website that is the starting point on the Web for a specific group or organization.
- B) Users browsing various websites about whatever interests them.
- C) An activity performed on ocean waves.

### **HISTORY**

- A) A point in time in the past.
- B) A diary or personal journal kept on a website.
- C) A tracking feature of Internet browsers that shows websites recently visited.

### **DOWNLOAD**

- A) To send information from your computer to another computer.
- B) To sit down a heavy load of assorted objects.
- C) To copy a file from one computer system to another via the Internet.

### **UPLOAD**

- A) To pick up a heavy load of assorted objects.
- B) To send information from your computer to another computer.
- C) A saved website link that has been added to a list of saved links or websites.

### Pronouns

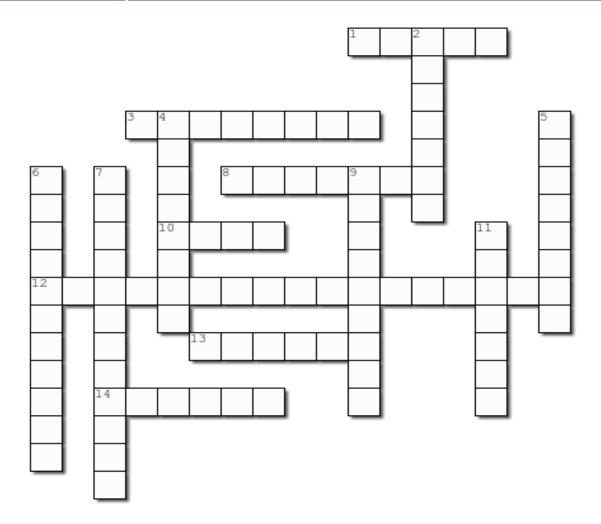
A pronoun is a word that can take the place of a noun.

Choose the correct pronoun to complete each sentence below. Then use the circled letters to provide clues to help you solve the following riddle:

I have keys but do not lock. I have space but have no room.
You can enter but not come in. What am I?

(he/him)	1 uses a gamer tag, or nickname, when playing games online.
(her/she)	2. Ada tells mom about repeated cyberbullying at school.
(his/him)	3. Alan teaches students about etiquette when with others online.
(We/Our)	4 parents monitor real time communication in the chatroom.
(their/your)	5. Do you keep a list of friends on chat's buddy list?
(us/we)	6 exit games where griefers are intentionally irritating other gamers.
(him/his)	7. Vint tells his teachers about cyberstalkers tracking friends online.
(them/their)	8. A person can update topics on website with a post.
	Answer to the Riddle:

# Cybersecurity for All Crossword Puzzle



### Across

- 1. The temporary storage of information before use, typically used to speed up systems
- 3. Making data appear to have originated from another source so as to hide the true origin from the recipient
- 8. A class of software that is designed to cause harm
- 10. An independent piece of malware or software that self-replicates
- **12.** The network layer protocol used by the Internet for routing packets across a network
- 13. A term for a collection of software robots, or bots, that runs independently and automatically and often invisibly in the back
- **14.** Advertising-supported software that automatically plays, displays, or downloads advertisements after the software is installed

### Down

- 2. Information stored on a user's computer by a web browser
- 4. A string of characters used to prove an individual's identity to a system or object
- **5.** A network security system used to prevent unauthorized users access to a network
- **6.** A program or group of programs designed to provide specific user functions, such as a word processor or web server
- The art of secret writing that enables someone to hide the contents of a message or file from everyone but the person receiving the message
- 9. A step-by-step procedure used to solve a problem
- **11.** The process of gaining unauthorized access to computer systems and networks

# Proofreading

Read the following messages. Find and correct the 12 errors. The errors can be spelling, punctuation, capitalization, or grammar.

### Shhh! It's a Surprise.

We are throwing mom a surprise party this saturday. It is so hard to keep a secret from her. My brother and I are going to use cryptography techniques to kep a confidential list of everything we need for the party? We hope she will not be able to decipher our notes by converting our secret text to and understandable message. i will also post our party list to



the cloude. The cloud will allow us to acces the files through our phones from anywhere with an Internet connection.

