



Use these cross-curricular content connections to align to your grade level standards and content goals.

Find Content Connections by Grade Level		
Kindergarten	1st Grade	2nd Grade
3rd Grade	4th Grade	5th Grade
6th Grade	7th Grade	8th Grade

GRADE K

Math

COUNTING AND GROUPING

Lesson 6: After students estimate the growth in number of squares for both their sanitized and unsanitized petri dishes, have them count and record the actual amount of squares for each on their [Do You See What I See?](#) observation sheet.

[CCSS.MATH.CONTENT.K.CC.B.4](#)

English Language Arts

EDITING WRITING

Lesson 7: Have students share their PSA writing with another group and use the [K-2 Revising and Editing Checklist](#) to share suggestions and ideas to make improvements to their PSAs.

[CCSS.CCSS.ELA-LITERACY.W.K.5](#)

Science

HUMANS CHANGE THEIR ENVIRONMENT

Lesson 6: As you study bacteria (germ) growth in sanitized and unsanitized environments, discuss how and why humans change their environment to keep them healthy and safe from germs.

[NGSS K-ESS2-2](#)

Social Studies

DISEASE IMPACT

Lesson 3: Discuss how diseases (like COVID-19) can easily spread and impact their community, state, country, and world.

[NCSS D2.Geo.12.K-2](#)





GRADE 1

Math

REPRESENT AND INTERPRET DATA

Lesson 6: After students record the actual amount of squares for the sanitized and unsanitized petri dish on their [Do You See What I See?](#) observation sheet, have students calculate the difference between the two and discuss how sanitized surfaces affect the growth of bacteria.

[CCSS.MATH.CONTENT.1.MD.C.4](#)

English Language Arts

COLLABORATION

Lesson 7: Before students share their work with another group for editing and revising suggestions, determine agreed upon rules for discussion and sharing of ideas. Discuss how to give and respond appropriately to suggestions

[CCSS.ELA-LITERACY.SL.1.1](#)

Science

PREVENTING DISEASES

Lesson 3: Discuss how humans have developed solutions (soap, gloves, facemasks, medicines, vaccines) to help prevent diseases, but animals have been preventing diseases for a long time. For example, [monkeys groom](#) themselves and each other to prevent diseases. Ants bury the dead ants in their colony to keep their colonies healthy.

[NGSS 1-LS1-1](#)

Social Studies

DISEASE IMPACT

Lesson 3: Discuss how diseases (like COVID-19) can easily spread and impact their community, state, country, and world.

[NCSS D2.Geo.12.K-2](#)





GRADE 2

Math

REPRESENT AND INTERPRET DATA

Lesson 6: After students record the actual amount of squares for the sanitized and unsanitized petri dish on their [Do You See What I See?](#) observation sheet, have them draw a bar graph and calculate the difference between the two dishes. Then, have them use their analyzed data to determine how sanitizing affects the growth of bacteria.

[CCSS.MATH.CONTENT.2.MD.D.10](#)

English Language Arts

INFORMATIONAL WRITING

Lesson 5: Have students use what they learned from the [Let's Learn about Germs!](#) resource and their bacteria investigation to write their PSA message. Share the [How to Create a PSA](#) resource to help them get started.

[CCSS.ELA-LITERACY.W.2.8](#)

Science

SUDDEN OR SLOW?

Lesson 2: Discuss how diseases like (COVID-19) can spread very quickly in an area. Connect this to how Earth events can also happen very quickly (volcanic eruptions, earthquakes, landslides), but can also occur very slowly (erosion of rocks, mountain formation). Consider using the [Sudden or Slow](#) investigation to demonstrate these processes.

[NGSS 2-ESS1-1](#)

Social Studies

DISEASE IMPACT

Lesson 3: Discuss how diseases (like COVID-19) can easily spread and impact their community, state, country, and world.

[NCSS D2.Geo.12.K-2](#)





GRADE 3

Math

MULTIPLYING WITH ARRAYS

Lesson 2: When you set up your science experiment, you will have different bacteria sources. Have students use arrays to model and calculate how many petri dishes would be needed to investigate one unsanitized surface and two different sanitizers. They should deduce that you would need $6 \times (2+1)$ dishes! What if there were THREE sanitizers?

[CCSS.MATH.CONTENT.3.OA.A.1](#)

English Language Arts

ENGAGING WITH A SPEAKER

Lessons 2&6: Connecting with real-world experts is a great way to help students practice their speaking and listening skills. Discuss appropriate questions, as well as answer with appropriate elaboration and detail, and put your learning into practice by Skyping with a scientist or connecting with a writing professional.

[CCSS.ELA-LITERACY.SL.3.3](#)

Science

LIFE CYCLES

Lesson 6: As you study bacteria growth, explain that the growth in the area the bacteria cover is a result of their population growing. Draw a connection to the life cycles of other organisms more common to the experience of third graders to show that all living things are born, grow, reproduce, and die.

[NGSS.3-LS1-1](#)

Social Studies

GLOBAL IMPACTS

Lesson 3: Discuss how diseases can travel around the world due to human interconnectivity. Have students generate ideas of other problems with potential global impact.

[NCSS.D2.GEO.12.3-5](#)





GRADE 4

Math

REAL-LIFE AREA

Lesson 6: Students need some way to quantify the growth of the different dishes of bacteria. Teach them to extend their understanding of area to deal with irregular shapes!

[CCSS.MATH.CONTENT.4.MD.A.3](#)

English Language Arts

PLANNING, REVISING, AND EDITING

Lesson 5: Students develop and strengthen writing as needed by planning, revising, and editing.

