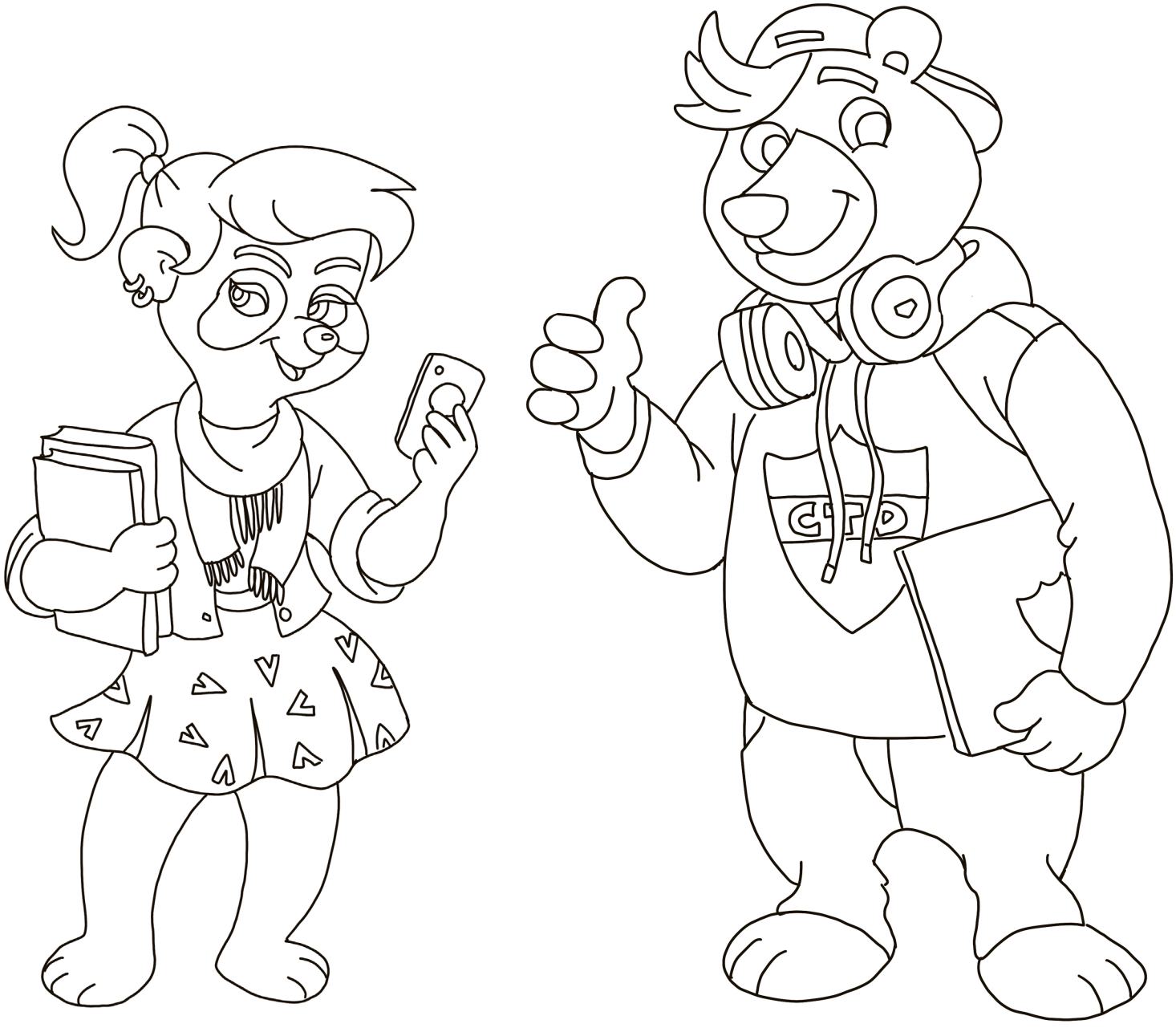
My name is _____

Hello! We're Ada and Vint CyBear!

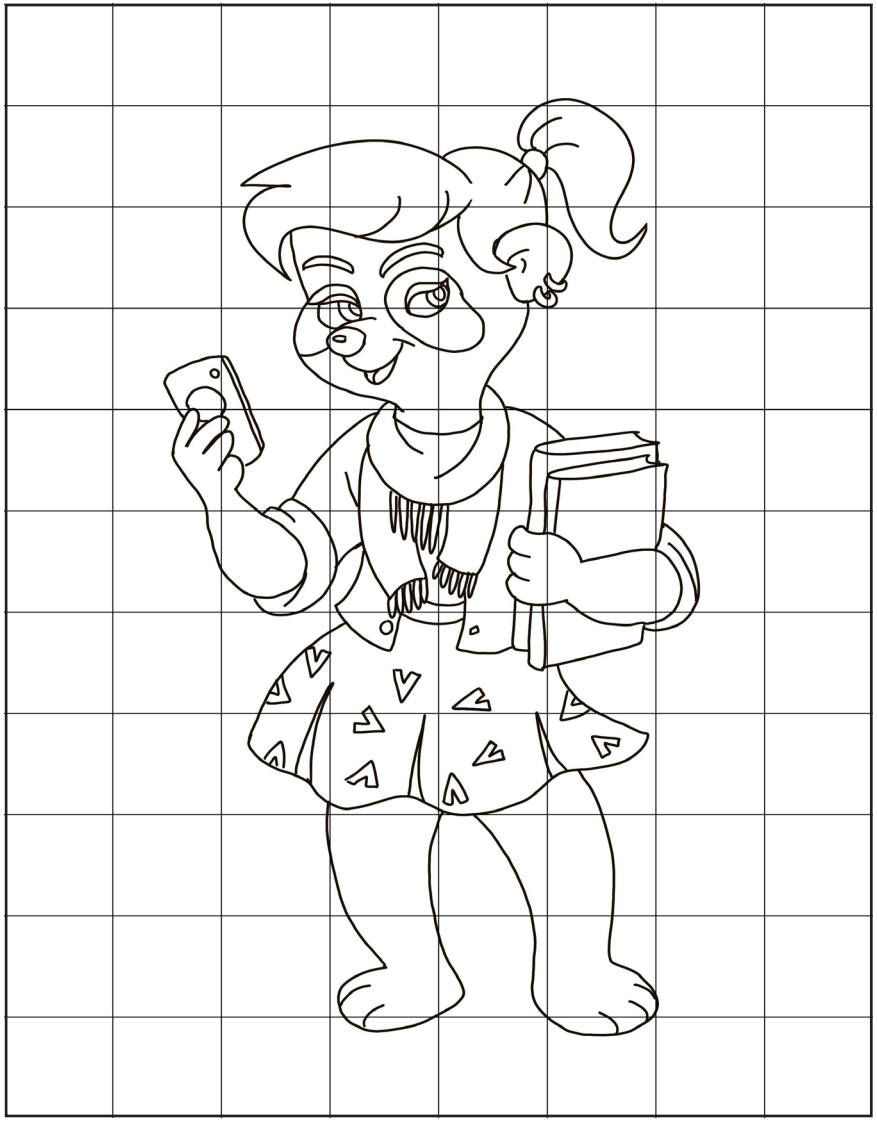
Can you identify our wireless devices? *(Hint: There are three items!)*

