An escape room lesson plan on cyber technology and safety for students in grades 6-8.

"Be Cyber Savvy" Escape Room

Can you save your school from hackers?

Included in This Guide

Be Cyber Savvy Escape Room

Grades 6–8

Start here!

Welcome to the "Be Cyber Savvy!" Escape Room! In this super-engaging lesson plan, your students will work together in small groups to solve challenges surrounding popular STEM topics like artificial intelligence, cryptology, cybersecurity, and more.

To help you get the most out of this resource, we've created two unique ways to enjoy this activity with your students!

MINI ESCAPE ROOM (1 CLASS PERIOD)

Time requirement: One 40-to-60-minute class period.

Setup expectation: This lesson plan requires approximately the same amount of prep work as a typical lesson plan.

How to group students: This activity is best done with small groups of 3 or 4 students. It can also be done as a whole-class activity with students working independently.

FULL ESCAPE ROOM (2–3 CLASS PERIODS)

Time requirement: Two to three 40-to-60-minute class periods.

Setup expectation: The full Escape Room is an awesome learning experience your students will remember for years to come. Be prepared for more setup and preparation than an average lesson plan. Give yourself plenty of time to read the teachers guide, print/assemble the materials, and understand the puzzles before enjoying it with your class.

How to group students: This activity is best done with small groups of 3 or 4 students.

Student movement: Depending upon your classroom limitations and/or your own preference, the full Escape Room can be done with groups moving from one station to the next or with groups remaining in one location:

Students rotate: In this model, you set up the puzzle stations in advance. During the activity, students rotate from one station to the next as they complete each one. (Note: We recommend setting up two identical stations for each puzzle—eight total—so groups can remain small.)

Students don't rotate: In this model, you put all puzzle station materials into envelopes in advance. Students get into groups of 3 or 4 and complete each puzzle in one location, receiving the next puzzle's materials from you when the previous puzzle is completed.

Mini Escape Room page 4

Full Escape Room page 16

Be Cyber Savvy

Mini Escape Room CHALLENGE

Pages 4 to 14

girls4tech

Teachers Guide

Hackers are trying to steal student passwords at your school! The students in your class must work in small groups to stop the hackers by using a pigpen cipher to solve a puzzle. Doing so, they will learn five rules for creating a secure password they can share with their classmates, saving their school from the hackers!

Time Requirement:

One 40–60-minute class period

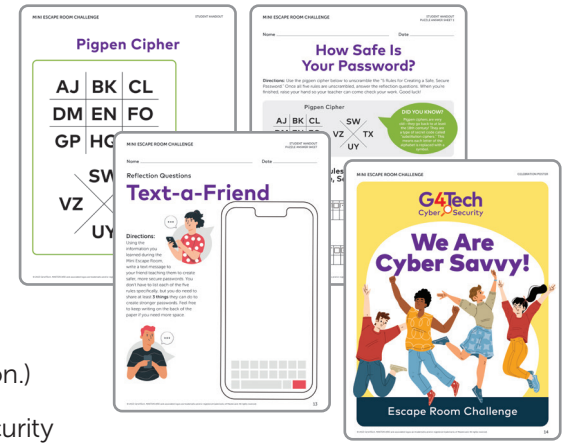
Grade-Level:

6–8

Materials:

- G4Tech Cyber Security Door Sign (print and/or display)
- Mini Escape Room Story Pages (print and/or display)
- Pigpen Cipher Page (1 per student)
- "How Safe Is Your Password?" Page (1 per student)
- "Text-a-Friend" Reflection Page (1 per student)
- "We Are Cyber Savvy!" Celebration Poster (print and/or display)
- Optional: Timer (a phone timer or YouTube 30-minute countdown timer work well)

BEFORE ACTIVITY



1. Print copies of Pigpen Cipher page, "How Safe Is Your Password?" page, and "Text-a-Friend" reflection page for each student.
2. Organize students in groups of 3 or 4. (You can also allow students to choose their own groups at the start of the lesson.)
3. Display the G4Tech Cyber Security door sign on your classroom door or on the front board to get students excited about the activity.

DURING ACTIVITY

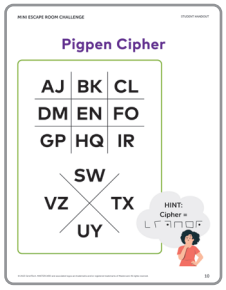
1. Begin the lesson with a conversation about passwords. Use any of the following questions and/or your own to keep the discussion going.
   - Why do we use passwords?
   - Do you know anyone who's been "hacked" or had their password stolen? What happened?
   - Without sharing your passwords with us, how do you choose them?
   - Do you think your passwords are safe? Why?
   - What do you think are the three most common passwords people use? (Answer: 123456, 123456789, qwerty)
   - Why do you think those three are the most popular? Would you ever use one of those passwords? Why or why not?
   - Why do you think people try to find out other people's passwords?
   - What would you tell people if they wanted to make a super-safe password?
2. Tell your students that today they're going to become cybersecurity experts. But only if they can complete a challenging puzzle before their time runs out.

3 Display the **Mini Escape Room Story Pages** and read them aloud to your class.

4 Optional: Tell your students the amount of time they will have to complete their puzzle. This can vary based on the length of your class period but should be at least 30 minutes. (Note: Some students feel anxious when faced with completing timed tasks. If you think your class will do better without the time requirement, feel free to leave it out of the lesson.)

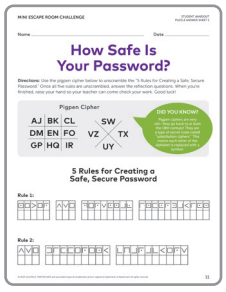
5 Assign students their groups and where each group will be working. Or let students choose their own groups of 3 or 4 and ask them to move so they are all sitting together.

6 Once students are settled, pass out the Pigpen Cipher pages and "How Safe Is Your Password?" pages to each group.



7 Ask students to look at their **Pigpen Cipher page**. Tell them you are going to give them 30 seconds just to study it and take note of anything they observe that might help them understand it. (This gives all students time to view the cipher in a relaxed way before time has started.) When time is up, ask students to raise their hands if they noticed anything that they think might help them "crack the code." Don't call on students to share, instead tell them to save that information for their groups.

8 Explain that this is the cipher, or code, they will need to solve their puzzle. Explain that it is supposed to be a little strange and confusing because it's a secret code that people have been using since the 1700s to send secret messages. They will have to work together as a group to figure it out. Point out that they have been given one clue in the lower right-hand corner of the page to help them get started.

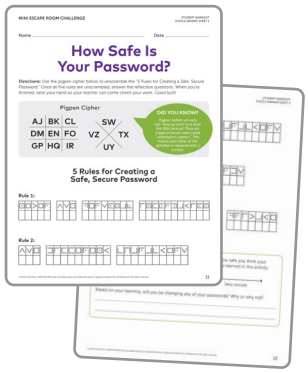


9 Ask students to look at their **"How Safe Is Your Password?"** page. Explain that they will need to use the Pigpen Cipher to unscramble all 5 Rules for Creating a Safe, Secure Password. Once they have, they should answer the reflection questions on the back of the page and then raise their hands. You will come check their work and, if they've completed it successfully, they will have beaten the hackers and won the Mini Escape Room!

10 Tell students that while you will be moving around the room, you won't be giving any clues for how to decipher the code until at least 10 minutes have passed. After answering any questions, start the timer and let the students begin working.

11 When groups finish, check their work. If correct, give them the **"Text-a-Friend" Reflection Page** and allow them to use any remaining time to start it. If incorrect, provide a clue and allow them to continue working.

12 Prompt students when 10 minutes have passed in case a group is stuck, when they have approximately 10 minutes left in the activity, and when they should finish up their work.



AFTER ACTIVITY

1. Ask students to stop working when time has run out (or when you have chosen to end the activity if not using a timer). If groups have not finished their "How Safe Is Your Password?" page, you can have them complete them as you review the activity together.

2. Discuss the activity and review "5 Rules for Creating a Safe, Secure Password" as a class with some of the following questions:

   - How did you decipher/make sense of the pigpen cipher? Was it challenging or easy? Why?
   - What did you do as a group when you got frustrated? What worked well? What could you have done better?
   - Which of the five rules do you think is the most important? Why?
   - Do you believe your passwords are secure or unsecure? Will you be changing any of them?
   - Would it be a good idea to share these rules with the rest of the school? Why or why not?

3. Collect all "How Safe Is Your Password?" pages from students for a quick assessment check/grade.

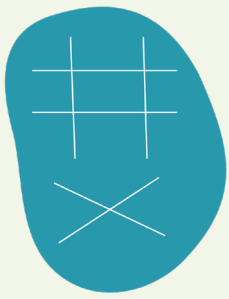
4. Pass out the "Text-a-Friend" reflection page to each student. They can use the remainder of class time to complete it. It can also be assigned as homework or as a review activity during your next class period.

