Suggested Learning Activities for Grade 6 students during the COVID-19 school closure.

Seattle Public Schools is committed to making its online information accessible and usable to all people, regardless of ability or technology. Meeting web accessibility guidelines and standards is an ongoing process that we are consistently working to improve.

While Seattle Public Schools endeavors to only post documents optimized for accessibility, due to the nature and complexity of some documents, an accessible version of the document may not be available. In these limited circumstances, the District will provide equally effective alternate access.

Due to the COVID-19 closure, teachers were asked to provide packets of home activities. This is not intended to take the place of regular classroom instruction but will help supplement student learning and provide opportunities for student learning while they are absent from school. Assignments are not required or graded. Because of the unprecedented nature of this health crisis and the District’s swift closure, some home activities may not be accessible.

If you have difficulty accessing the material or have any questions, please contact your student’s teacher.
# Week of May 25 – 29

## Grade Level: 6th Grade

### 6th Broadcast Schedule | የትምህርት ከፅታፋ ከፌፋ ከፌ ከፌ | 广播时间表

| Jadwalka Warbaahinta | Programa de Transmisión | Lịch Trình Phát Sóng |

### Tuesday, May 26th

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<td>Saynis</td>
<td>Ciencia</td>
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### Wednesday, May 27th

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<td>Taariikhda qabiilooyinka Gobolka WA</td>
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### Thursday, May 28th

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### Friday, May 29th

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- **SPS-TV Channels in the City of Seattle:** Comcast 26 and 319, Wave 26 and 695, Century Link 8008 and 8508.
- **West Seattle TV Channels:** 26 and 319 i, Wave 26 and 695 i, Century Link 8008 and 8508.
- **Mawjadaha aad ka heli karto telefishanka dugsiyada dadwaynaha Seattle waa:** Comcast 26 iyo 319, Wave 26 iyo 695, Century Link 8008 iyo 8508.
- **Los canales SPS-TV en la ciudad de Seattle son:** Comcast 26 y 319, Wave 26 y 695, Century Link 8008 y 8508.
- **SPS-TV Channels trong thành phố Seattle:** Comcast 26 và 319, Wave 26 và 695, Century Link 8008 và 8508.
Earth’s Changing Climate

Lesson 7: Investigating Human Activity and the Atmosphere

Investigation Question: Why are carbon dioxide and methane increasing in the atmosphere?
Hello Families,

We hope you and your family are well and safe during this time. During this unprecedented out-of-school time, the SPS middle school science team will be offering instructional opportunities for students that align with the district’s adopted middle school science instructional materials.

This investigation packet is part of a series of district-aligned lessons for middle school science developed by AmplifyScience and adopted by SPS in 2019. While Amplify Science lessons are designed to be done in the classroom with peers, there are some activities that students can complete at home.

In this packet you will find activities to accompany the lesson videos being aired this week through Seattle’s Public television programming on SPS TV (local channel 26). The videos and packets are also posted to the SPS Science webpage under their corresponding grade level. These lesson videos, developed in collaboration between SPS teachers, Denver Public Schools teachers, and Amplify Science, feature teachers going through the information in the lessons. The work in this packet is intended to be completed alongside the viewing of the video of the corresponding videos.

Closed captioning for the videos is available many home languages if this helpful to your family.

- Click CC (bottom right of video)
- Click Setting (the gear next to CC)
- Click Subtitles/CC
- Click Auto-translate
- Choose your language

For students who have access to the internet and the following devices and browsers may wish to log-in to their AmplifyScience account from home are welcome to do so. Chrome and Safari are the recommended browsers to use for full functionality of the Amplify digital tools and features.