_____ _____ _____



Copy Ada CyBear | Learn to Draw

Try to copy the drawing of Ada CyBear using the grid lines as a guide. Next, color your drawing of Ada.



► **NOW TRY THIS:** Using research tools available to you, find out more about who Ada was named after, Ada Lovelace. What is she known for? **Hint:** It involves the very first computer program!

Copy Alan CyBear | Learn to Draw

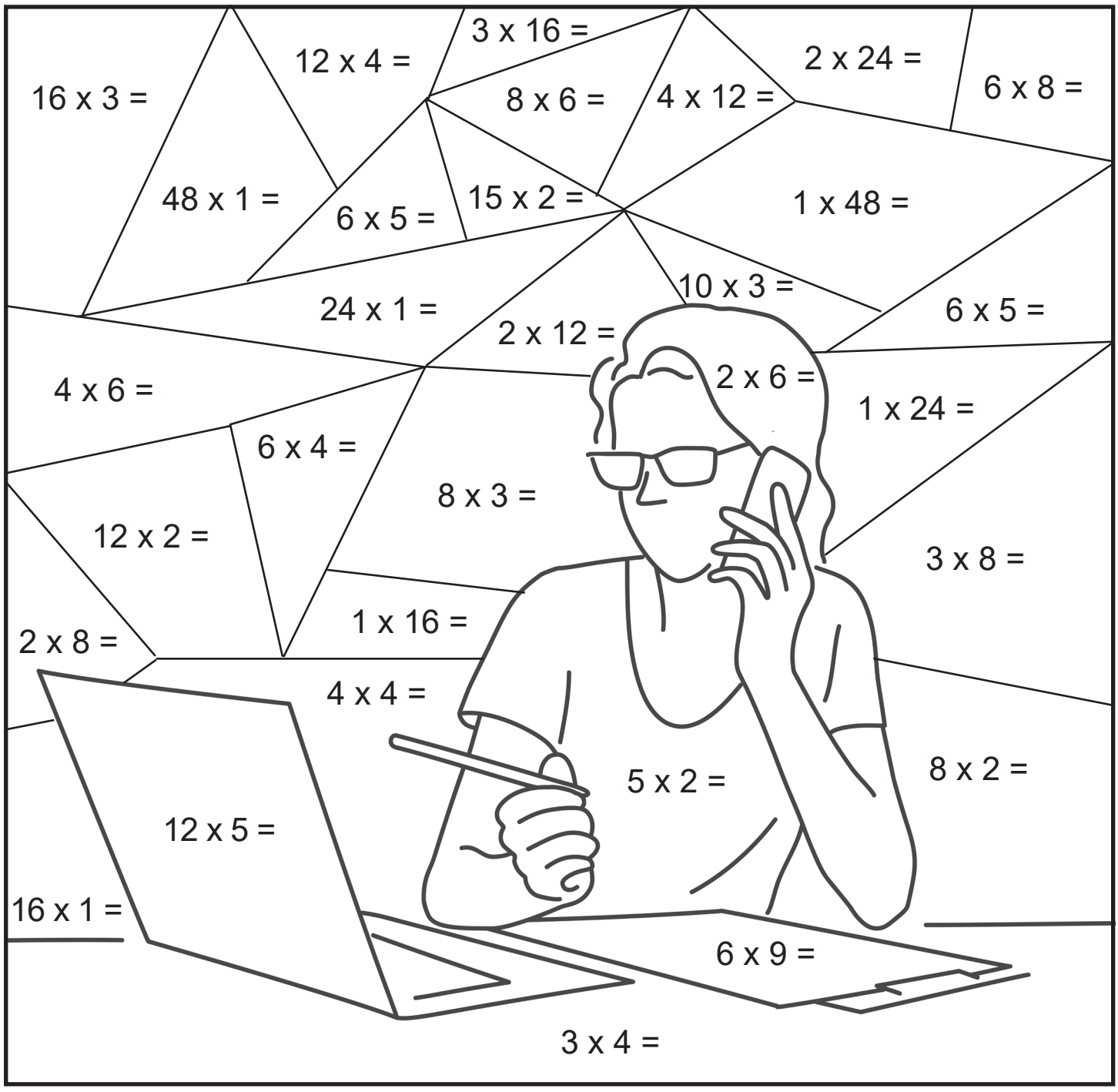
Try to copy the drawing of Alan CyBear using the grid lines as a guide. Next, color your drawing of Alan CyBear.