[CCSS.ELA-LITERACY.W.4.5](#)

Science

MULTIPLE SOLUTIONS

Lesson 6: Compare multiple solutions for ways to reduce the impact of natural Earth processes on humans.

[NGSS 3-5 ETS 1-2](#)

Social Studies

EVOLVING PERSPECTIVES OVER TIME

Lesson 3: As students learn about the history of human understanding of germs, discuss how perspectives changed with increased understanding by showing a short video from NPR entitled, [A Short History of Humans and Germs](#). Examine other ways that improved scientific understandings have changed human behavior.

[NCSS D2.His.5.3-5](#)

Additional Grade 4 correlations also available.





GRADE 5

Math

COMPARING FRACTIONS

Lesson 6: As students calculate the area of the bacterial growth, have them approximate what fraction of the dishes are covered by each type of the bacteria; make sure they include some different denominators. Then, have them compare the fractions to find how much more or less different dishes have in comparison to each other.

[CCSS.MATH.CONTENT.5.NF.A.1](#)

English Language Arts

USING MULTIMEDIA COMPONENTS

Lesson 5: As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance their work.

[CCSS.ELA-LITERACY.SL.5.5](#)

Science

THE INVISIBLE WORLD

Lesson 6: Discuss how an individual bacterium is too small to be seen, but that a large number of them together become visible. Draw a connection to the fact that matter is made of particles too small to be seen.

[NGSS 5-PS1-1](#)

Social Studies

COMPARISONS WITH HISTORY

Lesson 4: Discuss the historical limitations of PSAs relative to our current abilities to spread useful information. Compare historical and contemporary means of changing society.

[NCSS D2.HIS.14.3-5](#)





GRADE 6

Math

DIVISION WITH FRACTIONS

Lesson 6: Have students approximate the fraction of each petri dish that is covered by bacteria. Then, have them visualize division with fractions by asking how many times a dish with less bacteria would have to repeat itself to cover a dish with more bacteria. Express as a problem involving division of fractions. For instance, if one dish is one-half covered and another dish is one-fifth covered, the smaller dish would need to double and then add 1/2 of ITSELF to be equally covered. So $1/2 \div 1/5 = 2 \frac{1}{2}$.

[CCSS.MATH.CONTENT.6.NS.A.1](#)

English Language Arts

USING MULTIMEDIA COMPONENTS

Lesson 5: As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance the clarity of their work.

[CCSS.ELA-LITERACY.SL.6.5](#)

Life Science

FACTORS AFFECTING GROWTH

Lesson 6: Explore how the presence or absence of sanitizer acts as an environmental condition that either inhibits or permits for the successful reproduction of bacteria.

[NGSS MS-LS1-5](#)

Civics

CIVIC VIRTUES

Lesson 4: As students learn about Public Service Announcements, discuss civic virtues by debating our responsibilities to others with regard to public health.

[NCSS D2.Civ.7.6-8](#)

Earth and Space Science

ENERGY FLOW

Lesson 2: As you begin your bacteria investigation, discuss the role of bacteria in the flow of energy on earth.

[NGSS MS-ESS2-1](#)

Geography

MAPS AND DISEASE

Lesson 2: Explore how epidemiologists use maps to explore the spread of disease and to identify potential causes. Research both historical and modern uses of maps in epidemiology.

[NCSS D2.Geo.1.6-8](#)

Physical Science

ATOMS, MOLECULES, AND CELLS

Lesson 2: When starting your investigation of bacteria, contextualize how bacteria, though small, are composed of much smaller molecules and atoms.

[NGSS PS1-1](#)

History

PERSPECTIVES ON DISEASE

Lesson 6: After your bacteria investigation, explore the way in which bacteria and viruses cause disease, and the way in which human's perspective on the origin of disease has evolved over time.

[NCSS D2.His.5.6-8](#)





GRADE 7

Math

AREA FORMULA FOR CIRCLES

Lesson 6: After students approximate the area of each dish that is covered in bacteria, have them approximate what fraction of the dish is covered by using the area formula for circles to calculate the total area of the dish.

[CCSS.MATH.CONTENT.7.G.B.4](#)

English Language Arts

USING MULTIMEDIA COMPONENTS

Lesson 5: As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance the clarity of their work and to emphasize salient points.

[CCSS.ELA-LITERACY.SL.7.5](#)

Life Science

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[NCSS D2.His.5.6-8](#)





GRADE 8

Math

APPROXIMATING WITH IRRATIONAL NUMBERS

Lesson 6:

After students approximate the area of each dish that is covered in bacteria, have them approximate what fraction of the dish is covered by using the area formula for circles to calculate the total area of the dish.

[CCSS.MATH.CONTENT.8.NS.A.2](#)

English Language Arts

USING MULTIMEDIA COMPONENTS

Lesson 5:

As students craft their Public Service Announcements, have them consider and incorporate appropriate multimedia elements to enhance the clarity of their work, to emphasize salient points, and to add interest.

[CCSS.ELA-LITERACY.SL.8.5](#)

Life Science

FACTORS AFFECTING GROWTH

Lesson 6:

Explore how the presence or absence of sanitizer acts as an environmental condition that either inhibits or permits for the successful reproduction of bacteria.

[NGSS MS-LS1-5](#)

Civics

CIVIC VIRTUES

Lesson 4:

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[NCSS D2.Civ.7.6-8](#)

Earth and Space Science

ENERGY FLOW

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[NGSS MS-ESS2-1](#)

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