### Schools Get Technical

My school recently purchased Laptop computers for students to use in the classroom. I can bring my laptop computer home to work on various assignments. When connected to cyberspace, which includes the Internet and the school's computer systems, I am required to use a Virtual Private Network (VPN). This VPN tool keeps my



computer's IP address private anonymous, and secure. My IP Address is similiar to my home address, except its the unique address for my computer's Internet connection. The vpn helps hide my computer's location from cyber criminals so they can't learn personal information about me.

## Reasoning

Help Grace CyBear match the correct definition with the word in the right column by drawing a line between them.

HINT: Review the stories on page 8 to determine the answers.



- A technology that allows us to access files through the Internet from anywhere in the world.
- An exchange of data, information, and knowledge to manage risks or respond to cyber incidents.
- To convert enciphered text to plain text by means of a cryptographic system.
- The interdependent network of information technology infrastructures, which includes the Internet, telecommunications networks, computer systems, and embedded processors and controllers.
- A set of programs that tell a computer to perform a task.
- The use of mathematical techniques to provide security services, such as confidentiality, data integrity, entity authentication, and data origin authentication.
- A tool that allows the user to remain anonymous while using the Internet by masking the location and encrypting traffic.
- An Internet version of a home address for your computer, which is identified when it communicates over a network.

Cyberspace

Cloud

Virtual Private Network

(VPN)

**IP Address** 

Information Sharing

Cryptography

Software

Decipher

# Informative Writing

Informative writing provides information about a topic. The information includes facts and details needed to understand a topic. It should not include the writer's opinion.

Read the following paragraphs about two types of cyber threats. Answer the questions below.

### Cyber Threats

Cyber threats are intentionally harmful, or malicious, actions taken to steal information about a person or company. Cyber threats can also be used by cyber criminals to damage data or disrupt digital lives. Cyber threats are a big deal. A cyber criminal can use a keylogger program to record every keystroke when typing on a computer's keyboard. Your actions are reported immediately to an attacker. Confidential information can include passwords to your computer or email address.

Any computer software that is used with malicious intent is a type of malware. Spyware is a type of malware that covertly transmits information about a computer's activity to another cyber attacker. Spyware can secretly monitor your Internet activity or track your login and password information. Some spyware can even add software you don't want onto a device and change your settings to help an attacker gain personal information about you.

## What is the main idea of this article?

- A) Spyware is used to covertly transmit information to an attacker.
- B) A keylogger program records your actions almost as fast as they happen.
- C) Cyber threats are malicious actions taken to steal information or disrupt a company.

# Which detail supports the main idea?

- A) A cyber criminal can use a keylogger program.
- B) Some types of spyware can covertly add software to you computer.
- C) Spyware is a type of malware.
- Find the sentence that is an opinion and should be taken out. Circle it.

# Your/You're

Ada CyBear is writing a blog about two types of cyber threats. Can you help her finish the article below by writing either your or you're on each blank?

Grammar Clues: Your is the possessive form of you. Use it when talking about something that belongs to the person with whom you are speaking. You're is a contraction of "you are".



If like me, you love technology! Technology allows us to listen					
to music, play games, connect with friends on social media, and helps us with					
directions. Technology can be very helpful in daily life.					
But be careful of cyber criminals lurking online. Technology can be used to					
steal information and harmcomputer. You may not know about					
a vulnerability in computer system until after hacked!					
Cyber criminals are also called bad actors. These bad actors can be a					
single person or group of people taking hostile action againstcomputer					
and other technology devices. Sometimes, bad actors will use a footprinting					
technique to quietly gather information aboutcomputer system to learn					
about its weaknesses for a future cyber attack.					
When a bad actor learns aboutcomputer's vulnerabilities and					
locate a flaw in its security, they can exploit this loophole in the computer's					
software. Bad actors can launch a zero-day exploit in an undocumented security					
flaw found incomputer's systemnot able to locate this type of					
flaw found incomputer's systemnot able to locate this type of advanced cyber attack until after a bad actor launches it.					