► **NOW TRY THIS:** Using research tools available to you, find out more about who Alan was named after, Alan Turing. What machine did he help create? **Hint:** It was used in World War II.

Color by Code

Multiple the numbers below and color the picture using the color code.

8 = Black	24 = Yellow	54 = White
10 = Pink	30 = Purple	60 = Green
12 = Brown	36 = Red	
16 = Orange	48 = Blue	



Unscramble Words

Help Vint CyBear unscramble the technology words below. Hints are provided below each scrambled word. Then circle each word inside the box. (Hint: Four words are people's names connected to the CyBear Family)

a) _____
omecturp
(electronic device)

b) _____
coed
(programming language)

c) _____
asofterw
(used by computers)

d) _____
akeybdro
(input device)

e) _____
emarfniam
(large computer)

f) _____
gturin
(first name is Alan)

g) _____
mircipcoh
(tiny electronic part)

h) _____
erhopp
(first name is Grace)

i) _____
lacelove
(first name is Ada)

j) _____
fcer
(first name is Vint)

k) _____
bnyira
(number system)

l) _____
epncryt
(hide messages)

m) _____
dpecryt
(unhide messages)

n) _____
etrenint
(global network)

o) _____
tcegyoholn
(application of knowledge)

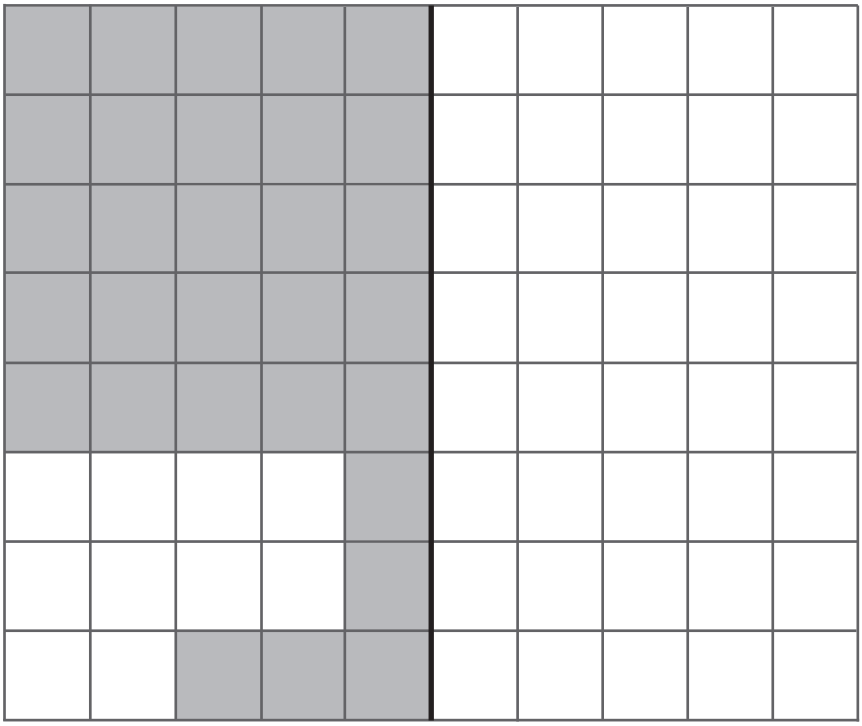
E	K	E	Y	B	O	A	R	D	T	Y	Y	Y	Y	T
H	R	M	J	W	T	T	X	E	Y	T	D	Y	G	Y
A	T	A	G	D	D	W	C	N	Q	K	T	B	T	Z
R	D	K	W	Y	M	H	X	D	Y	R	P	P	D	P
D	Y	D	R	T	N	A	T	T	M	D	Y	R	L	L
W	C	L	Z	O	F	E	I	Y	P	R	R	P	B	E
A	L	O	L	L	N	O	G	N	C	Y	I	Y	C	R
R	X	O	M	R	V	N	S	N	F	H	R	A	Q	Y
E	G	B	E	P	I	G	E	K	C	R	L	C	R	T
Y	L	T	C	R	U	B	B	O	J	E	A	A	E	H
L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