5. Celebrate! If desired, take a photo of each of the groups holding the "We Are Cyber Savvy!" celebration poster.

How To Read a Pigpen Cipher/Hints:

If students are struggling to read the pigpen cipher, use any of the following hints to help them:

- What do you notice about the shapes that symbolize each letter in the clue on the Pigpen Cipher page? For example, the letter "E" looks like an open box. If we find "E" on the pigpen cipher, do you notice anything about its location or what's around it? (Point to the outline of the table around it—a box with 4-lined sides.)
- www.wikihow.com/Write-in-Pigpen-Code
- www.youtube.com/watch?v=jTMTBCP2P7A



girls4tech

Welcome to

G4Tech Cyber Security

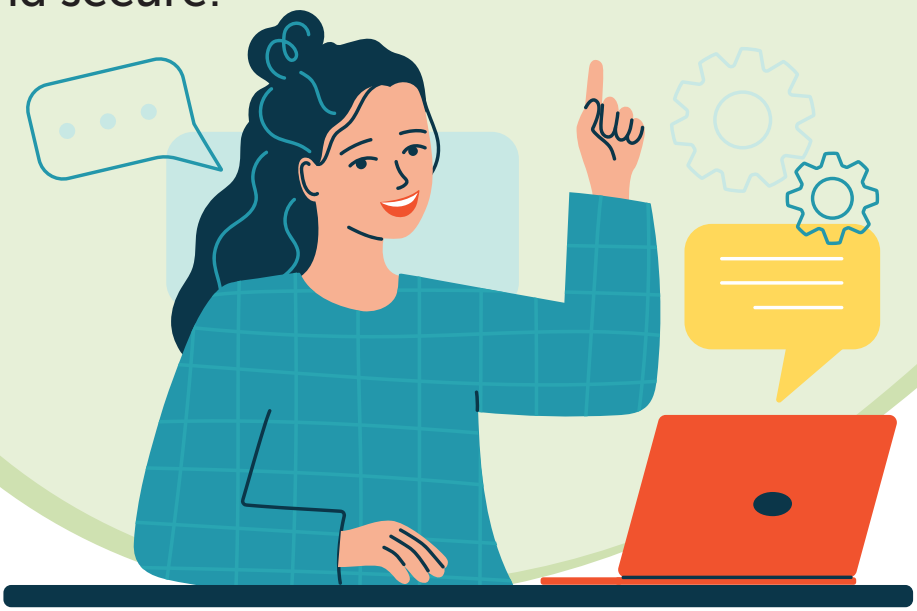
Escape Room Challenge

G4Tech Cyber Security Door Sign

Congratulations!

You're one of a handful of students to land a junior internship at G4Tech Cyber Security! Here, you've been learning all about the different ways people can keep their personal information safe and secure as they enjoy working, playing games, and talking with friends and family online.

Things have been going really well at your internship. Until today, that is. Today, you learned that hackers are trying to get students' passwords so they can log into their accounts and cause trouble at your school. It's important that everyone keeps their passwords safe and secure!



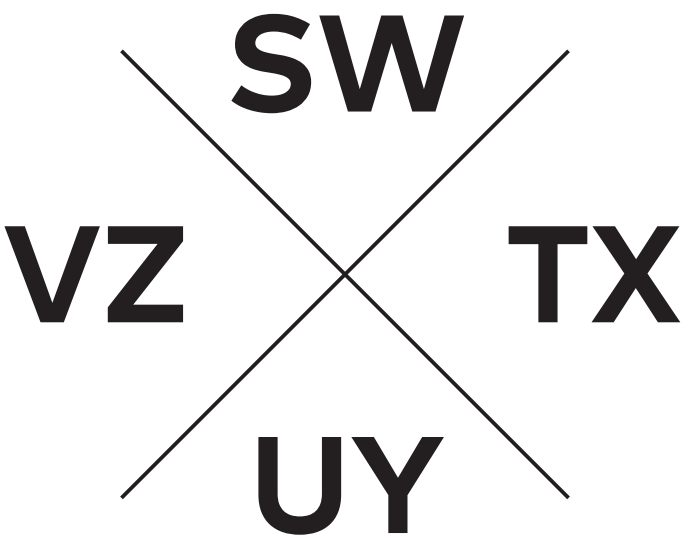
The cybersecurity experts at G4Tech are sure everything will be fine if students just follow the five basic rules for creating secure passwords, but unfortunately, the rules are hidden in a puzzle no one can seem to crack!

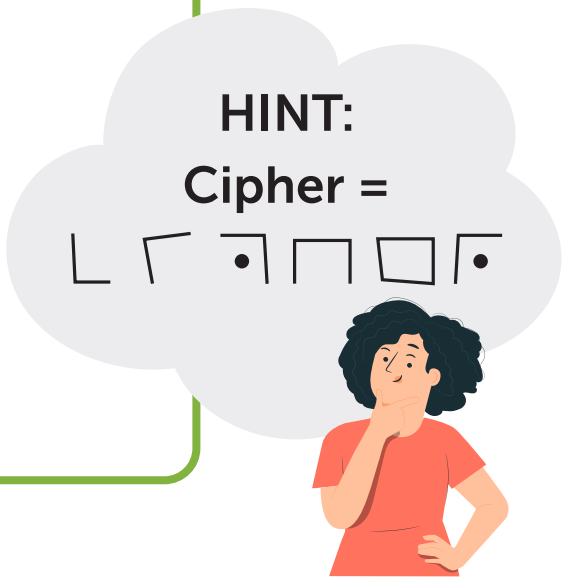
Can you and your fellow interns solve the puzzle and find the five rules your classmates need in order to stop the hackers?

You'll have to work together and quickly!

Pigpen Cipher

AJ	BK	CL
DM	EN	FO
GP	HQ	IR





Name _____ Date _____

How Safe Is Your Password?

Directions: Use the pigpen cipher below to unscramble the "5 Rules for Creating a Safe, Secure Password." Once all five rules are unscrambled, answer the reflection questions. When you're finished, raise your hand so your teacher can come check your work. Good luck!

Pigpen Cipher

AJ	BK	CL
DM	EN	FO
GP	HQ	IR

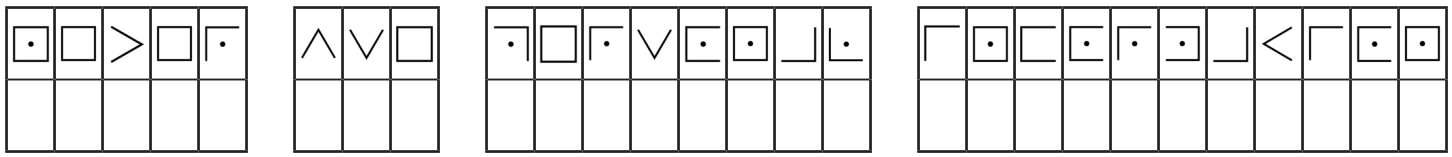
SW
VZ TX
UY

DID YOU KNOW?

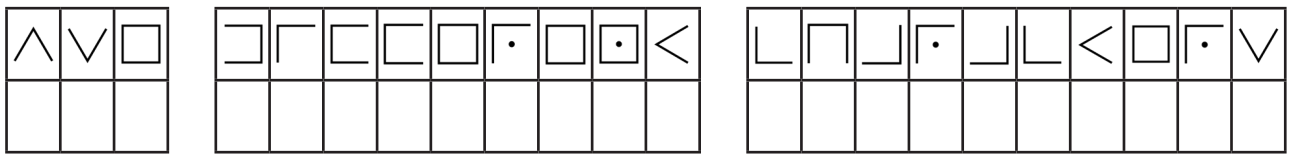
Pigpen ciphers are very old—they go back to at least the 18th century! They are a type of secret code called "substitution ciphers." This means each letter of the alphabet is replaced with a symbol.