## Idioms

Idioms are words or phrases that mean something different from its literal meaning. For example, "piece of cake" is another way of saying "an easy task." It can be difficult to understand the meaning of an idiom by using the ordinary meaning of the words.

Read the following idioms about different types of cyber threats. Fill in the bubble next to the meaning that makes the most sense.

1	A Ping Flood cyber attack will <b>flood</b> a computer system with packets of data, which results in a denial of service.			
	deluge	overwhelm	break	
2	Don't let your computer attack just because it is	kick the bucket from a post	olymorphic malware	
	die	stop working	quit	
3		nt Denial of Service cyber a s when it disrupts your onl	•	
	dirty	unfriendly	sad	
4		ud nine after successfully in hat can not be traced back		
	fantastic	very happy	his couch	
5	You might smell a rat a confidential information	after a keylogger attack bro to an attacker.	adcasts your	
	think something is wrong	want to cry about it	be scared	

# Matching Cybersecurity Definitions

Help Ada CyBear with her homework by matching the cybersecurity term with the correct definition.

HINT: Review the exercises on pages 14-16 to help determine the answers.



A. Polymorphic Malware

B. Zero-Day Exploit

C. Advanced Persistent DoS

D. Ping Flood

E. Keylogger

F. Spoofed Scan

6. Footprinting

H. Spyware

information on a network without having a way to trace back to original user.

Covertly transmits information about a system's data and user activities to an attacker.

An undocumented security vulnerability.

> All your actions are reported to an attacker almost as fast as they happen, broadcasting all

A technique used to gather information about the target system and is usually performed prior to

the actual attack.

of their confidential information.

Type of scan used to gain

Attacks that use a variety of methods to attack a target and disrupt their activities.

Malware that has the ability to redefine its signature, or how the code appears to anti-virus scanners, making it much more difficult to detect.

Systems being flooded with random packets of data.

## Tic-Tac-Toe

Draw a line through the three computer science terms that are like each other. Your line can be vertical, horizontal, or diagonal.

Worm	Snail	Fishing	Journal	Fixtures	Box
Bait	Phishing	Earthworm	Laptop	Computer	Hardware
Snake	Soil	Vishing	Calculator	Hammer	Machine
Master	Programmer	Builder	Pony	Bronco	Trojan Horse
Planner	Coder	Compiler	Flaw	Ransomware	Hoax
Engineer	Software Developer	Creator	Malware	Beetle	Bribe
		-			-

► NOW TRY THIS: Create your own game of tic-tac-toe! Identify three specific jobs available in cybersecurity (and make sure they connect!) and fill in the other squares with other technical, computer-related jobs.

# Dividing by 1-Digit Divisors

Men and women over the last two hundred years have made an impact on careers connected to technology and cybersecurity. Did you know? Each member of the CyBear family is named after a person that has contributed to the growing career field of cybersecurity.

Find out how well you know the CyBear family by dividing the numbers in column one. Once you have the correct number, match the answer to the quotient and correct person! Answers may be used more than once.



### Divide:

1. Widely known as one of the "Fathers of the Internet".

315÷7 = \_\_\_\_\_

2. Helped devise the first commercial electronic computer.

690÷3 = \_\_\_\_\_



3. Instrumental in decoding the ENIGMA machine.

800÷5 = \_\_\_\_\_

4. An Englishman knows as the "Father of Computer Science".

960÷6 = \_\_\_\_\_



5. Considered the first computer programmer.

744÷4 = \_\_\_\_\_

 An American mathematician and a Rear Admiral in the U.S. Navy.