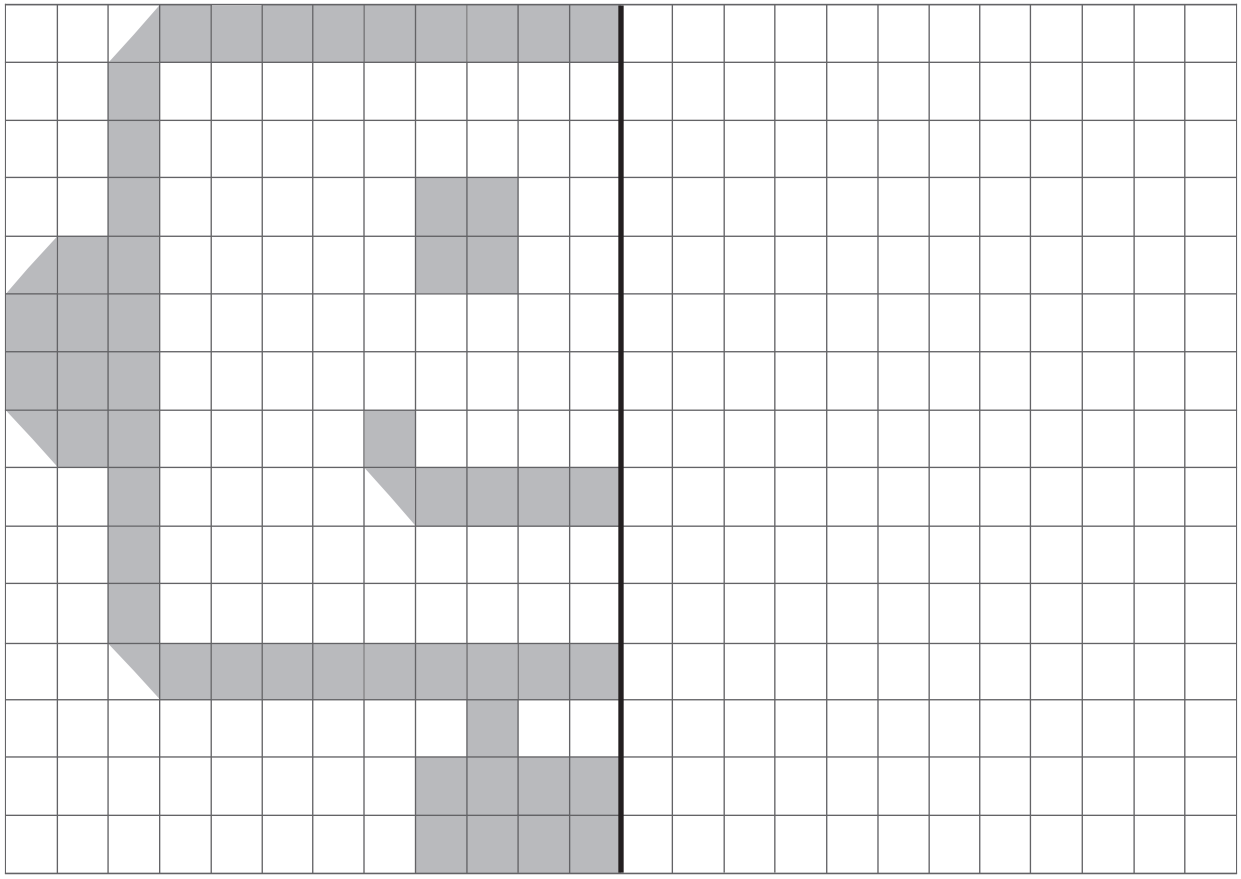
Symmetry - Complete Each Image

In both designs, half of the image appears to the left of a line of symmetry.

Shade the rest of each design. Keep it symmetrical.

To the right, you will finish a desktop computer. Below, you will complete a robot design.





Synonyms

A **synonym** is a word that means the same or almost the same as another word. Check your answers below with a dictionary or thesaurus.

connects	search	clandestine	lock	protect
urgent	maneuver	click	expand	protocols

Circle the synonym in each sentence.

1. When a computer **connects**, it joins a network.
2. When you **search** the Internet, you explore new websites.
3. A **clandestine** website is hidden from the public.
4. When you **lock** a computer, you close access to it.
5. When you **protect** a computer, you defend against cyber criminals.
6. An **urgent** email needs immediate action.
7. When you **maneuver** a mouse, you move an arrow around the screen.
8. You don't **bang** a keyboard, you click its keys.
9. When you **expand** a website's size on your computer, you enlarge it.
10. When a compuer network follows **protocols**, it uses rules to access the Internet.

Help Grandma CyBear show Ada the synonyms by matching the words in the first column with words in the second column. Draw a line between the words that match.

11. move	**a.** shield
12. code	**b.** defender
13. defend	**c.** join
14. guardian	**d.** maneuver
15. rules	**e.** enlarge
16. connect	**f.** cipher
17. Web page	**g.** protocols
18. expand	**h.** website

Synonyms - Wordcross Puzzle

A **synonym** is a word that means the same or almost the same as another word.

joins	defend	immediate	hidden	move
click	enlarge	rules	explore	close

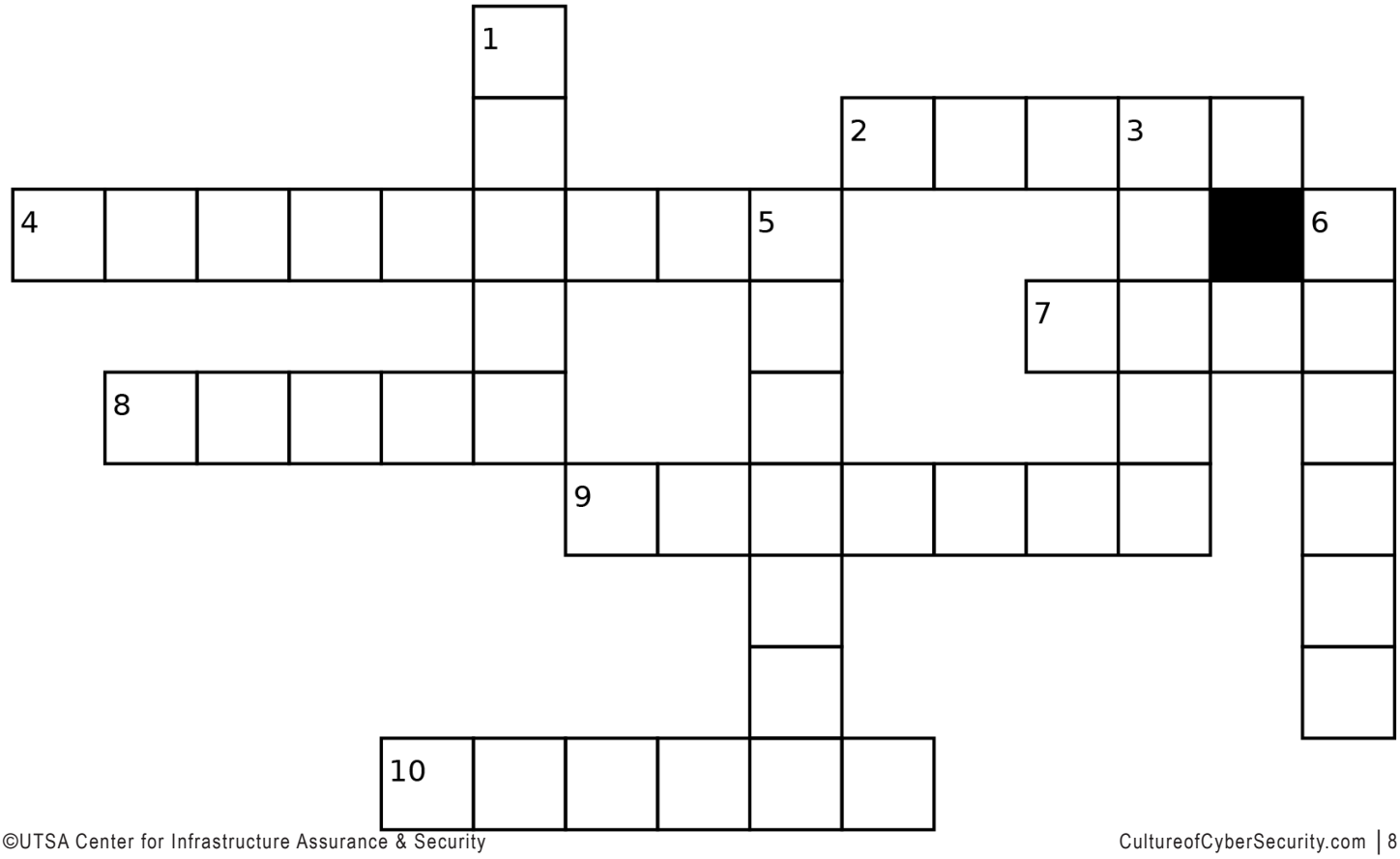
Complete the puzzle. Find the synonym for each word with help from the answer key above.

