Texas CARES 5E Lesson

Grades Kindergarten-2

Texas Coronavirus Antibody Response Survey

UTHealth
The University of Texas Health Science Center at Houston
School of Public Health

TEXASCARES
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TABLE OF CONTENTS

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Teacher Background Information

What is Texas CARES?

The Texas Coronavirus Antibody REsponse Survey (Texas CARES) measures the percentage of participants who have antibodies to SARS-CoV-2 virus in their blood (this measurement is called "seroprevalence"). All Texans 5-80 years of age can participate in the survey. Volunteers complete an informed consent, fill out a questionnaire, and then receive a blood draw at three time points (each three months apart) to determine if they have SARS-CoV-2 antibodies.

Texas CARES is not just *about* the Texas population. It's also ***for*** the Texas population.

Texas CARES is sharing information with the public, so that anybody – from public health officials to schoolchildren – can learn more about this project and the antibody response to COVID-19 across Texas! The Texas CARES dashboard presents the data from the participants updated weekly. Please download the Dashboard Guide for how to navigate the dashboard and more details about what the data represents

People can learn more about Texas CARES and enroll at www.TexasCARESproject.org.

What are the survey's goals?

- Estimate how many people in Texas have been infected with SARS-CoV-2.
- Estimate how many people have been vaccinated for SARS-CoV-2 and develop antibodies.
- Learn how long COVID-19 antibodies last in someone's system.
- Identify the characteristics of people who develop COVID-19 antibodies.
- Identify the characteristics of people who never develop COVID-19 antibodies.

Interviews

Dr. Eric Boerwinkle shares pertinent information that will set the stage for a successful teaching and learning experience in this 20-minute interview. Dr. Eric Boerwinkle is dean and M. David Low Chair of Public Health at The University of Texas Health Science Center at Houston (UTHealth) School of Public Health.

ABC13 coverage of Texas CARES: "More than 20 percent of Texans may have COVID-19 antibodies, study shows" by Marla Carter from March 15, 2021.

Texas CARES 5E Lesson for Grades K-2

Learning Targets

- I can describe what a virus is.
- I can explain how my body fights viruses.
- I can describe how to stop a virus from spreading.
- I can explain how scientists learn more about health problems like the coronavirus.

Key Vocabulary

Antibody: Antibodies help your body recognize and destroy germs, like viruses, that make you sick
COVID-19: a newly-discovered infectious disease caused by a coronavirus
Scientist: a person who is trained in a science and whose job involves doing scientific research or solving scientific problems
Vaccine: A vaccine gives your body directions to make the antibodies that fight germs like the coronavirus so you don't get sick
Virus: A non-living germ that infects cells and causes disease

TEKS alignment:

Health TEKS	K.6A tell how germs cause illness and disease in people of all ages K.6C explain practices used to control the spread of germs such as washing hands K.6D discuss basic parts of the body's defense system against germs such as the skin 1.7A name types of germs that cause illness and disease 1.7C explain common practices that control the way germs are spread. 2.4A explain ways in which germs are transmitted, methods of preventing the spread of germs, and the importance of immunization 2.4C explain how the body provides protection from disease 2.4D apply practices to control spread of germs in daily life such as hand washing and skin care.
Science TEKS	1.2A ask questions about organisms, objects, and events observed in the natural world 1.2B plan and conduct simple descriptive investigations 1.2 collect data and make observations using simple tools 1.2D record and organize data using pictures, numbers, and words; and 1.2E communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations. 1.3A identify and explain a problem and propose a solution 1.3B make predictions based on observable patterns; 1.3C describe what scientists do. (Note: Kindergarten and 2nd grade have almost identical TEKS to these.)
Math TEKS	1.1A and 2.1A apply mathematics to problems arising in everyday life, society, and the workplace K.1D, 1.1D, and 2.1D communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate K.1E, 1.1E, and 2.1E create and use representations to organize, record, and communicate mathematical ideas K.8C draw conclusions from real-object and picture graphs. 1.8C draw conclusions and generate and answer questions using information from picture and bar-type graphs 2.10D draw conclusions and make predictions from information in a graph