5 Rules for Creating a Safe, Secure Password

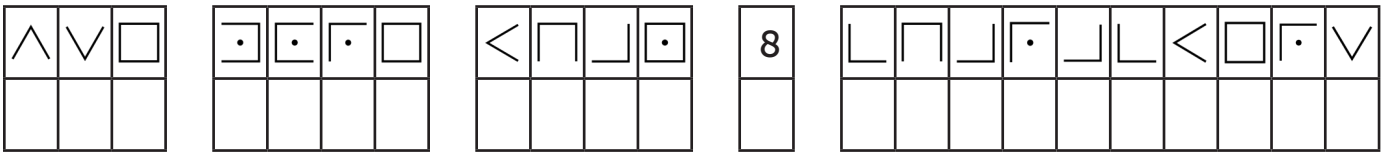
Rule 1:



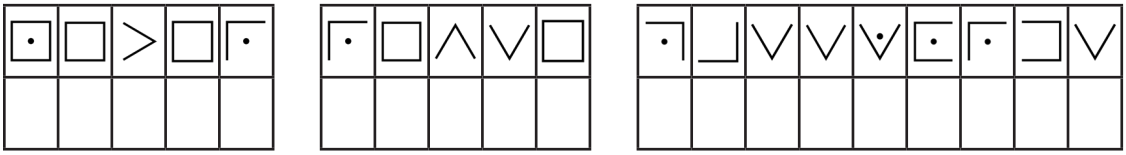
Rule 2:



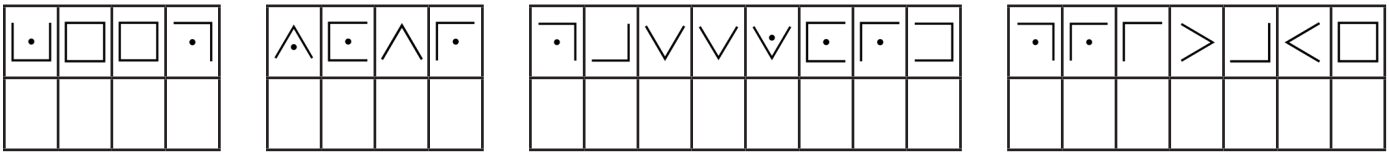
Rule 3:



Rule 4:



Rule 5:



Reflection Questions

Draw an "X" on the line below to indicate how safe you think your current passwords are based on what you've learned in this activity.

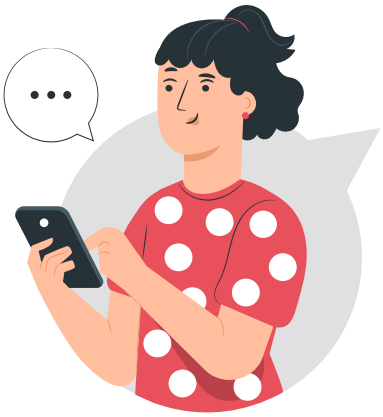
Not secure — Somewhat secure — Very secure

Based on your learning, will you be changing any of your passwords? Why or why not?

Name _____ Date _____

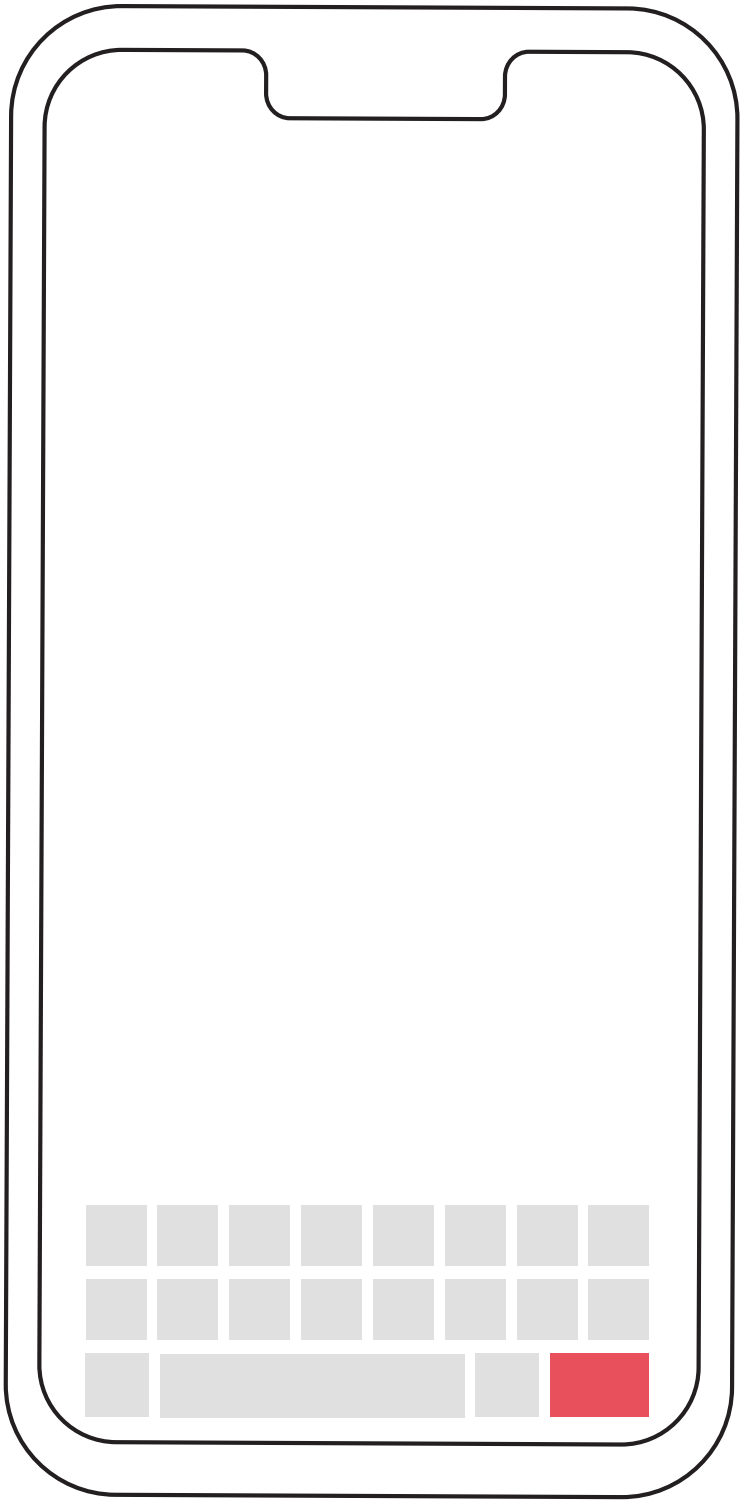
Reflection Questions

Text-a-Friend



Directions:

Using the information you learned during the Mini Escape Room, write a text message to your friend teaching them to create safer, more secure passwords. You don't have to list each of the five rules specifically, but you do need to share at least **3 things** they can do to create stronger passwords. Feel free to keep writing on the back of the paper if you need more space.



G4Tech Cyber Security

We Are Cyber Savvy!

Escape Room Challenge

Be Cyber Savvy

Full Escape Room CHALLENGE

Pages 16 to 45

girls4tech

Teachers Guide

Hackers are trying to gain access to your school's online grading system. Once in, they'll delete all the grades and the school year will have to be repeated! The students in your class must work in small groups to stop them. They will need to complete four challenges, each one giving them one piece of the Final Puzzle. Once they've received all four pieces, they will assemble a "Rules for Staying Safe Online" poster that they can display in school to ensure the hackers can't trick anyone in the building into giving them access to the online grading system!

Time Requirement:

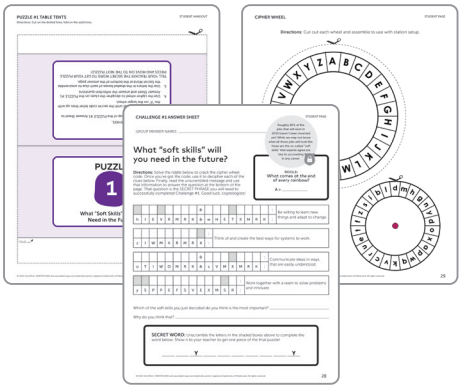
Two to three 40-to-60-minute class periods

Grade-Level:

6–8

Materials:

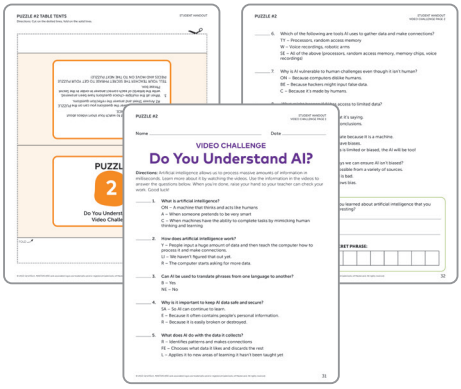
- G4Tech Cybersecurity door sign (display)
- Full Escape Room story pages (display)
- "We Are Cyber Savvy!" celebration poster (display)
- "We Are Cyber Savvy!" Escape Room directions page (display)
- Optional: Timer (a phone timer or YouTube 30-minute countdown timer work well)



PUZZLE #1:

"What 'Soft Skills' Will You Need in the Future?" Materials

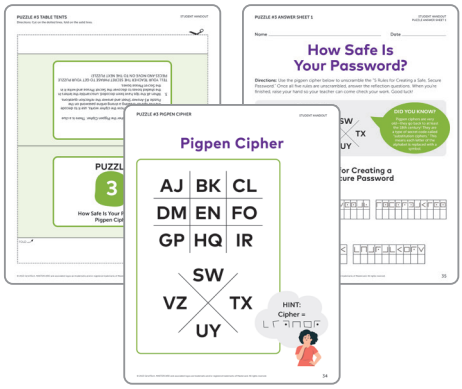
- Puzzle #1 Table Tent/Student Instructions
- Cipher Wheel pages (at least 1 per group)
- Round-head brass paper fasteners for assembling cipher wheels (at least 1 per group)
- "What 'Soft Skills' Will You Need in the Future?" page (1 per student)
- Scissors



PUZZLE #2:

"'Do You Understand AI?' Video Challenge" Materials

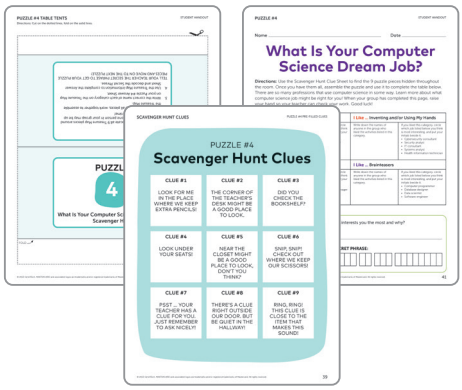
- Puzzle #2 Table Tent/Student Instructions
- "'Do You Understand AI?' Video Challenge" page (1 per student)
- Device(s) with internet access (e.g., tablets, laptops, or student phones)
- Headphones (1 pair per student)
- Videos: What Is Artificial Intelligence? www.weareteachers.com/become-a-cyber-detective



PUZZLE #3:

"How Safe Is Your Password?" Materials

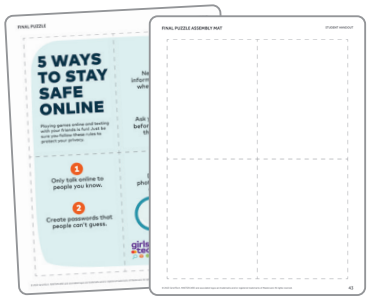
- Puzzle #3 Table Tent/Student Instructions
- How Safe Is Your Password?" page (1 per student)
- Pigpen Cipher page (1 per student)



PUZZLE #4:

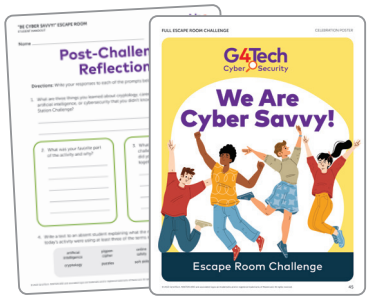
"'What Is Your Computer Science Dream Job?' Scavenger Hunt" Materials

- Puzzle #4 Table Tent/Student Instructions
- Dream Job puzzle pieces (1 per group)
- Scavenger Hunt Clue page pre-filled or blank (1 per group)
- "'What Is Your Computer Science Dream Job?' Scavenger Hunt" page (1 per student)



FINAL PUZZLE MATERIALS:

- "5 Ways To Stay Safe Online" puzzle, 1 per group
- Final Puzzle assembly mat
- Glue or tape, 1 per group



POST–ESCAPE ROOM ACTIVITY:

- "We Are Cyber Savvy!" Escape Room reflection page (1 per student)
- "We Are Cyber Savvy!" Celebration Poster (1 per group)

BEFORE ACTIVITY

1. Print and prepare all needed materials for the Full Escape Room.

2. Determine if students will or will not rotate between puzzles.

   Student Movement: Depending upon your classroom limitations and/or your own preference, the Full Escape Room can be done with groups moving from one station to the next or with groups remaining in one location:

   Students Rotate:

   - Designate areas in your room for each station (e.g., four student desks pushed together).
   - Each area will need the Puzzle Station Table Tent (see Table Tent Assembly Instructions) and all puzzle materials (see Materials).
   - Determine how many stations you will be assembling so you know how many of each item to print.

   Students Don't Rotate:

   - Designate areas in your room for each student group (e.g., four student desks pushed together).
   - Determine how many groups will be participating in the activity. Note: We recommend no more than four students per group.
   - Determine how many student groups you will be assembling so you know how many of each item to print.
   - For each group, print and place all materials for each puzzle (see Materials) in separate manilla folders or 9 x 12 envelopes. Clearly label each one with the appropriate puzzle table tent so they will have the puzzle number and directions.

3. Display the G4Tech Cyber Security door sign on your classroom door or on the front board to get students excited about the activity.

DURING ACTIVITY

1. As students enter class, instruct them not to touch any of the materials set up or their desks. Instead, ask them to observe the classroom and see if they can come up with any inferences about what they'll be doing in class over the next day or two. Tell your students that today they're going to become cybersecurity experts, but only if they can complete a challenging Escape Room before their time runs out. Lead a brief conversation using your own questions or some of the questions below:

   - What sort of topics do you think we'll be studying today? Why do you think that?
   - Did you see anything you're excited about or interested in checking out?
   - What do you think we might be doing?
   - Has anyone ever done an Escape Room before? What was it like?

   Note: Depending on your group, you may want to take a minute to explain what an Escape Room is and how it works. Escape rooms are puzzle games in which you must work with your team to solve a series of puzzles. In this Escape Room, there are four puzzles. Completing each one will give you one piece of the Final Puzzle you will need to assemble in order to win.

2. Inform students of which groups they will be working in and where each group will be working. Or tell students they will need to move into groups of no more than 4 and ask them to move so they are all sitting together.

3. Display the Escape Room story pages and read them aloud to your class.

4 **Optional:** Tell your students the amount of time they will have to complete their puzzle. This can vary based on the length of your class period but should be approximately 80 minutes. Note: Some students feel anxious when faced with completing timed tasks. If you think your class will do better without the time requirement, feel free to leave it out of the lesson.

5 Once students are settled in their groups, explain the directions for the Escape Room (see below and pages 24-25).

6 Tell students that while you will be moving around the room, you won't be giving any clues for how to decipher the code until at least 5 minutes have passed. Ask if there are any last-minute questions, then start the timer, and students can begin.

7 Prompt students when 10 minutes have passed, when they have approximately 5 minutes left in the activity, and when they should finish up their work and prepare to move to the next puzzle.

DIRECTIONS IF STUDENTS ARE ROTATING THROUGH STATIONS

STEP 1: When all group members are seated at a puzzle station, read the directions for the puzzle on the table tent. Make sure everyone in your group understands the directions.

STEP 2: Pass out the puzzle worksheets and any other materials needed for this puzzle to every group member.

STEP 3: Working together, you will have approximately 15 minutes to solve the puzzle and complete the worksheet.

STEP 4: If your group gets stuck, raise your hand to ask for a clue.

STEP 5: When you have solved the puzzle and completed the worksheet, raise your hand. Your teacher will come and check your work. If it is correct, you will receive a piece of the Final Puzzle. DON'T LOSE IT!

STEP 6: Stay seated quietly at the puzzle station until your teacher instructs you to move to the next one. If you don't finish the puzzle in time, don't worry! Your teacher will collect your worksheets and you will have time to finish the puzzle later.

STEP 7: After you have successfully completed all four puzzles, you will receive a Final Puzzle Assembly Mat. Use it to assemble the "5 Ways To Stay Safe Online" poster. Once it is assembled correctly, raise your hand to show your teacher. Congratulations! You have defeated the hackers!

DIRECTIONS IF STUDENTS ARE STAYING IN ONE PLACE

STEP 1: When all group members are ready, read the directions for the puzzle on the envelope your teacher has given you. Make sure everyone in your group understands the directions.

STEP 2: Pass out the puzzle worksheets and any other materials needed for this puzzle to every group member.

STEP 3: Working together, you will have approximately 15 minutes to solve the puzzle and complete the worksheet.

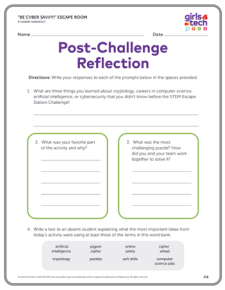
STEP 4: If your group gets stuck, raise your hand to ask for a clue.

STEP 5: When you have solved the puzzle and completed the worksheet, raise your hand. Your teacher will come and check your work. If it is correct, you will receive a piece of the Final Puzzle. DON'T LOSE IT!

STEP 6: Place all puzzle materials back into the correct envelope. Stay seated quietly at the puzzle station until your teacher hands you your next puzzle. If you don't finish the puzzle in time, don't worry! Your teacher will collect your puzzle envelope and you will have time to finish the puzzle later.

STEP 7: After you have successfully completed all four puzzles, you will receive a Final Puzzle Assembly Mat. Use it to assemble the "5 Ways To Stay Safe Online" poster. Once it is assembled correctly, raise your hand to show your teacher. Congratulations! You have defeated the hackers!