Synonyms Down

1. connects
3. lock
5. search
6. protect

Synonyms Across

2. bang
4. urgent
7. maneuver
8. protocols
9. expand
10. clandestine



Homographs

A **homograph** is a word that is spelled the same as another word but has a different meaning. Sometimes, it is pronounced differently too!

ring	mouse	wave	subject
can	watch	pet	speaker

The following sentences feature the homograph words in the box above. Read each sentence aloud. Can you identify the different meanings?

1a. When you wear a **ring**.

1b. To **ring** a doorbell.

2a. A computer **mouse**.

2b. A **mouse** eats cheese.

3a. An ocean **wave** along the shore.

3b. You **wave** to a friend to say hello.

4a. My favorite **subject** is technology.

4b. I have nothing to say on the **subject**.

5a. I **can** write computer code.

5b. I drink soda from a **can**.

6a. You **watch** TV after school.

6b. I wear a smart **watch**.

7a. I love to **pet** my dog.

7b. My **pet** dog is very soft.

8a. We had a **speaker** at graduation.

8b. The laptop **speaker** is loud.

A. Read the following words aloud in each row. **Circle** the **three words** that rhyme with the word at the left. One word will not be circled.

1.	**mouse**	blouse	house	muse	spouse
2.	**can**	ban	fan	gran	bean
3.	**watch**	swatch	patch	notch	botch
4.	**speaker**	soaker	weaker	beaker	sleeker

B. Read each question and circle the correct answer.

1.	Which one can be wireless?	mouse	spouse
2.	Which is an Internet connect device?	watch	sasquatch
3.	Which one has four legs?	log	dog
4.	Which one is made of metal?	can	man
5.	Which one connects to a computer?	beaker	speaker

Spot the Differences

Attention to detail is important. See if you can spot the differences between the two pairs of pictures below.

The orginal picture is on the left. Circle the differences found in the image on the right. Then write the answers in the lines at the bottom.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Spelling Skills - Vowels vs Consonants

Fill in the missing vowels and consonants of each word below.

A **vowel** is a letter representing a speech sound made with the vocal tract open, specifically the letters A, E, I, O, U.

Read each definition below and then fill in the missing vowels to identify the word.

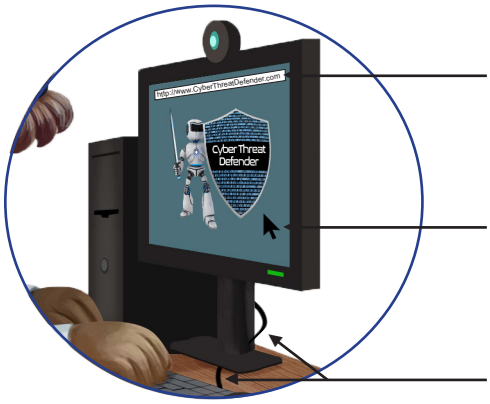
1. H__RDWARE: The physical components of a computer system.
2. KEYB__ __RD: An input device using an arrangement of buttons, or keys, to act as mechanical levels or electronic switches.
3. M__NIT__R: An electronic visual display for computers.
4. BL__ __TOOTH: A wireless technology designed to replace cables between cell phones, laptops, and other devices.

A **consonant** is any letter *except* a, e, i, o, u.

Read each definition below and then fill in the missing consonants to identify the word.

5. B__OWSE__: A utility program that allows the user to locate and retrieve information from networked information services.
6. CA__ __E: A physical medium for carrying signals.
7. __UR__OR: A symbol on a display screen that indicates the active position.

NOW TRY THIS: Now that you have filled in the missing letters of the words above, match some of those words to the pictures shown. The first one has been done for you.



Help Your Family Stop Phishing Emails

A **homophone** is a word that sounds the same as another word but has a different spelling and different meaning. A phishing (sounds like fishing) email pretends to be from someone you trust and trys to gain personal information about you. They are "fishing" for information.

Read the phishing email below. For each pair of underlined homophones, circle the correct word.

To: Alan and Grace CyBear

From: Your Neighborhood Supermarket

Subject: Congratulations! You Won/One! (1)

Greetings, Mr. and Mrs. CyBear!