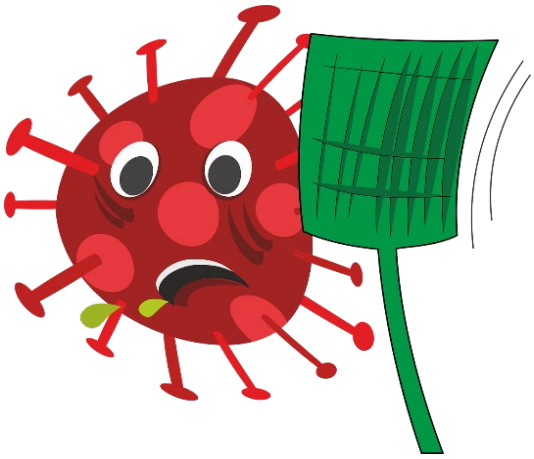
The 5E Model: Each part of the 5E is summarized below. The parts should be done in order, starting with Engage. The Explore and Explain can be done in a back-and-forth manner as students need information to complete and understand the Explore activity and communicate their findings from the data investigation.

Engage Teacher Directions and Key The purpose of the Engage activity is to get students interested and personally involved in the lesson and for the teacher to assess prior knowledge.	**Option 1: Germ Fighters!** is an activity that will engage students in thinking about protection measures against COVID-19, a topic for which they will have familiarity. Have students work in pairs or groups to answer the question and justify their answer and then share. Lead a discussion and come to a class consensus as to the best answer and a reasonable justification. The correct answer is Ashley. Each of the other students named a correct protection strategy, but Ashley gave the complete answer. **Option 2: Mask Cut and Paste** Use the template attached below to color the face and the face mask. Then, cut out the face and the face mask. Glue the face mask onto the face in the correct spot. Explain to a partner why wearing the mask incorrectly does not protect a person from COVID-19.
Explore Teacher Directions and Key The purpose for the Explore activity is for students to collaborate with other students to build knowledge of the topic by interacting with phenomena.	Be sure you have read the Teacher Background Information on page 3 prior to doing this activity with your students. There are opportunities throughout the activity to discuss viral infection and prevention, immunity, antibodies, vaccination of adults and children, and how scientists with the Texas CARES project are answering important questions about the frequency of antibodies in the population. The teacher background information will help you prepare for these discussions. Consider using a Lead4Ward movement and discourse strategy for the data investigation. Student pairs can share their data representations with other groups using Chair Share, Four Corners, Pair-Square-Share, or Think and Throw. Background Information for Students: Show these slides to students and use the notes section of the slides to find opportunities for students to answer and ask questions. Have students work in pairs or work with small groups of students. Answer Key to **COVID-19 Attack!** Data Questions: 1. 7 out of 10 children 2. No could be a reasonable answer because the more kids that are tested, it's possible they will find more kids who have never had COVID, especially when this age group becomes eligible to get vaccinated. The more adults that are vaccinated means less virus

	circulating in the community. Yes is a reasonable answer because the more kids that participate across all areas of Texas -- and the more time goes on -- it's possible researchers will see a higher frequency of antibodies in this age group.
Explain Teacher Directions and Key The purpose of the Explain activities is for students to build knowledge of the topic and use appropriate vocabulary as they communicate what they have learned.	Use the **vocabulary activity** that is provided or use the vocabulary words and have students play Think and Throw defining the vocabulary words or drawing a picture as their response. Answer Key: The answers go in the blanks in this order: viruses, COVID-19, lungs, antibodies
Elaborate Teacher Directions and Key The purpose of the Elaborate activities is for students to use their new knowledge to further communicate understanding.	There are three options: health activity, a data activity and science activities. You can assign one or more of these to students, or you can use this as a menu and have students choose one. Students should be creative but also use accurate health and science information. The poster, video and model projects should be shared with other students in class or on campus, as these are intended to serve as peers teaching peers.
Evaluate Teacher Directions and Key The purpose of the evaluate activities is for students to demonstrate what they have learned.	There are three options: a short quiz (slides linked here), a Claims-Evidence-Reasoning or the Happy or Sad activity. You may do one or several with your students. For the CER, students make a claim that answers the question that is posed. They use evidence to back up the claim, then the student provides their reasoning behind the claim using a scientific principle, providing a justification for why the reasoning is important for the claim, or explaining how or why the data counts as evidence. A further step can be added -- peer review or rebuttal. In this fourth step, students examine each other's CERs and provide feedback. **Happy or Sad?** Key: Happy faces: Brianna, Carlos, Jay, Abby Sad faces: Ray, Gia