460÷2 = \_\_\_\_\_



7. A co-designer of the TCP/IP protocols and the architecture of the Internet.

405÷9 = \_\_\_\_\_

8. Recognized as having written instructions for the first computer program in the mid-1800s.

558÷3 = \_\_\_

Quotient and Person:

186 = Augusta Ada King

230 = Grace Hopper

45 = Vint Cerf

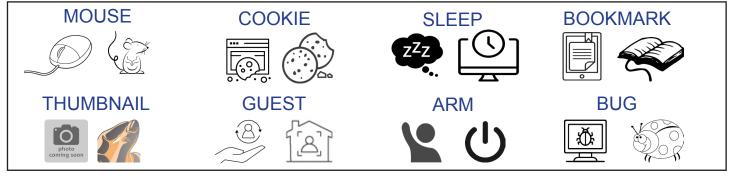
160 = Alan Turing

### **NOW TRY THIS:**

Match each CyBear family member to their namesake, which is one of the people listed above, by visiting Cultureof Cybersecurity.com.

# Homonyms

Homonyms are words that have the same spelling and usually sound alike, but the words have different meanings. Each word has two definitions. Fill in the two numbers below each word that match the definition.



- . A small insect.
- 2. A user who is able to log into a site without the use of a password.
- A small reproduction of an image or page.
- 4 A small rodent that typically has a pointed snout, relatively large ears and eyes, and a long tail.
- 5 A strip of leather, cardboard, or other material used to mark one's place in a book.
- 6. A pointing device that is moved by hand around a flat surface.
- The resting state in which the body is not active and the mind is unconscious.
- A link stored in a web browser for future reference.

### THUMBNAIL

BUG

**MOUSE** 

COOKIE

**GUEST** 

SLEEP

ARM

- A person who is invited to visit the home of, or take part in, a function organized by another.
- 1 () An error in a program or system.
- 1 | Where the machine is made inactive while preserving screen layout, program states, and more.
- 1 ? The nail on the thumb.
- 13 A small file placed on a user's hard disk by a server, containing details about the user's use of the website.
- $14.\,$  To bring a device to a state of readiness.
- 15 A small sweet cake, typically round, flat, and crisp.
- 16. Each of the two upper limbs of the human body from the shoulder to the hand.

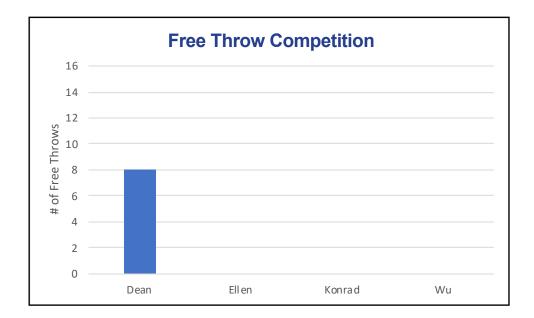
### Free Throws



Contest Results		
Dean	8	
Ellen	15	
Konrad	14	
Wu	9	

Conrad and his friends held a competition on who could make the most free throws out of 15 attempts.

Use the Contest Results to complete the Free Throw Competition bar graph. Dean's results have been filled in for you. When done, answer the questions below.



. Who won the competition? 2. Who made the least amount of shots? 3. How many shots did Dean and Wu make together? \_\_\_\_\_\_ 4. How many shots did Conrad and his friends make together? 5. How many more shots did Ellen make than Konrad? \_\_\_\_\_\_ 6. Who made more shots than Wu, but less than Konrad? \_\_\_\_\_\_ 7. Who made more shots than Dean, but less than Konrad? \_\_\_\_\_

8. How many shots did Konrad and Ellen make together?

## Protect Yourself from Punk Mistakes

Find the statements and questions. Then rewrite each sentence in the table next to their question, using the correct punctuation and capitalization.

A **statement** tells something. It begins with a capital letter and ends with a period.

A **question** asks something. It begin with a capital letter and ends with a question mark.



QUESTIONS	ANSWERS
1.	
2.	
3.	



# Content Words: Cyber Defense

### Vocabulary Words

Antivirus: A special program that protects your computer by finding and removing harmful programs, like a security guard for your device.

Falcon Defense: CrowdStrike's special protection system that keeps computers safe from bad guys trying to cause trouble.

Password: A secret code you create to keep your accounts private, like a key to your digital house.