Thank you for ordering your weekly groceries online from the Neighborhood Supermarket. It is customers like you/ewe (2) that help us support schools and robotic clubs each week/weak (3). As a loyal customer, we/wee (4) would like to/too (5) inform you that you have bin/been (6) entered into our weekly sweepstakes for free groceries. We are excited to share you won this weeks drawing for $500 in free groceries!

To verify your information, please reply by email to confirm you have received this message and weather/whether (7) or not we can share your name in the weekly newlsetter. Make sure/shore (8) to include the password you use to make your grocery orders online to confirm your identity. We will mail/male (9) you the prize money soon!

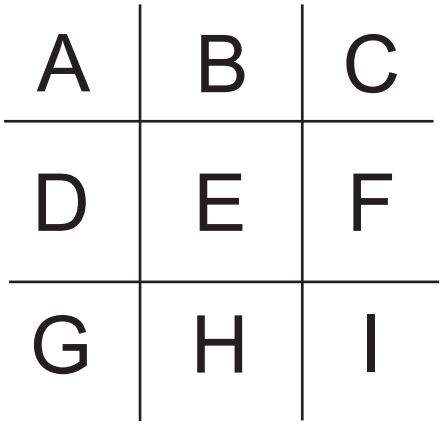
Sincerely,

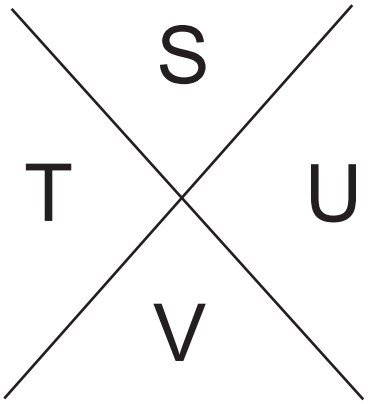
Yore/Your (10) Neighborhood Supermarket

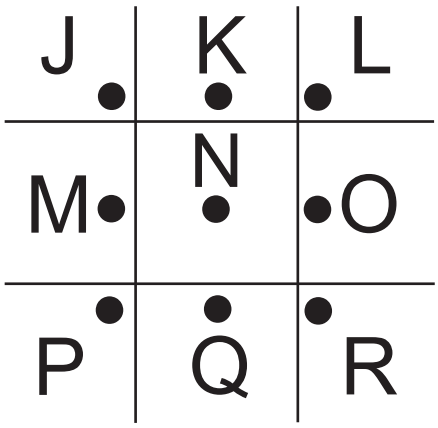
About Pigpen Ciphers

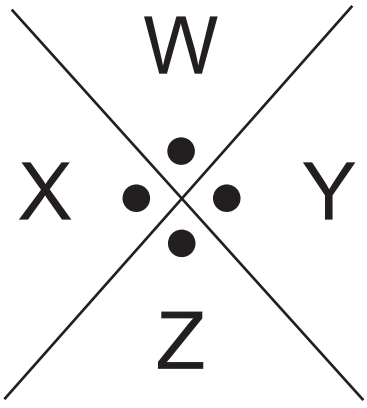
A **pigpen cipher** is a type of **subsititution cipher**. This means that instead of using letters in the alphabet, letters are subsituted, or replaced, by geometric symbols. To encrypt a message, replace each letter in the message with its designated symbol.

Use the key below to solve the phrase on following pages. An example is found at the bottom of the page.









As an example, the phrase "**Writing in code is called a cipher**" becomes:

Decoding with a Pigpen Cipher

Use the pigpen codes from page 13 to decode the following quotes from prominent members of the computer science community!

Hint: To decode a message, locate the shape on the diagram to find the letter. Whether there is a dot in the shape will guide you to which grid you should be looking at.

1. >ΠΟ ƎΕFΟ Γ V><Ɔ< >ΠΟ ƎΕFΟ ΓΟVJ>ΓJUŁΟ ƆΕ Γ ΓΟΟŁ Ǝ< ⅂ ΟΟΓ<V ΓΕF Γ> >Ε UΟ

~ Agusta Ada King

---

2. VΟ ΟΟΛΟF ΟΛΟF ΓΟ >ΠΟ ΠΓV>ΕF< ΕΓ ƎJΟUΓΟƆ ΠJΛΟ ΠJƆ JL ŁΟVV >Ε VΕ Ǝ<ŁΠ ΓΟΓΕFƎJ>ΓΕΟ VΕ Π<ΓŁUŁ< JΟƆ VΕ ΟJVΓ Ł<

~ Vint Cerf

---

3. J ŁΕ> ΕΓ UΓƆV ⅂FΕVΓΟ⅂ <⅂ >ΕƆJ< JFΟΟ> >ΕŁƆ >ΠJ> <Ε< ŁJΟ UΟ VΠJ>ΟΛΟF <Ε< VJΟ> >Ε UΟ >ΠΟFΟ ƎJ< UΟ ΕUV>JŁŁ ΟV U<> >ΠΟFΟ JFΟ ΟΕ ŁΓƎΓ>V

~ Mark Dean

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4. >ΠΟ ƎΕFΟ Γ V><Ɔ< >ΠΟ ƎΕFΟ ΓΟVJ>ΓJUŁΟ ƆΕ Γ ΓΟΟŁ Ǝ< ⅂ ΟΟΓ<V ΓΕF Γ> >Ε UΟ

~ Rear Admiral Grace Hopper

Encoding with a Pigen Cipher

Use the pigpen codes from page 13 to encode the following quotes from prominent members of the computer science community!

Fun Fact: A pigpen cipher is known by many different names. This cipher is also called a Tic-Tac-Toe Cipher, Freemason's Cipher, Napoleonic Cipher and Masonic Cipher.