The Each activity page can be found on the following pages or linked above.
The Student Background Information and Quiz slides are linked above.

Engage Activity 1 | Grades K-2
Germ Fighters!



Directions: Read the scenario and student responses below, then answer the question and justify your decision.

Students are talking about ways to protect themselves and others from getting infected with the virus that causes COVID-19.

Didi thought that wearing a mask would be the best way to protect someone from getting COVID-19.

Maya thought that keeping at least three feet away from other people would be the best way to protect someone from getting COVID-19.

Jared thought that staying at home when you were sick would be the best way to protect someone from getting COVID-19

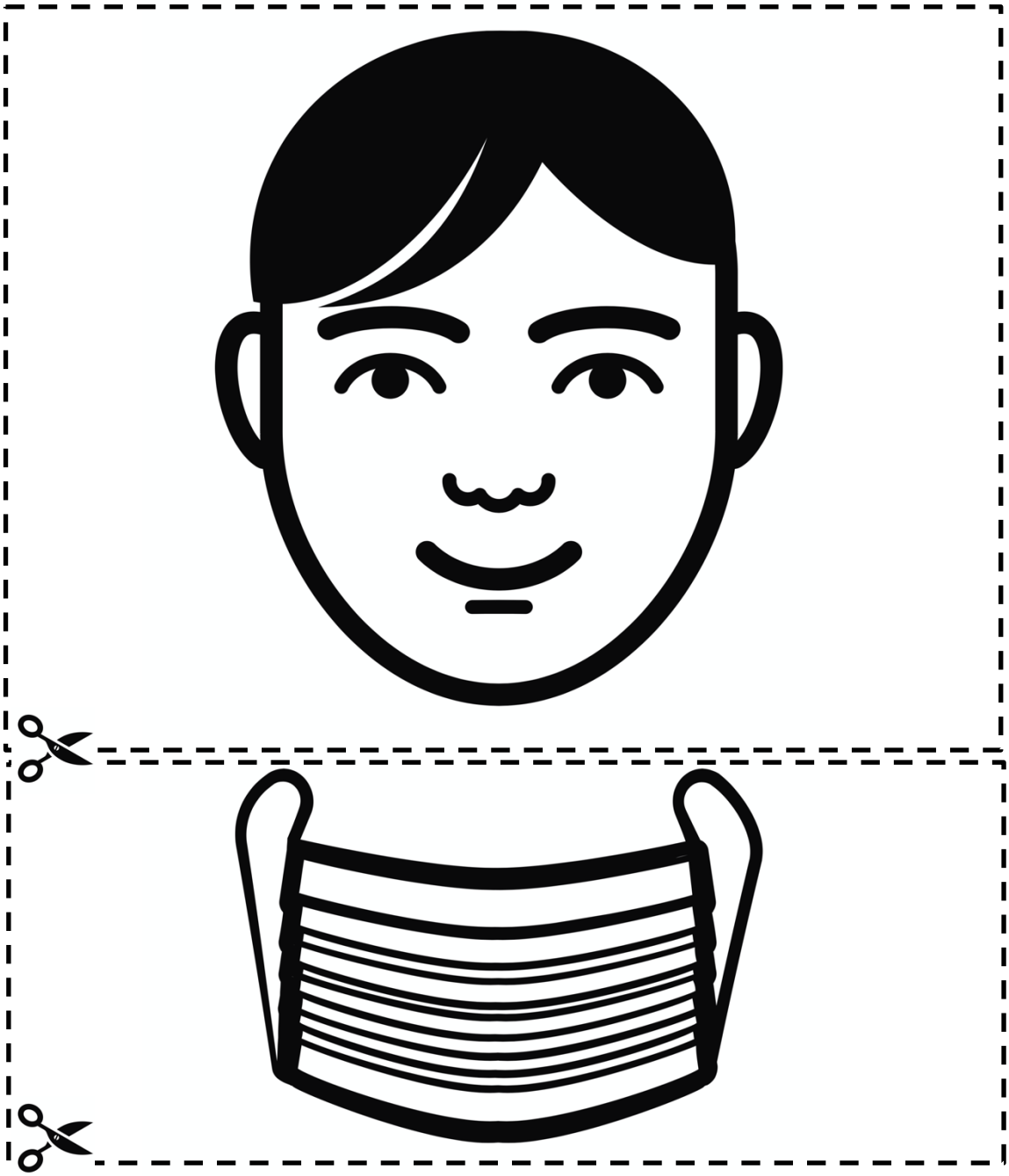
Sergio thought keeping hands away from eyes, nose and mouth would be the best way to protect someone from getting COVID-19

