

GAME CHANGERS

NATIONAL YOUTH SCIENCE DAY



Youth Workbook





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USERNAME:

PASSWORD:

PITCH YOUR PASSION

Optional Follow-Up Activity: Scratch Public Service Announcement

A public service announcement (PSA) is a video or message that aims to raise awareness and change attitudes or behavior towards an issue. In this activity, you'll use Scratch to create your own PSA about a topic of your choosing. Your PSA should grab the audience's attention, send a simple and clear message, and encourage people to consider changing a behavior or their attitude towards a societal issue.



Step 1: Watch example PSAs with your class

Step 2: Discuss

As a group, discuss the projects and videos you just watched. How did these PSAs raise awareness about a topic or social issue, and motivate people to take positive actions for that cause? As you discuss, consider how you might use these examples to help guide your own PSA.

Make a list:

If you could change anything about the PSAs you just watched, what would you do to make them better?

Step 3: Choose your own topic

Select a topic or issue that is important to you. It could be about a place you want to help and protect, a group or organization, or other issues like online safety or being healthy.

1. Create a list of possible topics related to the issue that you've chosen.

Examples:

- Is your focus on supporting an organization? List some actions that the organization does or goals they try to achieve.
 - Is your focus on preserving and protecting the environment? Specific sub-topics could include protecting wildlife, reducing litter or using solar power.
 - Is your focus on the body and being healthy? Think about specific issues, like healthy food or mental health.
2. Share your ideas in a small group and discuss. Share why your topic is important.
 3. Write down your opinions and other group members' perspectives related to the topic you've chosen.
 - **TIP:** Sometimes others' contrary opinions can be helpful starting points for research to persuade them.
 4. Choose a specific topic for your passion project.

Step 4: Research your topic

1. Using the internet and/or other resources available (e.g. newspapers, books, other people), research the topic that you've chosen.
 - **TIP:** Consult a wide variety of sources in your research to get different perspectives.
2. Find 2-3 pieces of data or statistics about your topic that will help convince your audience why your topic is important.
 - **TIP:** Use reliable sources for your research. Internet websites that end in ".org" or ".edu" aim to have reliable information.
 - **EXAMPLE:** A PSA topic to encourage people to go outdoors and hike could use the following data/information:

"On average, children aged 10 to 16 now spend only 12.6 minutes a day on outdoor activity compared to 10.4 hours being motionless."

SOURCE: UK STUDY SPONSORED BY NATIONAL TRUST (BIT.LY/2WGTSKU)

Think and discuss: Answer these questions with your group.

- What information did you find in your research that surprised you?
- How are the facts different from what you expected?
- What do you think causes this problem or issue?
- What facts do you have to back up this explanation?

Step 5: Plan

If you were in charge of a national (or global) campaign to solve this problem or advocate for this issue, what would you do?

- What are some different solutions to your problem or issue?
- Imagine what would happen if people started to act differently to solve this problem. What would that look like?

Step 6: Create your own PSA Scratch Project

You will use Scratch to create your PSA and share it with the world.

TIPS

Think about how you would create a PSA on your topic.

- What words could you use to convey your message or goal?
- Is there a catchy phrase or slogan you can use?
- What would you say to highlight the importance of your message?
- How will you convince or persuade people?
- How will you share your facts? Will you be funny or dramatic? Show positive outcomes or negative ones?

Suggested structure and outline:

- 1. Overview.** The first part of your project should have an opening message that grabs the audience's attention. Use leading questions, like "Did you know...", "Would you believe that..." or a statistic.
- 2. Facts.** The middle part of your project should give the audience facts about why your topic is important. Use the research you collected about your topic. Include facts and their sources.
- 3. Personalization.** You can also weave in a personal story or narrative about why you (or the character/narrator that you've chosen) cares about the topic.
- 4. Closing.** Close your project by persuading the audience to take action.
- 5. Credits.** List credits to your project, using sources and references for where you found your information. If you'd prefer not to use a scene in your Scratch project on credits, make the credits a part of your project description when you save and share your work.

Use Scratch coding challenges, like the ones you used in the first "Pitch Your Passion" activity, to create your PSA. You may find some of these add-ons to be helpful:

- Speak out.
- Change scene.
- Add background music.
- Include supporters.
- Make some noise, use your voice.