Sincerely,
Seattle Public Schools Science Department
中学科学团队将为学生提供教学机会，开发的一系列与校区一致的远程校外课程的一部分。虽然课程的设计目的是与同伴在课堂上完成，但学生也可以在家中进行。学生将找到一些活动，以配合本周通过 SPS TV 在西雅图的公共电视节目播放的数学视频（本地频道 26）。

如果有助您的家人，可以为他们提供视频的字幕菜单。您将找到一些活动，以配合本周通过 SPS TV 在西雅图的公共电视节目播放的数学视频（本地频道 26）。视频和学习包也会发布 SPS 网页上 https://www.seattleschools.org/academics/curriculum/science

如果有助您的家人，可以为他们提供视频的字幕菜单。您将找到一些活动，以配合本周通过 SPS TV 在西雅图的公共电视节目播放的数学视频（本地频道 26）。视频和学习包也会发布 SPS 网页上 https://www.seattleschools.org/academics/curriculum/science
Suggested browser: Safari

Sincerely,
Departamento de Ciencias de las Escuelas Públicas de Seattle

SOMALI
Qoysaska Dugsiga Dhexe SPS,

Waxaan raajeynayaa adiga iyo qoyskaada in aad caafimaad iiyo nabadgelyo qabtaan waqtigaan lagu jiro. Dg Inta lagu jiro waqtigan aan caadiga aheyen ee dugsiga dibadiisa, kooxda sayniska ee dugsiga dhexe ee SPS waxay soo bandhigayaan fursado waxbarid ilaa markaana ardayga oo la waafajineysa agabka tacliinta sayniska ee dugsiga dhexe ee degmadu qaadaday.
Xirmaidan barista sayniska waa qeyb ka mid ah taxane ah oo dugsiyada degmada inkastoo casharada Amplify Sayniska loogu talagalay in lagu sameeyo fasalka dhexdiisa ardayda, waxaa kale oo jira howlo qaarhood oo ay ardaydu ku dhamayn karaan guriga warqadaahan xirmaidan dhexda ah dhexdeedaln casharada muqaalka ah waxaad ka heleysa sitmaanka barnaamijka talefishinka Dugsiyada Dadweynaha Seattle SPS TV (kanaalka gudaha 26). Xirmaidan warqadaaha iyo fiidiyowga waxaad ka heleysa shaabakada SPS websaydhka, https://www.seattleschools.org/academics/curriculum/science.

Waxaad halkan ka heli kartaa sawirowo qaar iyo luqado hadlii aay tahay mid ka caawineysa qoyskaada.
- guji CC (bottom right of video)
- guji Setting (the gear next to CC)
- guji Auto-translate
- Dooro luqadaada

Ardayga heysta Khadka internet raacana tilmaanta istimkaalka ka dibna ay galaanka koontadooda AmplifyScience guriga.
- Desktops and Laptops (Chrome & Safari)
- Chromebooks
- iPads that support iOS11.3+ (iPad5+ – talo isticmaal : Safari

Mahadsanid,
Dugsiyada Dadweynaha Seattle Waaxda Sayniska

VIETNAMESE
Kính gửi các gia đình của học sinh cấp 2 SPS,

Chúng tôi hy vọng quý vị và gia đình đều được khỏe mạnh và an toàn trong thời gian này. Trong thời gian nghỉ học chủ động xây ra này, nhóm khoa học của các trường cấp 2 SPS sẽ mang đến cho các em học sinh cơ hội học tập phù hợp với tài liệu giảng dạy khoa học dành cho cấp 2.
Tập bài học kiến nghị năm là một phần của một loạt các bài học dưới đây và được phát triển bởi AmplifyScience. Trong khi các bài học Khoa học Amplify được thiết kế để thực hiện trong lớp học với các ban học, nhưng cũng có một số hoạt động mà học sinh có thể hoàn thành tại nhà. Trong tập bài học này, quý vị sẽ tìm thấy các hoạt động để kèm với video bài học được phát sóng trong tuần này thông qua chương trình truyền hình công cộng Seattle trên SPS TV (kênh đài phương 26).
Phù dính cho các video có sẵn qua nhiều ngôn ngữ giữa đầy này giúp ích cho gia đình của quý vị.
- Nhập vào Setting (biểu tượng hình bánh răng bên cạnh CC)
- Nhập vào Subtitles/CC
- Nhập vào Auto-translate
- Chọn ngôn ngữ của quý vị

Học sinh nào truy cập vào internet và các thiết bị và trình duyệt sau có thể đăng nhập vào tài khoản AmplifyScience của các em từ nhà.
- Desktops and Laptops (Chrome & Safari)
- Chromebooks
- iPads that support iOS11.3+ (iPad5+) - Suggested browser: Safari

Trân trọng,
Seattle Public Schools Science Department
Unit Investigation Question: Why is the ice on Earth’s surface melting?