Ashley thought that Didi, Maya, Jared and Sergio were all correct and that doing all of these things would provide the best protection from getting COVID-19.

Question: Which student or students had the best solution to protecting themselves and others from getting COVID-19? Explain your reasoning.

Engage Activity Option 2 | Mask Cut and Paste

Color the face and the face mask. Then, cut out the face and the face mask. Glue the face mask onto the face in the correct spot. Explain to a partner why wearing the mask incorrectly does not protect a person from COVID-19.



Explore Activity | Grades K-2
COVID-19 Attack!

Student Data Investigation

When children ages ten and under had their blood tested by scientists to see if there was evidence they had COVID-19 sometime in the past, this is what they found:

For every ten children tested, three had antibodies for COVID-19. This means they had COVID-19 in the past whether they had been sick or not! With your partner, draw a picture using symbols or a bar graph in the space below that communicates this data:

Compare your picture or bar graph with two other groups. Use these sentence stems to have your conversation:

> *We decided to use _____ (pictures, symbols, bar graph) to show the data. The ten children are shown as _____ and the three children with antibodies are shown as _____.*

In the space below, use one of the ideas from your group conversations to show the data in a different way than in your original drawing or bar graph:

Data Questions

1. If three out of ten children under the age of ten years old tested by the scientists showed they had COVID-19 in the past, how many had never had COVID-19?

2. Do you think that as scientists test more children that more than three out of ten will have antibodies? Why or why not?

Conclusion

What other questions do you think scientists should ask about children and COVID-19?

Write as many as you can think of, then circle your favorite question and share it with the class.

The class will choose their top three questions and then write a short paragraph about how scientists could answer these questions.

Explain Activity | Grades K-2
Vocabulary Activity

Word Bank:

Antibodies Lungs Viruses COVID-19

_____ are tiny germs that can enter your body and make you sick. A new virus that has spread around the world and has made many people sick is the virus that causes _____. When a person infected with COVID-19 breathes out air or coughs, the virus can enter your body through your nose or mouth and settle in your _____ and make copies of itself. It can also enter your body when you touch a surface that has the virus on it and then you touch your nose, mouth or eyes.

A person who has had COVID-19 or has been vaccinated will produce antibodies in their blood. _____ are attackers that will help fight off COVID-19 the next time you are exposed to it. Scientists with the Texas CARES project are finding out more about who has antibodies to COVID-19 by testing people's blood.

Elaborate Activities | Grades K-2

Option 1: Health Activities

Stop the Spread! Poster or Video

Create a video or poster that helps kids know how to prevent being infected with COVID at school, at home or in the community. You may want to identify one problem (example: wearing a mask all the time when within six feet of other people) and propose solutions, or you may want to identify multiple ways to prevent infection along with student actions. This is a great opportunity for kids to help kids make healthy decisions! A Stop the Spread! Poster template is attached below.

Option 2: Data Activity: Be a Scientist!

Create your own data investigation. The activity is on page 14.