AFTER ACTIVITY



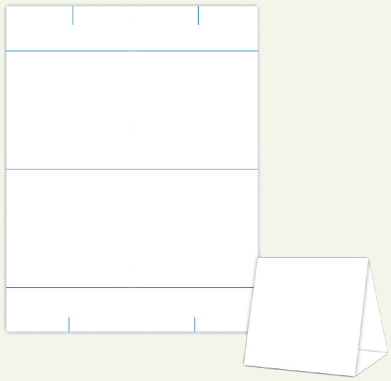
1. When all student groups have rotated through each of the four puzzles and had time to assemble their Final Puzzles, collect all competed worksheets and pass out the "We Are Cyber Savvy!" Escape Room reflection page.
2. Groups who successfully complete the Escape Room can use the time to begin work on their reflection pages. Groups who need more time at one or more of the stations can use this time to finish them up, working on the reflection pages at home or at a later date.
3. After students have completed their "We Are Cyber Savvy!" Escape Room reflection page, discuss the activity and review the five ways to stay safe online as a class with some of the following questions and/or your own questions:
   - Which puzzle did you like the most/least? Why?
   - What did you do as a group when you got frustrated? What worked well? What could you have done better?
   - What was something you learned from the puzzles that sticks with you or you think is important?
   - What might they add to the "5 Ways To Stay Safe Online" poster based on their own experiences?

4. Collect the "We Are Cyber Savvy!" reflection pages from students for a quick assessment check/grade.
5. Celebrate! If desired, take a photo of each of the groups holding the "We Are Cyber Savvy!" poster.

Table Tent Assembly

Print the table tent page for each puzzle. Assemble them according to the image at right.

Display on each puzzle station to direct students as they rotate to each puzzle station.



Puzzle Hints

Share these with your students if they get stuck/require a hint!

Puzzle #1

Puzzle #1: "What 'Soft Skills' Will You Need in the Future?"

CLUE 1: What comes at the end of every rainbow? **A** = **w**

CLUE 2: Make sure **A** on the outer wheel of the cipher wheel lines up with the **w** on the inner wheel. Use it to help the students decode the first word.

Puzzle #2

"'Do You Understand AI?' Video Challenge"

CLUE 1: Ensure students are watching the correct video for each question using the answer keys.

Puzzle #3

"How Safe Is Your Password?"

CLUE 1: What do you notice about the shapes that symbolize each letter in the clue on the Pigpen Cipher page? For example, the letter "E" looks like an open box. If we find "E" on the pigpen cipher, do you notice anything about its location or what's around it? (Point to the outline of the table around it – a box with 4-lined sides.)

CLUE 2:
www.wikihow.com/Write-in-Pigpen-Code

CLUE 3:
www.youtube.com/watch?v=jTMTBCP2P7A

Puzzle #4

"'What Is Your Computer Science Dream Job?' Scavenger Hunt"

CLUE 1: Help students locate any clues that they might have struggled to find.

CLUE 2: Help students assemble their puzzle and use it to determine what aspect of computer science they might be most interested in pursuing in the future.

Welcome to

G4Tech Cyber Security

Escape Room Challenge

G4Tech Cyber Security Door Sign

Congratulations!

You're one of a handful of students to land a junior internship at G4Tech Cyber Security! Here, you've been learning all about the different ways people can keep their personal information safe and secure as they enjoy working, playing games, and talking with friends and family online.

Things have been going really well with your internship. Until today, that is. Today, you learned that hackers are trying to get the password to your school's online grading software so they can delete all the records of student grades this year. With no way to confirm that students have passed their classes, the school would have no choice but to make EVERYONE REPEAT THE ENTIRE SCHOOL YEAR! You have to do something!

The hackers are hoping to steal the password to the online grading software from someone at school who isn't internet savvy so it's important to remind your classmates about how to remain safe online as soon as possible.

The cybersecurity experts at G4Tech are sure that everything will be fine if students just follow the five basic rules for being safe and secure online, but unfortunately, the rules are hidden in various STEM-related puzzles throughout the office!

Can you and your fellow interns solve the puzzles and find the five rules your classmates need in order to save the school year?

You'll have to work together and quickly!

Student Directions

STEP 1: When your group is seated, read the directions for the puzzle on the table tent.

STEP 2: Pass out the puzzle worksheets and any other materials to every group member.

STEP 3: Work together to solve the puzzle. You don't have much time!

STEP 4: Raise your hand for a clue if your group gets stuck.

STEP 5: When you have solved the puzzle and completed the worksheet, raise your hand. If you have solved it correctly, your teacher will give you one piece of the final puzzle. Don't lose it!

STEP 6: Stay at this station until instructed to move to the next one.

STEP 7: Once you have all four final puzzle pieces, you will receive a Final Puzzle Assembly Mat. Use it to make the "5 Ways To Stay Safe Online" poster you will need to keep your school safe from the hackers!

Student Directions

STEP 1: When your group is seated, read the directions for the puzzle on the envelope.

STEP 2: Pass out the puzzle worksheets and any other materials to every group member.

STEP 3: Work together to solve the puzzle. You don't have much time!

STEP 4: Raise your hand for a clue if your group gets stuck.

STEP 5: When you have solved the puzzle and completed the worksheet. Raise your hand. If you have solved it correctly, your teacher will give you one piece of the final puzzle. Don't lose it!

STEP 6: Place all puzzle materials back into the envelope and wait to receive your next envelope.

STEP 7: Once you have all four final puzzle pieces, you will receive a Final Puzzle Assembly Mat. Use it to make the "5 Ways to Stay Safe Online" Poster you will need to keep your school safe from the hackers!

PUZZLE #1 TABLE TENTS

Directions: Cut on the dotted lines, fold on the solid lines.

PUZZLE #1 DIRECTIONS

1. Assemble the CIPHER WHEEL.
2. Solve the riddle at the top of the PUZZLE #1 Answer Sheet to crack the cipher code.
3. Spin the smaller wheel until the secret code letter lines up with the "A" on the larger wheel.
4. Use the cipher wheel to decipher the clues on the PUZZLE #1 Answer Sheet and answer the reflection questions
5. Use the letters in the shaded boxes of each clue to unscramble the Secret Word at the bottom of the answer page.

TELL YOUR TEACHER THE SECRET WORD TO GET YOUR PUZZLE PIECES AND MOVE ON TO THE NEXT PUZZLE!

PUZZLE

1

What "Soft Skills" Will You Need in the Future?

FOLD

GROUP MEMBER NAMES: _____

What "soft skills" will you need in the future?

Roughly 85% of the jobs that will exist in 2030 haven't been invented yet! While we may not know what all those jobs will look like, these are the so-called "soft skills" that experts agree are key to succeeding in any career.

Directions: Solve the riddle on the right to crack the cipher wheel code. Once you've got the code, use it to decipher each of the clues below. Finally, read the unscrambled message and use that information to answer the question at the bottom of the page. That question is the SECRET PHRASE you will need to successfully completed Challenge #1. Good luck, cryptologists!

RIDDLE:
What comes at the end of every rainbow?

A = _____

								&								:	Be willing to learn new things and adapt to change.
s	c	w	h	b	t	b	u	&	w	v	w	d	n	t	b	u	:	

									:	Think of and create the best ways for systems to work.
v	c	g	t	u	b	t	b	u	:	

								&								:	Communicate ideas in ways that are easily understood.
g	d	c	w	z	t	b	u	&	o	h	t	n	t	b	u	:	

													:	Work together with a team to solve problems and innovate.
k	l	s	s	w	q	l	h	w	n	t	l	b	:	