1. Everyone is a proponent of strong encryption. ~ *Dr. Dorothy Denning*

2. Those who can imagine anything, can create the impossible. ~ *Alan Turing*

3. All creative people want to do the unexpected. ~ *Hedy Lamarr*

4. The danger of computers becoming like humans is not as great as the danger of humans becoming like computers. ~ *Konrad Zuse*

Cryptography - Letter Grouping

Writing in 4-letter groups or 5-letter groups is a quick way to encode a message. To begin, write a sentence in *all capital letters* and *without* punctuation. Squeeze all the letters together.

For example,the sentence **TO BE OR NOT TO BE THAT IS THE QUESTION** becomes **TOBEORNOTTOBETHATISTHEQUESTION**.

Now that the sentence has been squeezed together, divide it evenly into 5-letter groups: **TOBEO RNOTT OBETH ATIST HEQUE STION**

Finally, if a sentence does not divide evenly, fill in the empty spaces with "**null**" letters that do not fit with the sentence.

For example, the sentence SECRET CODES ARE EASY becomes **SECRETCODESAREEASY**, which can be encoded into 5-letter groups to **SECRE TCODE SAREA SYQWX**. The sentence is completed as a coded message by adding the "null" letters QWX at the end.

Now you try! Below is a coded message. Write out the complete message in capital letters, with no spaces between them. Mark a slash (/) between words as they appear to you. We'll start it for you.

CYBER ATTAC KSCAN HARMY OURCO MPUTE RIFYO URCOM PUTER SFIRE WALLS OFTWA REISN OTUPD ATEDQ

C Y B E R/A T _

_ _

_ _

_ _

Bonus Question: How many "null" letters were at the end of the sentence?

Cryptography - Practice Letter Grouping

Let's practice decoding secret messages!

Key: 5-Letter Groups

Coded Message:

THEIL OVEYO UVIRU SISAM ALWAR ECYBE RATTAC KSENT
INANE MAILT HATCA NHARM YOURC OMPUT ERQWY

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

Write the message in plain English:

Key: 4-Letter Groups

ANTI MALW AREI SSOF TWAR ETHA THEL PSPR OTEC
TYOU RCOM PUTE RFRO MMAL WARE CYBE RATT ACKS

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

Write the message in plain English:

Cryptography - Reverse Cipher

A really quick, simple way to encode, or hide, a message is with a reverse cipher. It is the simple process of reading a word or sentence backwards!

For example,the word **HELLO** becomes **OLLEH**.

To make an encoded message hard to read, make sure to write it in all capital letters and remove all punctuation marks. Then, squeeze all the words in a message together by removing the spaces between words.

For example, CREATING SECRET MESSAGES becomes: **SEGASSEMTERCESGNITAERC**. You can also add "null" letters at the end of a message to make it more confusing!

Practice encoding the following message. Remember to remove spaces between words. We'll get it started for you.

YOU MUST BE CLEVER TO UNDERSTAND THIS MESSAGE

E G A S __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

Now, practice decoding, or uncovering, the following message. Add a slash (/) between words to help read the message. We'll get it started for you. (Hint: The Q at the end is a null letter)

HSILGNENIALPOTNISEGASSEMDEDOCGNIGNAHCFOSSECORP
EHTSIGNIDOCEDQ

D E C O D I N G / I __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

Cryptography - Reverse Cipher + Letter Grouping

Practice decoding secret messages using two types of ciphers: the reverse cipher and letter grouping. Decode the following messages by going in reverse—from right to left. Don't leave spaces between letters and remember to add a slash (/) between words as they appear.

Key: 5-Letter Groups
Hint: Contains 3-Null Words

RETUP OCRUO YSSEC CAOTS REKCA HWOLL ANACD ROWSS APKAE WAZXY

— —

— —

— — — — — — — — — —

Write the message in plain English:

Key: 4-Letter Groups
Hint: Contains 2-Null Words

SKCA TTAG NIHS IHPD ELLA CERA UOYT UOBA NOIT AMRO FNIN IAGO TYRT TAHT SLIA MEQL

— —

— —

— —

Write the message in plain English:

CIAS

CROWDSTRIKE

Cyber Safety Word Building

Using Compound Words to Build Cyber Defense Words

Did you know? A compound word is made when two small words are put together to make one new word. Let's look at some compound words to learn important computer safety words by matching them together!

A. Match words from Column A and B to create special cyber safety words. Draw a line to connect them. The first one has been done for you.

Column A	Column B
thumb	guard
pass	phone
fire	board
smart	word
key	wall
safe	drive

Definition

Something that protects or keeps things secure.

A phone that's also like a small computer.

The part of a computer with letters and numbers that you type on.

Your secret code to log in to accounts.

A security shield that protects your computer.

A small device that stores computer files you can carry around.

B. Think of a word for each picture. Then write the compound word.

1.  + wall = _____

   Hint: Protects your computer like a strong shield!

2.  + screen = _____

   Hint: Keeps others out of your device.

3.  + print = _____

   Hint: A special way to unlock devices!

4.  + page = _____

   Hint: The safe starting point on websites.

5.  + site = _____

   Hint: Places we visit on the internet.

Remember: Just like we lock our doors at home, we need to use these special words to lock up our computers and stay safe online!

Catch the Mistakes: Help Stop Wizard Spider!

Read the following. Find and correct the 10 errors (spelling, punctuation, capitalization, or grammar).

WANTED

Wizard Spider is a tricky cyber bad guy who tries to sneek into computers and cause trouble. He acts like a wizard, using sneaky computer “spells” to lock up files and ask for money to unlock them. just like how a real spider spins webs to catch bugs. Wizard Spider builds traps on the internet to trick people.

Wizard Spider is dangerous because he can send emails that look real but are fake. If someone clicks on a bad link or opens a strange file, Wizard Spider can sneak into there computer. He can lock important school work, pictures and games so you can’t use them anymore! Thats why we never click on things we don’t trust

To stay safe from Wizard Spider, always ask a grown-up before opening messages or clicking on links. Use strong pass words and never tell anyone your personnal information online. If something feels weird or too good to be true—like winning a prize you didn’t enter—don’t click! Be a cyber superhero and help stop wizard Spider’s tricks!