Lesson 7
The head climatologist is calling on you for assistance with another investigation. This investigation is focused on human activities and how they might be impacting the atmosphere. You will use the Sim and evaluate evidence, using the Evidence Gradient, as you discover how human activities are affecting Earth.

Vocabulary you will use in this lesson:
- atmosphere
- carbon dioxide
- change
- claim
- climate
- climate change
- combustion
- energy
- evidence
- fluctuation
- human activities
- methane
- stability
- temperature
- trend
Lesson 7 – Part 1: Investigating Human Activities in the Sim

We will investigate ways to stop the increase of carbon dioxide and methane in this chapter, but before we do that, we need to understand why they are increasing in the first place. Today we will answer the question, why are carbon dioxide and methane increasing in the atmosphere? Human activities refer to things people do that affect the Earth system. Today we’ll investigate whether human activities are changing the atmosphere.

New Vocabulary for the Lesson:
HUMAN ACTIVITIES: things people do that affect the Earth system

Human Activities Mode in the Earth’s Changing Climate Sim

Things you can adjust or change in the Sim:

- **Population.** This slider changes the number of people on Earth. Right now, about 7 billion people live on Earth.

- **Combustion per Person.** This slider represents the average amount of combustion from each person on Earth. Combustion includes engines (cars) and the way most electrical energy is produced. In Seattle most electricity is generated using hydro-electric power plants. The medium setting in the Sim models the current level of combustion per person.
• **Livestock per Person.** Livestock are farm animals that humans raise and use, such as cows and sheep. This represents the average number of these animals for each person on Earth. The animals are raised for meat, milk, wool, and more. The medium setting in the Sim models the current amount of livestock per person.

• **Forest Cover.** This represents how much of the Earth’s land is covered by forest. The low setting in the Sim models the current amount of forest.

• **Gas Capture.** Explain that technologies are being developed to trap gases as they are released from factories or other sources. These technologies are just beginning to be used. The low setting models the current amount of gas capture.

**Graph View in the Human Activities Mode**
Lesson 7 – Part 2: Carbon Dioxide Investigation

Investigate how changes to Population and Combustion per Person affect the amount of carbon dioxide in the atmosphere. Go to Earth’s Changing Climate Simulation and select Human Activities mode.

Select Human Activities mode from the menu on the left. Open the graph by pressing the graph icon in the lower left corner and select carbon dioxide.

**Population Testing**

1. **No change to Population**: Run the Sim until the time reaches 30. Pause and record your observations.

   With no change to Population, ____________________________________________________

2. **Decrease Population to the lowest setting**: Run until the time reaches 60. Pause and record your observations.

   When I decreased Population, ____________________________________________________

3. **Increase Population to the highest setting**: Run until the time reaches 90. Pause and record your observations.

   When I increased Population, ____________________________________________________

**Combustion Testing**

4. **No change to Combustion**: Reset the Sim. Run until the time reaches 30. Pause and record your observations.

   With no change to Combustion, ______________________________________________________________________

5. **Decrease Combustion to the lowest setting**: Run until the time reaches 60. Pause and record your observations.

   When I decreased Combustion, ______________________________________________________________________

6. **Increase Combustion to the highest setting**: Run until the time reaches 90. Pause and record your observations.

   When I increased Combustion, ______________________________________________________________________
Lesson 7 – Part 3: Methane Investigation

Investigate how changes to Population and Livestock per Person affect the amount of methane in the atmosphere. Go to Earth’s Changing Climate Simulation and select Human Activities mode.

