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)

<table>
<thead>
<tr>
<th>a)</th>
<th>b)</th>
<th>c)</th>
<th>d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>omecturp</td>
<td>coed</td>
<td>asofterw</td>
<td>akeybdro</td>
</tr>
<tr>
<td>(electronic device)</td>
<td>(programming language)</td>
<td>(used by computers)</td>
<td>(input device)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e)</th>
<th>f)</th>
<th>g)</th>
<th>h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>emarfniam</td>
<td>gturin</td>
<td>mircipcoh</td>
<td>erhopp</td>
</tr>
<tr>
<td>(large computer)</td>
<td>(first name is Alan)</td>
<td>(tiny electronic part)</td>
<td>(first name is Grace)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>i)</th>
<th>j)</th>
<th>k)</th>
<th>l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>lacelove</td>
<td>fcer</td>
<td>bnyira</td>
<td>epncryt</td>
</tr>
<tr>
<td>(first name is Ada)</td>
<td>(first name is Vint)</td>
<td>(number system)</td>
<td>(hide messages)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>m)</th>
<th>n)</th>
<th>o)</th>
</tr>
</thead>
<tbody>
<tr>
<td>dpecryt</td>
<td>etrenint</td>
<td>tcegyoholn</td>
</tr>
<tr>
<td>(unhide messages)</td>
<td>(global network)</td>
<td>(application of knowledge)</td>
</tr>
</tbody>
</table>

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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.
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.
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.
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!

<table>
<thead>
<tr>
<th>ring</th>
<th>mouse</th>
<th>wave</th>
<th>subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>can</td>
<td>watch</td>
<td>pet</td>
<td>speaker</td>
</tr>
</tbody>
</table>

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

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

**Synonyms Down**
1. connects
2. bang
3. lock
4. urgent
5. search
6. protect
7. maneuver
8. protocols
9. expand
10. clandestine

**Synonyms Across**
1. joins
2. defend
3. immediate
4. hidden
5. move
6. click
7. enlarge
8. rules
9. explore
10. close
Homophones - Phishing

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 tries 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**!

Greetings, Mr. and Mrs. CyBear!

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

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

Sincerely,

**Yore/Your** Neighborhood Supermarket

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CultureofCyberSecurity.com
About Pigpen Ciphers

A pigpen cipher is a type of substitution cipher. This means that instead of using letters in the alphabet, letters are substituted, 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:

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. >no efo j v><<e> >no efo rov>j>ju o je j cool e< l do<r<v ce f j> >e u0
   
   ~ Agusta Ada King

2. v0 o<dof d<dof j0 >no njv>ef< ec nc ojnu cnuor< f nojv>ef< ec ve 3<jnu jugr e< fco ve m<jluj < l<
   
   ~ Vint Cerf

3. j le> ec ve jvjr<rlv<r<l< lej< lej< >en< jfe< fe> fuv>en< lej< l<jul>it ju fju> fo fju> fuj> fju>
   
   ~ Mark Dean

4. >no efo j v><<e> >no efo rov>j>ju o je j cool e< l do<r<v ce f j> >e u0
   
   ~ Rear Admiral Grace Hopper
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: **TOBEORNOTTOBETHATISTHEQUESTION**

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 **SECRET CODES ARE EASY**. 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

CYBER ATTAC KSCAN HARMY OURCOM
```

Bonus Question: How many “null” letters were at the end of the sentence?
Let's practice decoding secret messages!

Key: 5-Letter Groups

Coded Message:

THEIL OVEYO U VIRU 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 ET HA THEL PSPR OTEC
TYOU RCOM PUTE RFRO MMAL WARE CYBE RATT ACKS

Write the message in plain English:
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

EGAS

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

DECODING/
PAGE 1
a) computer  i) lovelace
b) code  j) cerf
c) software  k) binary
d) keyboard  l) encrypt
e) mainframe  m) decrypt
f) turing  n) internet
g) microchip  o) technology
h) hopper

PAGE 2 (continued)

PAGE 2

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

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

PAGE 8
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 9
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 10
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 11
Encoded Message: EGASSEMSIHT DNATSREDNUOTREVELCEBTSUMUOY

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

Did you know? The CIAS cybersecurity card game, called Cyber Threat Protector, is ideal for students in grades 3-5. It’s available through our online store >> CIASmarketplace.com.