New add-on challenges that can bring your PSA project to life:

- Weather/confetti: Program snow, rain, confetti or cheese-puffs to fall from the sky.
- Supportive phrases (using "data"): Program a sprite to say a supportive phrase from a list.
- Come on stage: Program your main character to spin onto the stage.
- Take action: Add credits, links and tips to the project page of the program. Have students exchange, collaborate and/or add comments.

TIPS

- Keep in mind your audience. What would affect them most?
- Fun catch phrases or "hooks" are helpful to have the audience remember your PSA. Use the "Title Card" Scratch add-on to include yours.

Use the following boxes to map out your PSA.

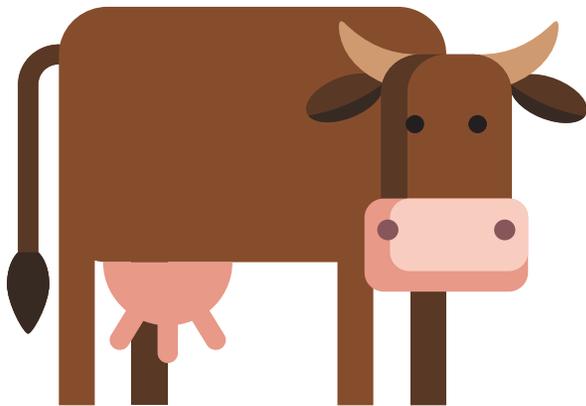
1	
2	
3	
4	
5	

Rules: Puzzles 2-3

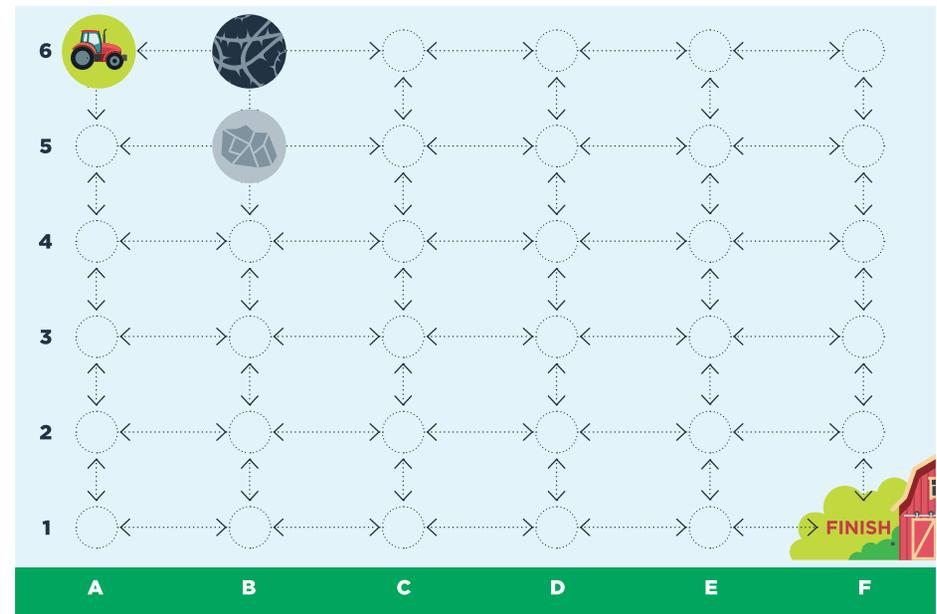
- All the rules from puzzle 1 still apply.
- You cannot go into spots with a boulder on them.
- Your tractor is now equipped with a dozer blade that will allow you to clear the brambles. Before you're allowed to move onto a spot with bramble, you must deploy the dozer blade by using the * instruction.

This example shows how to clear the bramble from the start position in puzzle 2:

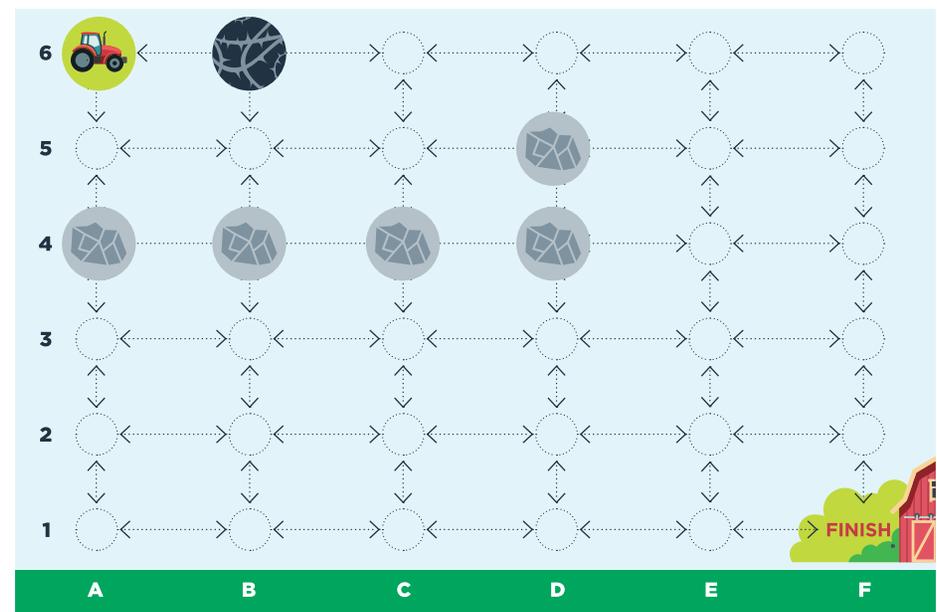
1	2
*	→



PUZZLE 2



PUZZLE 3



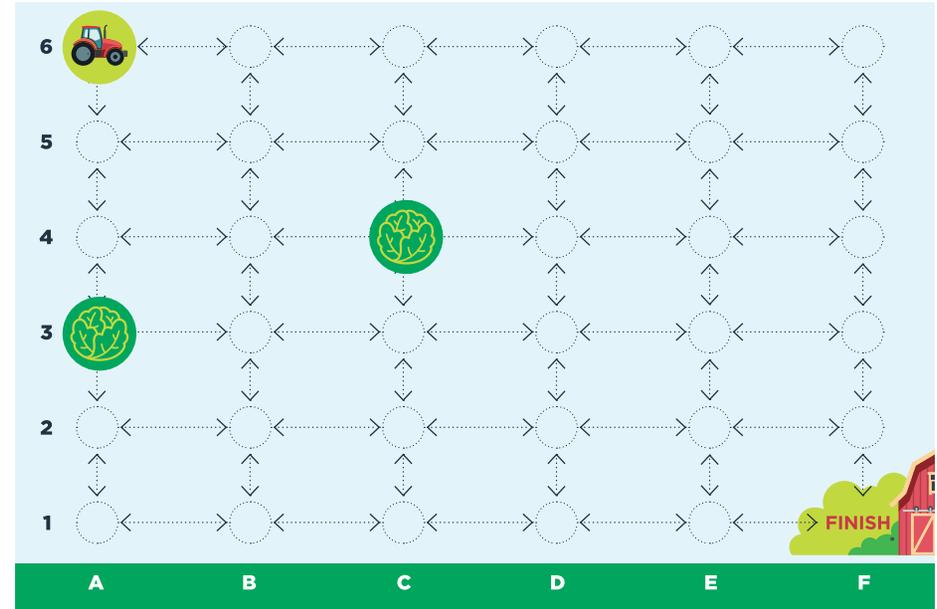
Rules: Puzzles 4-5

- All the rules from puzzle 1 still apply.
- To collect a head of lettuce, you must write a \$ instruction in a code block after you have moved the tractor onto the spot containing the head of lettuce.
- You must collect each head of lettuce before you get to the barn.