Option 3: Science Activities

Antibody Cut and Paste

Use the templates attached below to create a model of how antibodies attack the virus that causes COVID-19. Color the virus and the antibodies, then cut them out. Glue the antibodies to the virus to tag it so the immune system can destroy the virus. Explain in writing or as part of a class discussion what is happening in your completed model.

Antibody Attack!

Create a model showing how the virus that causes COVID-19 invades the body and how the body attacks the invading virus with antibodies. Use your imagination and any materials you have on hand to make this fun and creative while communicating accurate science information.

Elaborate Activities | Grades K-2
Stop the Spread!

Use the box below to make a poster that will help other people remember how to stop a virus from spreading. Then, color the poster and cut it out so it can be shared with the class, school, your parents or the community.

Elaborate Activities | Grades K-2
Be a Scientist!

A **scientist** collects information to try to understand or solve a problem.

A **survey** is a set of questions that researchers ask to learn more about people in a study.

Now it's your turn to be a scientist!

1. Brainstorm some questions that scientists could study. *Examples: What is your favorite color? How many pets do you have?*

2. As a class, pick ONE survey question to ask the class!

The question my class is going to ask is:

_____

_____

_____

Part 2: Collect Your Data!

1. As a class, answer the survey question. If you want, you can record everyone's answer below.

Student	Answer
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

Example: What is your favorite color?

Student	Answer
1	Blue
2	Green
3	Red
4	Blue
5	Yellow
6	Blue
7	Pink
8	Blue
9	Pink
10	Yellow

2. Now, let's tally the results. Put each different answer that was given on the left side of the chart below, then put one tally line for each student who gave that answer on the right side.

Answers	Number of students who choose that answer

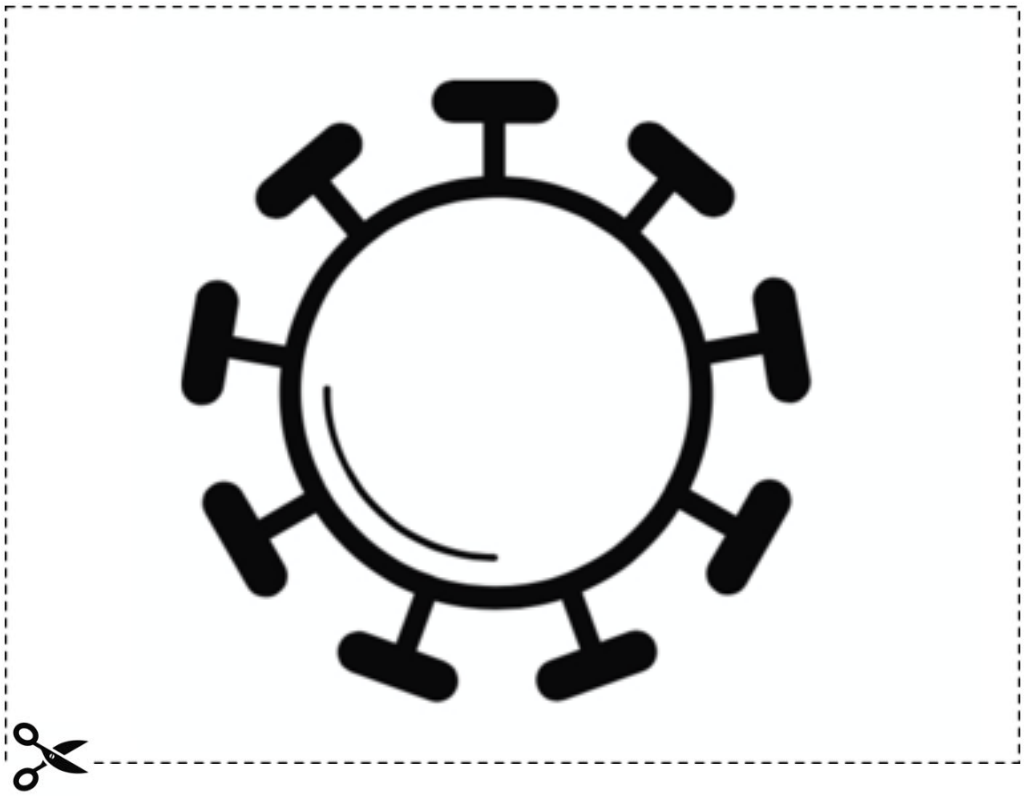
Example: What is your favorite color?