CyBear Activity Sheets - Answers

PAGE 1

mobile phone; laptop; headphones

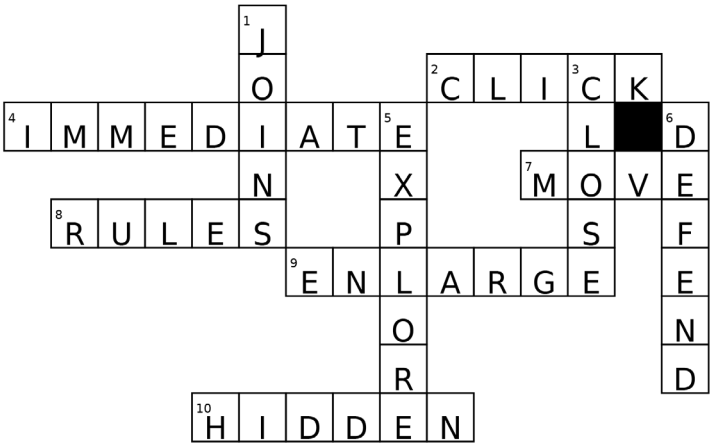
PAGE 5

a) computer
b) code
c) software
d) keyboard
e) mainframe
f) turing
g) microchip
h) hopper
i) lovelace
j) cerf
k) binary
l) encrypt
m) decrypt
n) internet
o) technology

PAGE 7

1. joins
2. explore
3. hidden
4. close
5. defend
6. immediate
7. move
8. click
9. enlarge
10. rules
11. move - d. maneuver
12. code - f. cipher
13. defend - a. shield
14. guardian - b. defender
15. rules - g. protocols
16. connect - c. join
17. Web page - h. website
18. expand - e. enlarge

Page 8



PAGE 9

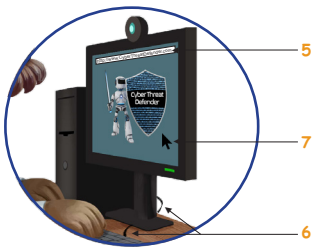
A. 1. blouse, house, spouse; 2. ban, fan, gran; 3. swatch, notch, botch; 4. weaker, beaker, sleeker
B. 1. mouse; 2. watch; 3. dog; 4. can; 5. speaker

PAGE 10

1. Grandma is missing an ear
2. Grandma gained an earring
3. Ada's hair tie is blue
4. Ada no longer has an earring
5. Ada is wearing Grandma's bracelet on her ankle
6. Grandma has an extra button on the bottom of her dress.

PAGE 11

1. HARDWARE
2. KEYBOARD
3. MONITOR
4. BLUETOOTH
5. BROWSER
6. CABLE
7. CURSOR



PAGE 12

1. Won
2. you
3. week
4. we
5. to
6. been
7. whether
8. sure
9. mail
10. Your

CyBear Activity Sheets - Answers

PAGE 14

1. The more I study, the more insatiable do I feel my genius for it to be. ~Agusta Ada King
2. We never, ever in the history of mankind have had access to so much information so quickly and so easily. ~Vint Cerf
3. A lot of kids growing up today aren't told that you can be whatever you want to be. There may be obstacles, but there are no limits. ~Mark Dean
4. One day ladies will take their computers for walks in the park and tell each other, "My little computer said such a funny thing this morning." ~ Rear Admiral Grace Hopper

PAGE 15

1. ▯^▯⊏<⊏▯▯ ⊏v ⌋ ⅂⊏⊏⅂⊏▯▯▯>
   ⊏⊏ v>⊏⊏▯⅂ ▯▯⌊⊏<⅂>⊏⊏▯
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PAGE 16

Cyber attacks can harm your computer if your computers firewall software is not updated

Bonus Question: One (1). The letter 'Q' is a null letter.

PAGE 17

5-Letter Group Message: The I Love You Virus is a Malware Cyber Attack sent in an email that can harm your computer

4-Letter Group Message: Anti Malware is software that helps protect your computer from malware cyber attacks

PAGE 18

Encoded Message: EGASSEMSIHT DNATSREDNUOTREVELCEBTSUMUOY

Decoded Message: DECODING IS THE PROCESS OF CHANGING CODED MESSAGES INTO PLAIN ENGLISH

PAGE 19

5-Letter Group: A WEAK PASSWORD CAN ALLOW HACKERS TO ACCESS YOUR COMPUTER

4-Letter Group: EMAILS THAT TRY TO GAIN INFORMATION ABOUT YOU ARE CALLED PHISHING ATTACKS

PAGE 20

Column A	Column B
thumb	guard
pass	phone
fire	board
smart	word
key	wall
safe	drive

1. firewall
2. lockscreen
3. finger print
4. homepage
5. website

PAGE 21

Wizard Spider is a tricky cyber bad guy who tries to sneak into computers and cause trouble. He acts like a wizard, using sneaky computer "spells" to lock up files and ask for money to unlock them. Just like how a real spider spins webs to catch bugs, Wizard Spider builds traps on the internet to trick people.

Wizard Spider is dangerous because he can send emails that look real but are fake. If someone clicks on a bad link or opens a strange file, Wizard Spider can sneak into their computer. He can lock important school

PAGE 21(continued)

work, pictures, and games so you can't use them anymore! That's why we never click on things we don't trust.

To stay safe from Wizard Spider, always ask a grown-up before opening messages or clicking on links. Use strong passwords and never tell anyone your personal information online. If something feels weird or too good to be true—like winning a prize you didn't enter—don't click! Be a cyber superhero and help stop Wizard Spider's tricks!