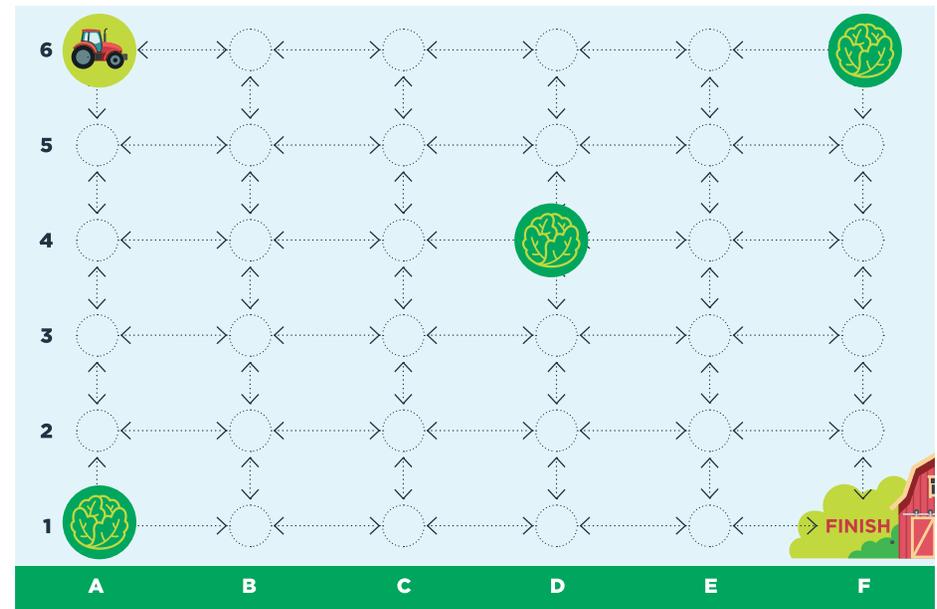
This example would allow the tractor to collect a head of lettuce if move 1 put the tractor on the spot where the head of lettuce is:

1	2
↓	\$

PUZZLE 4

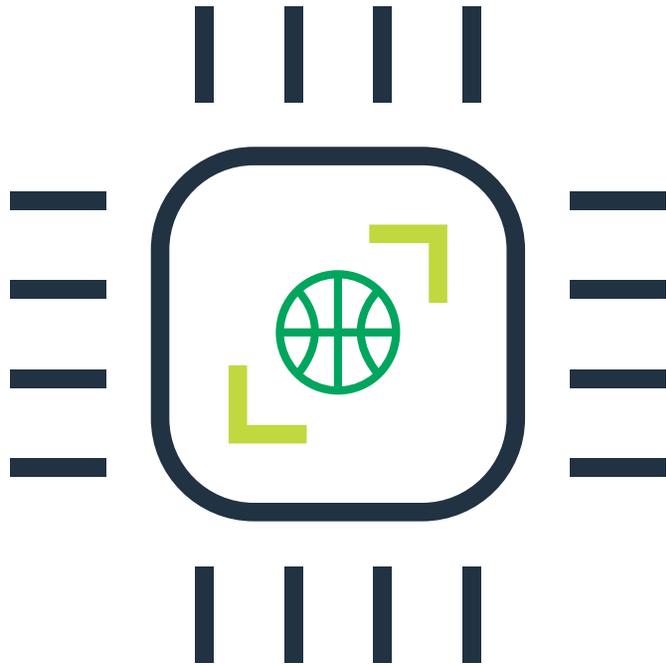


PUZZLE 5





PROGRAM YOUR PLAYGROUND



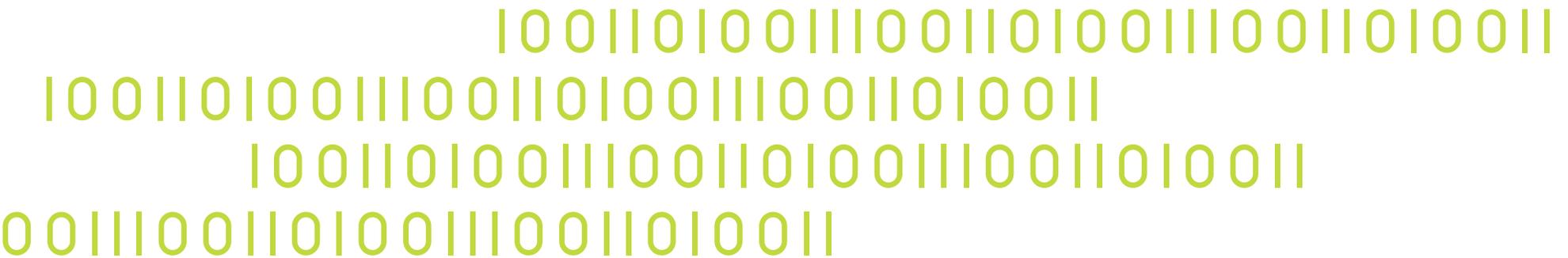
Part 1

With your group, create your own version of Conditional Tag. Answer the following questions to help you with the design process.