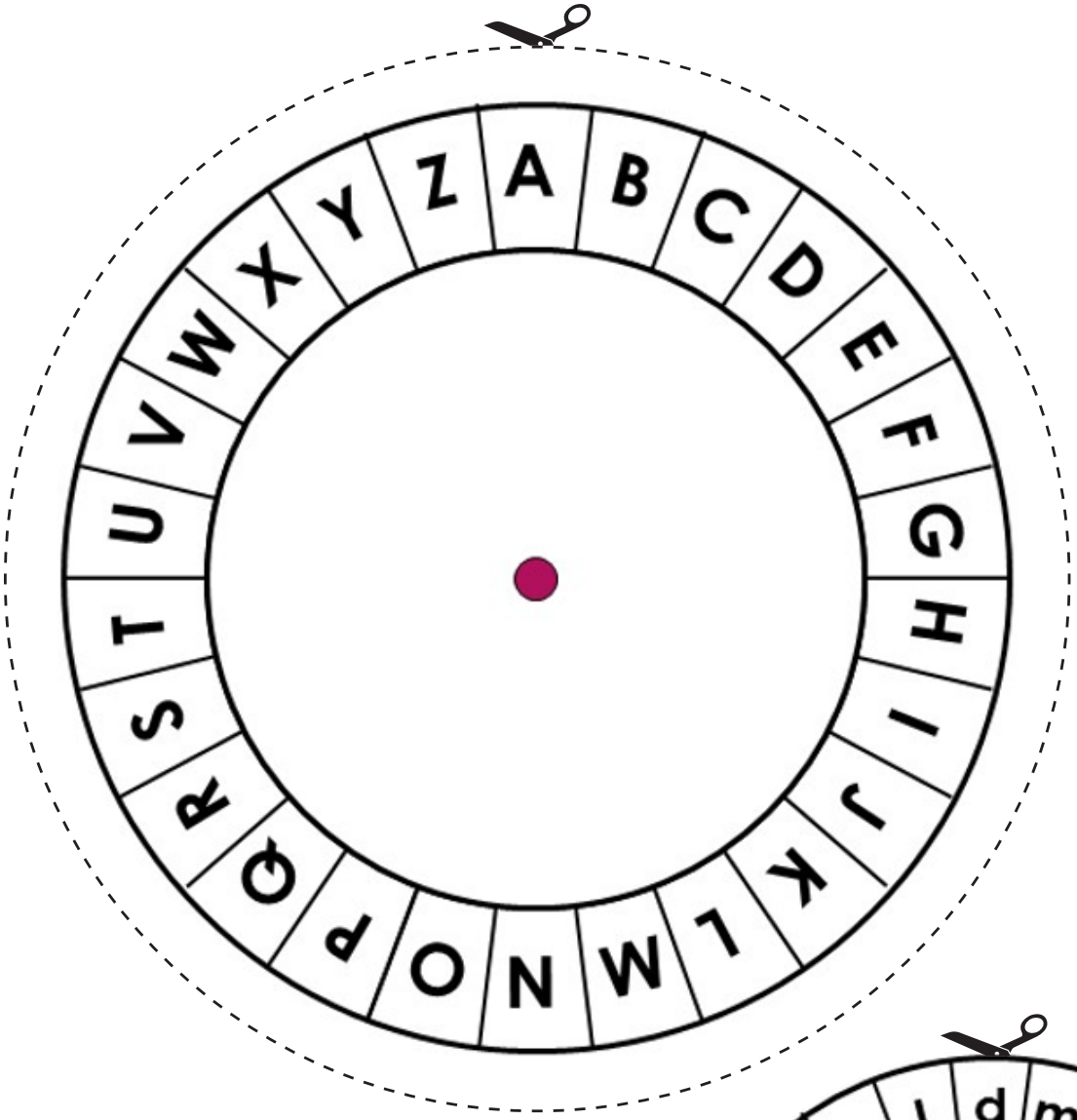
Which of the soft skills you just decoded do you think is the most important? _____

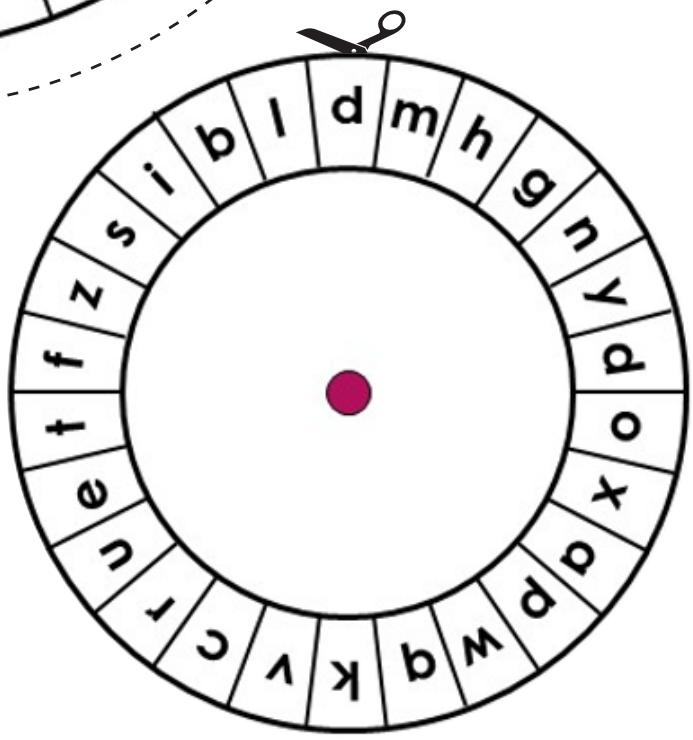
Why do you think that? _____

SECRET WORD: Unscramble the letters in the shaded boxes above to complete the word below. Show it to your teacher to get one piece of the final puzzle!

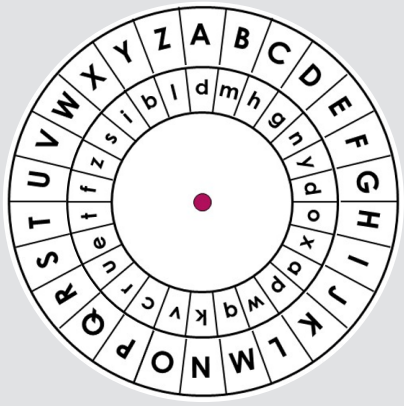
_____ _____ **Y** _____ _____ _____ _____ _____ _____ **Y**

Directions: Cut out each wheel and assemble to use with station setup.





Assembled Cipher Wheel



PUZZLE #2 TABLE TENTS

Directions: Cut on the dotted lines, fold on the solid lines.

PUZZLE

2

Do You Understand AI?
Video Challenge

FOLD

PUZZLE #2 DIRECTIONS

1. Use the device provided to watch four short videos about ARTIFICIAL INTELLIGENCE.
2. After each video, answer the questions you can on the PUZZLE #2 Answer Sheet and answer the reflection questions.
3. When all the multiple-choice questions have been answered, write the letter(s) of each correct answer in order in the Secret Phrase box.

TELL YOUR TEACHER THE SECRET PHRASE TO GET YOUR PUZZLE PIECES AND MOVE ON TO THE NEXT PUZZLE!

Name _____ Date _____

VIDEO CHALLENGE

Do You Understand AI?

Directions: Artificial intelligence allows us to process massive amounts of information in milliseconds. Learn more about it by watching the videos. Use the information in the videos to answer the questions below. When you're done, raise your hand so your teacher can check your work. Good luck!

_____ **1. What is artificial intelligence?**

ON – A machine that thinks and acts like humans

A – When someone pretends to be very smart

C – When machines have the ability to complete tasks by mimicking human thinking and learning

_____ **2. How does artificial intelligence work?**

Y – People input a huge amount of data and then teach the computer how to process it and make connections.

LI – We haven't figured that out yet.

R – The computer starts asking for more data.

_____ **3. Can AI be used to translate phrases from one language to another?**

B – Yes

NE – No

_____ **4. Why is it important to keep AI data safe and secure?**

SA – So AI can continue to learn.

E – Because it often contains people's personal information.

R – Because it is easily broken or destroyed.

_____ **5. What does AI do with the data it collects?**

R – Identifies patterns and makes connections

FE – Chooses what data it likes and discards the rest

L – Applies it to new areas of learning it hasn't been taught yet

_____ 6. Which of the following are tools AI uses to gather data and make connections?

TY – Processors, random access memory

W – Voice recordings, robotic arms

SE – All of the above (processors, random access memory, memory chips, voice recordings)

_____ 7. Why is AI vulnerable to human challenges even though it isn't human?

ON – Because computers dislike humans.

BE – Because hackers might input false data.

C – Because it's made by humans.

_____ 8. What might happen if AI has access to limited data?

A – It might break.

IN – People might not like what it's saying.

UR – It might draw incorrect conclusions.

_____ 9. AI can't be biased or discriminate because it is a machine.

TE – True, computers do not have biases.

IT – False, if the data it receives is limited or biased, the AI will be too!

_____ 10. Which of the following are ways we can ensure AI isn't biased?

Y – Provide as much data as possible from a variety of sources.

C – Teach AI that being biased is bad.

LT – Shut down any AI that shows bias.

Reflection Questions

What is something you learned about artificial intelligence that you found especially interesting?

_____

Why do you feel this way? _____

SECRET PHRASE:

PUZZLE #3 TABLE TENTS

Directions: Cut on the dotted lines, fold on the solid lines.

PUZZLE #3 DIRECTIONS

1. Work together to decipher the Pigpen Cipher. There is a clue on the cipher page!
2. Once you understand how the cipher works, use it to decode the five tips for creating a strong online password on the Puzzle #3 Answer Sheet and answer the reflection questions.
3. When all the tips have been decoded, unscramble the letters in the shaded boxes to discover the Secret Phrase and write it in the Secret Phrase boxes.

TELL YOUR TEACHER THE SECRET PHRASE TO GET YOUR PUZZLE PIECES AND MOVE ON TO THE NEXT PUZZLE!