Phishing: When bad people try to trick you into giving away private information by pretending to be someone you trust.

Hacker: Someone who tries to break into computers or networks, either to cause trouble or steal information.

**Encryption:** A way to scramble information so only people with the right key can read it, like a secret code language.

Two-Step Login: An extra safety step when logging in, like needing b oth a password AND a special code sent to your phone.

Firewall: A security barrier that protects your computer from dangerous things on the internet, like a shield.

Punk Spider: A bad group of hackers who try to steal information and cause problems for others.

Ransomware: A mean program that locks up your computer files and demands money to unlock them.

### Use the vocabulary words to fill in the graphic organizer below.

	Words That Name: <b>Tools for Defense</b>
1	
2	
3	

Words That Name:  Types of Cyber Threats
4
5

Words That Name: Ways to Protect Privacy
6
7
8

	Words That Name:  Cyber Adversaries
9	
10	



# Understanding Cyber Adversaries: Punk Spider

### CYBER CASE FILE: PUNK SPIDER INVESTIGATION

MISSION BRIEF: You are a junior cyber defender helping to protect websites from Punk Spider's attacks. Who is Punk Spider?

Punk Spider is a cyber adversary (a bad guy on the internet) who looks for websites that aren't properly protected. Think of Punk Spider as a burglar who checks for unlocked doors, but instead of houses, they check websites!

Help detectives complete their investigation!

1. What does Punk Spider target?

Target Profile:

(Hint: They look for websites with weak security, like a door with a broken lock.)

2. What is Punk Spider trying to do?

Criminal Activity:\_\_\_\_\_

(Hint: They want to steal information from these broken websites.)

3. How can we stop Punk Spider?

Defense Strategy:\_\_\_\_\_

(Hint: Think about what makes a website safe and trustworthy.)



### JUNIOR DEFENDER TIPS:

- A safe website starts with "https://"
- Look for the padlock symbol in your browser
- If something looks strange on a website, tell a trusted adult
- Never enter personal information on unfamiliar websites

Remember: Just like spiders build webs to catch prey, Punk Spider tries to trap people on unsafe websites. But with good cyber defense, we can keep everyone safe!

# CyBear Activity Sheets - Answers

#### PAGE 1

Staying safe and secure while using computers is everyone's responsibility.

#### PAGE 2

- 1. Two or more computer systems that are grouped together is called a network.
- 2.A router is a hardware device that transfers data to the correct network.
- 3.A broadcast sends, or transmits, a message to many users at once.
- 4. A hub is a network device that connects multiple computers or other devices together.
- 5. An organization's private network is called an Intranet.

### PAGE 3

1. NETWORK	5. BANDWIDTH
2. BROADCAST	6. ROUTER
3. INTRANET	7. HTTPS

8. DATA SERVER

### PAGE 5

4. HUB

Browser - B	History - C
Cookie - A	Download - C
Surfing - B	Upload - B

#### PAGE 6

1. He	2. Her	3. His	4. Our
5. your	6. We	7. his	8. their
Riddle:	<b>KEYBO</b>	ARD	

#### PAGE 7

Across	Down
1. cache	2. cookies
3. spoofing	4. password
8. malware	<ol><li>firewall</li></ol>
10. worm	<ol><li>application</li></ol>
12. internet protocol	7. cryptography
13. botnet	9. algorithm
14. adware	11. hacking

#### PAGE 8

### Shhh! It's a Surprise.

We are throwing mom a surprise party this Saturday. It is so hard to keep a secret from her. My brother and I are going to use cryptography techniques to keep a confidential list of everything we need for the party. We hope she will not be able to decipher our notes by converting our secret text to an understandable message. I will also post our party list to the cloud. The cloud will allow us to access the files through our phones from anywhere with an Internet connection.

### Schools Get Technical.

My school recently purchased laptop computers for students to use in the classroom. I can bring my laptop computer home to work on various assignments. When connected to cyberspace, which includes the Internet and the school's computer systems, I am required to use a Virtual Private Network (VPN). This VPN tool keeps my computer's IP address private, anonymous, and secure. My IP Address is similar to my home address, except it's the unique address for my computer's Internet connection. The VPN helps hide my computer's location from cyber criminals so they can't learn personal information about me.