1. If you are tagged by the green "it," then

2. If you are tagged by the yellow "it," then

3. If _____ happens, then the game is over.



Part 2

With your group, create an entirely new version of Tag. Answer the following questions to help you with the design process.

1. Who is “it” when the game begins?

2. We know “it” can tag people. Answer the following questions to determine what happens when a tag occurs:

What happens to the person tagged if they are not “it”

What happens to the person tagged if they are already “it”?

What happens to “it” when they tag someone?

3. When does the game end?

Part 3

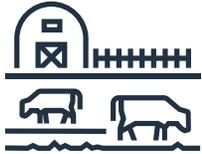
Look at the list of playground games below. Take a moment to group these activities into categories you think are relevant. Try to create your categories in such a way that each activity only belongs to one.

- Basketball
- Capture the flag
- Dodgeball
- Duck-Duck-Goose
- Simon Says
- Soccer
- Tag
- Ultimate frisbee
- Volleyball

With your group, use the space below to design your own game using the elements you’ve abstracted from other games. Your new game must be safe and fun to play in the space we have today, using only the supplies we have at hand.

Is your game SAFE AND FUN? If not, go back and change it so that it is.

4-H GAME CHANGERS



CS on the Farm

In Minnesota, a family farm faced an issue that farmers and ranchers around the world face every day: their cattle broke free of their fencing and got loose, wandering all over the countryside. Escapes like this one can cost farmers and ranchers huge amounts of time and money, and can be dangerous—or even fatal—for the cattle. That’s why a team of 4-H’ers set out to solve the problem using computer science and technology as part of the University of Minnesota Extension’s 4-H Science of Agriculture Challenge. Working with both ranchers and a mentor from the Minnesota Department of Natural Resources they developed a number of different prototypes, including a collar that was derived from moose tracking technology. Ultimately, after plenty of testing, they created a GPS ear tag that sends an alert to your phone as soon as cattle move outside a geofenced area. With this technology, farmers and ranchers know immediately when cattle escape, allowing them to react quickly to save time, money and even lives.



CS to Inspire

Aja Capel, a 4-H’er from Illinois, is one of those young people who doesn’t let challenges slow her down. Most people would consider diagnoses like dyslexia or ADHD to be setbacks, but Aja sees them as gifts that allow her to think differently. At just 15, Aja is a high school senior and is already earning college credits towards her dream of becoming a mechanical engineer with a focus in robotics. In her time attending STEM conferences and robotics competitions, she has noticed that she is often the only—or one of very few—black female participants. At the root of this problem, Aja believes, is the fact that not enough minority students see and engage with STEM professionals who look like them. So, with the help of her 4-H mentor, she decided to take matters into her own hands by starting her own organization to provide underrepresented youth with access to computer science projects and exposure to role models that look like them in STEM fields. Through her organization, See Me in STEM (seeminstem.org), in collaboration with 4-H and other local organizations, Aja uses projects like 4-H NYSD to engage and empower underrepresented kids with hands-on CS learning, with the hope of increasing the number of girls and underrepresented minorities in STEM fields.



CS for Public Health

Clyde Van Dyke didn’t grow up around computers; living on a limited income, access to technology was never high on his family’s list of priorities. Despite this, he discovered he loved working with computers when he used them in school and at the local library. When Clyde took the initiative to join the 4-H Tech Wizards program in Broome County, NY, he started learning about computer science and the many things you can do with a CS degree from experts in the community. This encouraged Clyde to start thinking bigger about his own future, and wondering what he could do to help his community using CS. He decided he wanted to use geographic information system (GIS) mapping, a method for visualizing information in maps, to help his community understand and address one of the major public health challenges they face: drug addiction. To do this, Clyde created a map that showed the progression of deaths from drug overdoses over eight years alongside potential contributing factors like poverty, unemployment, non-graduation and a lack of insurance. By doing this, Clyde was able to use CS to bring attention to the severity of the issue, while developing a tool that helps experts and other community members understand how problems like addiction arise and may be treated.

CONGRATULATIONS

for using computer science for
4-H National Youth Science Day 2019

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In 4-H, we believe in the power of young people. We see that every child has valuable strengths and real influence to improve the world around us. We are America's largest youth development organization—empowering nearly six million young people across the U.S. with the skills to lead for a lifetime.

Learn more online at: www.4-H.org/NYSD