PUZZLE

How Safe Is Your Password?
Pigpen Cipher

FOLD

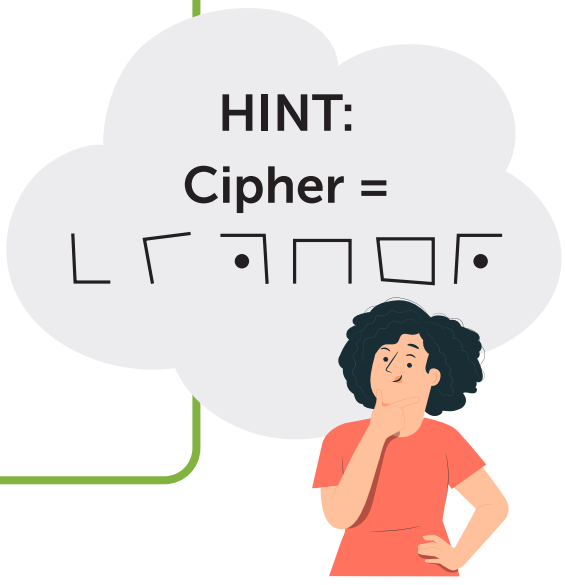
Pigpen Cipher

AJ	BK	CL
DM	EN	FO
GP	HQ	IR

SW

VZ TX

UY



Name _____ Date _____

How Safe Is Your Password?

Directions: Use the pigpen cipher below to unscramble the "5 Rules for Creating a Safe, Secure Password." Once all five rules are unscrambled, answer the reflection questions. When you're finished, raise your hand so your teacher can come check your work. Good luck!

Pigpen Cipher

AJ	BK	CL
DM	EN	FO
GP	HQ	IR

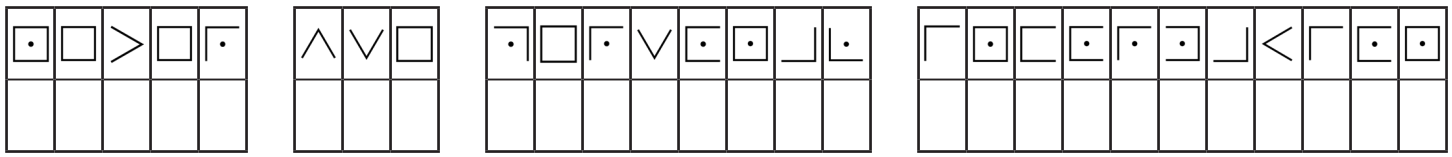
SW
VZ TX
UY

DID YOU KNOW?

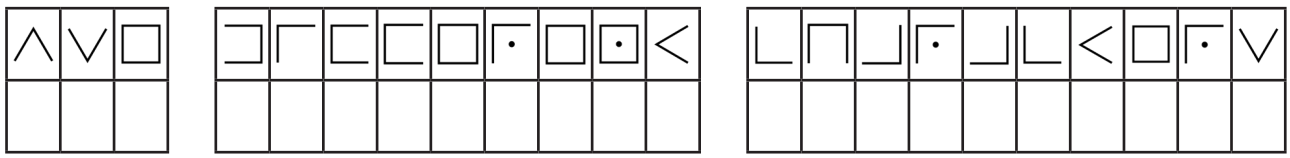
Pigpen ciphers are very old—they go back to at least the 18th century! They are a type of secret code called "substitution ciphers." This means each letter of the alphabet is replaced with a symbol.

5 Rules for Creating a Safe, Secure Password

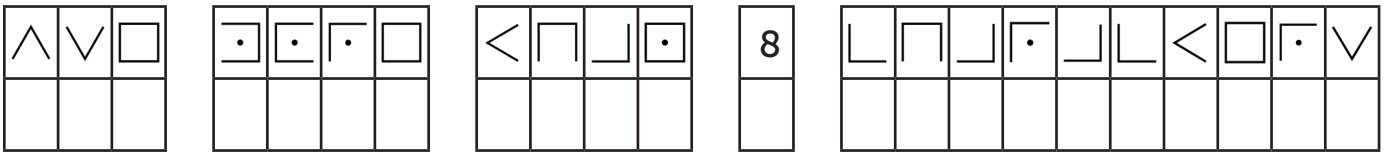
Rule 1:



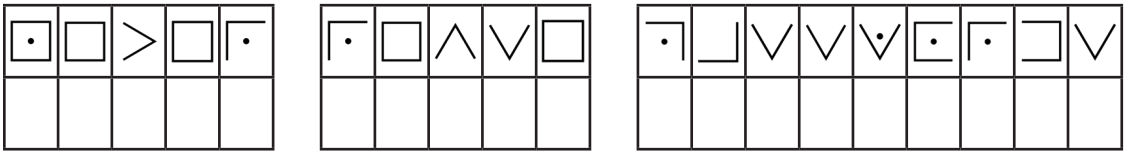
Rule 2:



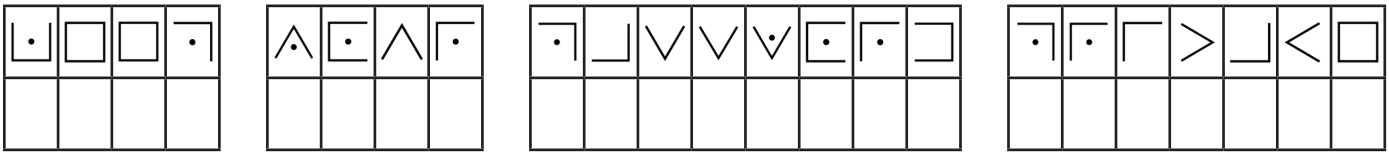
Rule 3:



Rule 4:



Rule 5:



Reflection Questions

Draw an "X" on the line below to indicate how safe you think your current passwords are based on what you've learned in this activity.

Not secure — Somewhat secure — Very secure

Based on your learning, will you be changing any of your passwords? Why or why not?

PUZZLE #4 TABLE TENTS

Directions: Cut on the dotted lines, fold on the solid lines.

PUZZLE #4 DIRECTIONS

1. Use the clue sheet to locate all 9 Treasure Map pieces around the room. NOTE: Only one person in your group may be up looking for a piece at a time!
2. Once you have found all pieces, work together to assemble the Treasure Map.
3. Write the correct name of each category on the Treasure Map on your Puzzle #4 Answer Sheet.
4. Use the Treasure Map information to complete the Answer Sheet and decode the Secret Phrase.

TELL YOUR TEACHER THE SECRET PHRASE TO GET YOUR PUZZLE PIECES AND MOVE ON TO THE NEXT PUZZLE!

PUZZLE

4

What Is Your Computer Science Dream Job? Scavenger Hunt

FOLD

PUZZLE #4 DREAM JOB PUZZLE PIECES

Directions: Cut on the dotted lines.

I Like ... the Arts

- Writing or making videos
- Playing an instrument
- Painting or drawing

COMP

I Like ... Inventing and/or Using My Hands

- Building or taking apart machines

UTER

I Like ... Inventing and/or Using My Hands

- Assembling furniture
- Fixing broken toys

SCI

I Like ... Helping Others

- Teaching others how to do things

ENCE

I Like ... Helping Others

- Listening to others' problems

IS

I Like ... Helping Others

- Assisting others with physical challenges

FOR

I Like ... Brainteasers

- Playing math games

ERY

I Like ... Brainteasers

- Learning HTML or coding

ONE

I Like ... Brainteasers

- Conducting science project

EV

PUZZLE #4

Scavenger Hunt Clues

CLUE #1 LOOK FOR ME IN THE PLACE WHERE WE KEEP EXTRA PENCILS!	**CLUE #2** THE CORNER OF THE TEACHER'S DESK MIGHT BE A GOOD PLACE TO LOOK.	**CLUE #3** DID YOU CHECK THE BOOKSHELF?
CLUE #4 LOOK UNDER YOUR SEATS!	**CLUE #5** NEAR THE CLOSET MIGHT BE A GOOD PLACE TO LOOK, DON'T YOU THINK?	**CLUE #6** SNIP, SNIP! CHECK OUT WHERE WE KEEP OUR SCISSORS!
CLUE #7 PSST ... YOUR TEACHER HAS A CLUE FOR YOU. JUST REMEMBER TO ASK NICELY!	**CLUE #8** THERE'S A CLUE RIGHT OUTSIDE OUR DOOR. BUT BE QUIET IN THE HALLWAY!	**CLUE #9** RING, RING! THIS CLUE IS CLOSE TO THE ITEM THAT MAKES THIS SOUND!

PUZZLE #4

Scavenger Hunt Clues

CLUE #1	**CLUE #2**	**CLUE #3**
CLUE #4	**CLUE #5**	**CLUE #6**
CLUE #7	**CLUE #8**	**CLUE #9**

Name ______________________________ Date ______________

What Is Your Computer Science Dream Job?