#### PAGE 9

- 1. Cloud 5. Software
- 2. Information Sharing 6. Cryptography
- 3. Decipher 7. Virtual Private Network (VPN)
- 4. Cyberspace 8. IP Address

### **PAGE 10**

- 1. C 2. B
- 3. Cyber threats are a big deal.

#### **PAGE 11**

If you're like me, you love technology!
Technology allows us to listen to music, play games, connect with friends on social media, and helps us with directions. Technology can be very helpful in your daily life.

# CyBear Activity Sheets - Answers

### **PAGE 11 (Continued)**

But be careful of cyber criminals lurking online. Technology can be used to steal **your** information and harm **your** computer. You may not know about a vulnerabilty in **your** computer system until after **you're** hacked!

Cyber criminals are also called bad actors. These bad actors can be a single person or group of people taking hostile action against your computer and other technology devices. Sometimes, bad actors will use a footprinting technique to quietly gather information about your computer system to learn about its weaknesses for a future cyber attack.

When a bad actor learns about your computer's vulnerabilities and locate a flaw in its security, they can exploit this loophole in the computer's software. Bad actors can launch a zero-day exploit in an undocumented security flaw found in your computer's system. You're not able to locate this type of advanced cyber attack until after a bad actor launches it.

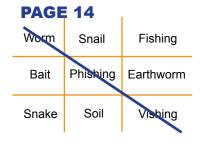
Protect **your** computer systems by updating software patches when prompted by **your** computer!

### **PAGE 12**

- 1. overwhelm
- 2. die
- 4. very happy
- 5. think something is wrong
- 3. sad

#### **PAGE 13**

1. F 2. B 3. E 4. A 5. H 6. G 7. C 8. D



1		ı
Journal	Fixtures	Box
Laptop	Computer	Hardware
Calculator	Hammer	Machine

### **PAGE 14 (Continued)**

Master	Pro- gran	mer	Builder
Planner	Co	ler	Compiler
Engineer	Softv Deve	vare oper	Creator

Pony	Bronco	Trojan Horse
Flaw	Ransom- ware	Hoax
Malware	Beetle	Bribe

### **PAGE 15**

- 1. 45 = Vint Cerf King
- 2. 230 = Grace Hopper Hopper
- 3. 160 = Alan Turing
- 4. 160 = Alan Turing King
- 5. 186 = Augusta
- 6. 230 = Grace
- 7. 45 = Vint Cerf
- 8. 186 = Augusta

### **PAGE 16**

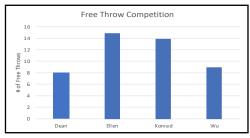
- THUMBNAIL = 3, 12 BUG = 1, 10 MOUSE = 4, 6 COOKIE = 13, 15
- GUEST = 2, 9 SLEEP = 7, 11 ARM = 14, 16 BOOKMARK = 5, 8

#### **PAGE 17**

- 1. Ellen
   5. 1

   2. Dean
   6. Konrad

   3. 17
   7. Wu
- 4. 46 8. 29



#### **PAGE 18**

1. What kind of websites do cyber criminals attack? Hackers looks for broken or unsafe websites to find ways to steal information.

(page 18 answers continued >>)

# CyBear Activity Sheets - Answers

### PAGE 18 (continued)

- 2. How can we protect ourselves from cyber threats? We can stay safe by using websites we trust.
- 3. What do cyber criminals do with broken websites? They hurt websites that aren't protected with strong security.

### **PAGE 19**

1. Antivirus 6. Encryption

2. Falcon Defense 7. Two-Step Login

3. Password 8. Firewall

4. Phishing 9. Punk Spider

5. Ransomware 10. Hacker

### **PAGE 20**

- 1. Punk Spider
- 2. Look for websites that aren't properly protected.
- 3. Look for a safe website that starts with https:// or has a padlock symbol in the browser