Color	Number of People Who Chose That Color
Blue	||||
Green	|
Red	|
Yellow	||
Pink	||

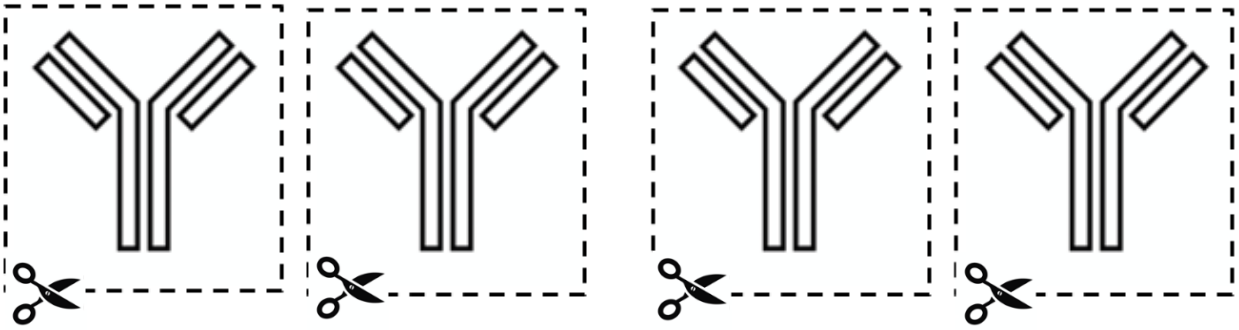
Elaborate Activities | Grades K-2
Antibody Cut & Paste

Color the virus and the antibodies, then cut them out. Glue the antibodies to the virus to tag it so the immune system can destroy the virus. Explain in writing or as part of a class discussion what is happening in your completed model.

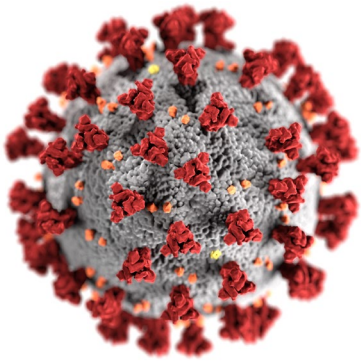
Virus



Antibodies



Evaluate Activity | Grades K-2
Claim-Evidence-Reasoning Spikey Viruses



The virus that causes COVID-19 is pictured above. Do you see the spikey things sticking out of the virus? Antibodies stick to these spikes. How do you think antibodies attaching to the spikes keep a person from getting sick with COVID-19?

Develop a Claims-Evidence-Reasoning to answer this question using what you learned about how antibodies destroy germs like the virus that causes COVID-19. Use words and pictures in your answer.

Claim:

Evidence:

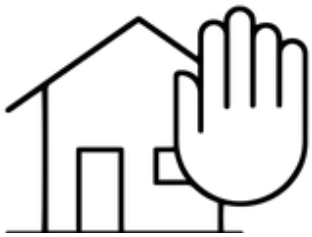
Reasoning:

Evaluate Activity | Grades K-2
Happy or Sad?

Is each person below doing what they can to stop the spread of COVID-19? Give each person below a **HAPPY FACE** if they are doing a good job stopping the spread of a virus and a **SAD FACE** if they are not stopping the spread COVID-19.

Breanna washes her hands with soap and water.

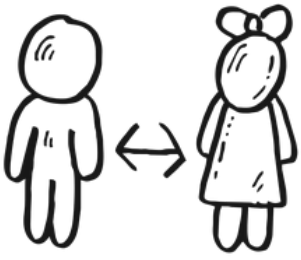
Carlos stays home when he feels sick.



Ray does not cover his cough.

Gia wears a mask over her mouth but not her nose.

Jay tries to stay 6 feet away from others.



Jade does NOT wash her hands after she sneezes.