Directions: Use the Scavenger Hunt Clue Sheet to find the 9 puzzle pieces hidden throughout the room. Once you have them all, assemble the puzzle and use it to complete the table below. There are so many professions that use computer science in some way. Learn more about what computer science job might be right for you! When your group has completed this page, raise your hand so your teacher can check your work. Good luck!

I Like ... the Arts		**I Like ... Inventing and/or Using My Hands**	
Write down the names of anyone in the group who liked the activities listed in this category.	If you liked this category, circle which job listed below you think is most interesting, and put your initials beside it. • Video game developer • Multimedia programmer • Technical writer • Web designer	Write down the names of anyone in the group who liked the activities listed in this category.	If you liked this category, circle which job listed below you think is most interesting, and put your initials beside it. • Cybersecurity consultant • Security analyst • IT consultant • Systems analyst • Health information technician
I Like ... Helping Others		**I Like ... Brainteasers**	
Write down the names of anyone in the group who liked the activities listed in this category.	If you liked this category, circle which job listed below you think is most interesting, and put your initials beside it. • App designer • Information systems manager • IT architect • Hardware engineer	Write down the names of anyone in the group who liked the activities listed in this category.	If you liked this category, circle which job listed below you think is most interesting, and put your initials beside it. • Computer programmer • Database designer • Data scientist • Software engineer

Reflection Questions

Which of these jobs interests you the most and why?

____

SECRET PHRASE:

5 WAYS TO STAY SAFE ONLINE

Playing games online and texting with your friends is fun! Just be sure you follow these rules to protect your privacy.

1. Only talk online to people you know.

2. Create passwords that people can't guess.

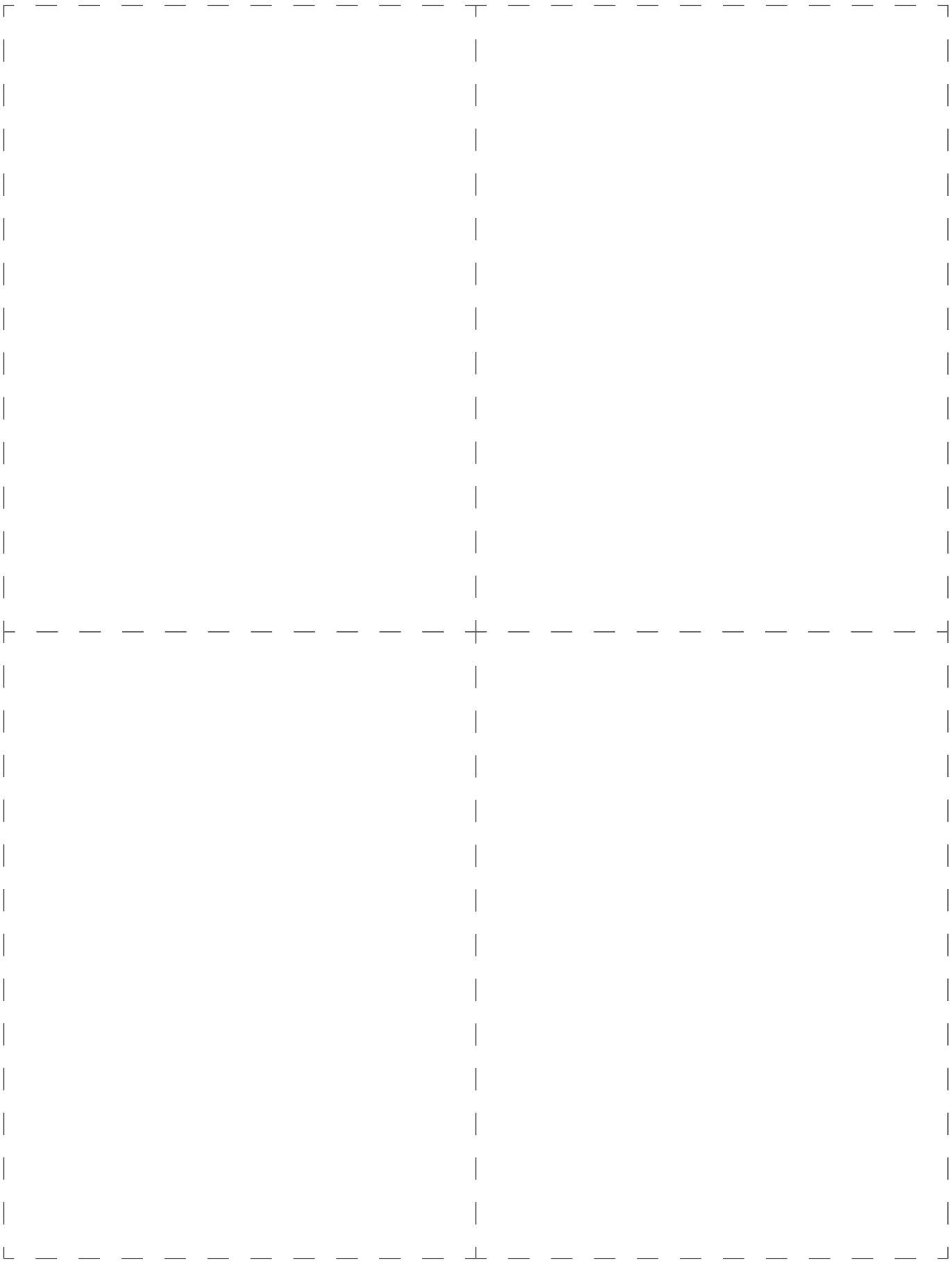
3. Never post information about where you live.

4. Ask your parents before you play on their phone.

5. Don't post photos of yourself or friends.

girls4tech

FINAL PUZZLE ASSEMBLY MAT



Name _____ Date _____

Post-Challenge Reflection

Directions: Write your responses to each of the prompts below in the spaces provided.

1. What are three things you learned about cryptology, careers in computer science, artificial intelligence, or cybersecurity that you didn't know before the STEM Escape Station Challenge?

_____

_____

2. What was your favorite part of the activity and why?

_____

_____

_____

_____

_____

3. What was the most challenging puzzle? How did you and your team work together to solve it?

_____

_____

_____

_____

4. Write a text to an absent student explaining what the most important ideas from today's activity were using at least three of the terms in this word bank.

artificial intelligence	pigpen cipher	online safety	cipher wheel
cryptology	puzzles	soft skills	computer science jobs

G4Tech Cyber Security

We Are Cyber Savvy!

Escape Room Challenge

"Be Cyber Savvy" Escape Room
Answer Key

Mini-Escape Room "How Safe Is Your Password" Answer Key (pages 11–12)

Rule 1: NEVER USE PERSONAL INFORMATION

Rule 2: USE DIFFERENT CHARACTERS

Rule 3: USE MORE THAN 8 CHARACTERS

Rule 4: NEVER REUSE PASSWORDS

Rule 5: KEEP YOUR PASSWORD PASSWORDS

Reflection Questions: Answers will vary.

Puzzle #1

Full Escape Room Puzzle 1: "What 'Soft Skills' Will You Need in the Future" Answer Key (page 28)

LEARNING & ADAPTING: Be willing to learn new things and adapt to change.

DESIGNING: Think of and create the best ways for systems to work.

SPEAKING & WRITING: Communicate ideas in ways that are easily understood.

COLLABORATION: Work together with a team to solve problems and innovate.

Reflection Questions: Answers will vary.

Secret Word: CRYPTOLOGY

Puzzle #2

Full Escape Room Puzzle 2: "Video Challenge: Do You Understand AI?" Answer Key (pages 31–32)

1.	C	6.	SE
2.	Y	7.	C
3.	B	8.	UR
4.	E	9.	IT
5.	R	10.	Y

Reflection Questions: Answers will vary.

Secret Phrase: CYBERSECURITY

Puzzle #3

Full Escape Room Puzzle 3: "How Safe Is Your Password" Answer Key (pages 35–36)

Rule 1: NEVER USE PERSONAL INFORMATION

Rule 2: USE DIFFERENT CHARACTERS

Rule 3: USE MORE THAN 8 CHARACTERS

Rule 4: NEVER REUSE PASSWORDS

Rule 5: KEEP YOUR PASSWORD PASSWORDS

Reflection Questions: Answers will vary.

NOTE: There is no "secret word/phrase" for this puzzle. Successfully deciphering the 5 rules earns students their piece of the final puzzle.

Puzzle #4

Full Escape Room Puzzle 4: "What Is Your Computer Science Dream Job?" Answer Key (page 41)

Reflection Questions: Answers will vary.

Secret Phrase: COMPUTER SCIENCE IS FOR EVERYONE