Select Human Activities mode from the menu on the left. Open the graph by pressing the graph icon in the lower left corner and select methane.

Population Testing

1. **No change to Population**: Run the Sim until the time reaches 30. Pause and record your observations.

   With no change to Population, _____________________________________________________________

2. **Decrease Population to the lowest setting**: Run until the time reaches 60. Pause and record your observations.

   When I decreased Population, _____________________________________________________________

3. **Increase Population to the highest setting**: Run until the time reaches 90. Pause and record your observations.

   When I increased Population, _____________________________________________________________

Livestock per Person Testing

4. **No change to Livestock per Person**: Reset the Sim. Run until the time reaches 30. Pause and record your observations.

   With no change to Livestock per Person, _______________________________________________________

5. **Decrease Livestock per Person to the lowest setting**: Run until the time reaches 60. Pause and record your observations.

   When I decreased Livestock per Person, _______________________________________________________

6. **Increase Livestock per Person to the highest setting**: Run until the time reaches 90. Pause and record your observations.

   When I increased Livestock per Person, _______________________________________________________


Lesson 7 – Part 4: Understanding More about Combustion and Methane

We know that carbon dioxide gas in the atmosphere is causing climate change, because it redirects energy back to earth’s surface, making it warmer. But where exactly is all this carbon dioxide coming from?

One of the main ways carbon dioxide is added to the atmosphere is through a process called combustion. Combustion means burning. One important way combustion happens is when people burn fossil fuels, like gasoline, coal, or natural gas for energy. When these fuels get burned, they do not go away. They change into something else. Through combustion, some of the matter from the fuel becomes carbon dioxide and is released into the atmosphere.

Many of our everyday activities rely on combustion. For example, did you know that when we turn on a light switch or a computer, we are using electrical energy from power plants? Well, most power plants generate electrical energy by burning fossil fuels, and that releases carbon dioxide into the air. We also burn fossil fuels in transportation. When we fly in a plane or ride in a car, these vehicles are powered by combustion. Inside their engines, fossil fuels are burned to make these vehicles move. It might seem like the heat from the engine causes climate change. But that small amount of heat is not enough to make a difference. The thing that really affects climate is the carbon dioxide being released by combustion.

When we understand how combustion and climate change are linked, it’s easier for each of us to do our small part by using less energy. If everyone helps, then we can reduce our impact on the climate.

New Vocabulary for the Lesson:

**COMBUSTION**: the process of burning fuels that produces heat and, for many fuels, carbon dioxide
One way that methane gets added to the atmosphere is by animals that eat grass. As cows or sheep digest, parts of that grass get turned into methane gas. Methane is released in these animals’ flatulence and from their burps.
Lesson 8: Climate Change Solutions

Investigation Question: What evidence do scientists use to support their claims about climate change?
Lesson 8
The Sim provides information about the kinds of human activities that increase carbon dioxide and methane, but we need to know whether these human activities have been changing over time—increasing or decreasing—in order to investigate whether they are actually causing the current change in climate. In the next part of this lesson, we will look at graphs that provide data about these activities. This data, together with information from the Sim, will provide us with a better understanding of why global average temperature is increasing.

Vocabulary you will use in this lesson:

- atmosphere
- carbon dioxide
- change
- claim
- climate
- climate change
- energy
- evidence
- methane
- model
- stability
- temperature
Lesson 8 – Part 1: Analyzing Human Activities Data

Investigation Question: Why are carbon dioxide and methane increasing in the atmosphere?

Carefully analyze the following four graphs. As you do so, consider the following:

- Which evidence was strongest. Why?
- Which evidence was not as strong? Why?
- Look at the evidence you thought was strongest, and see if the trend on that card matches the trend for carbon dioxide or methane.
Amount of Summer Sea Ice in Arctic (1980–2013)

World Population 1820–2010
After carefully analyzing the four graphs and comparing them to the graphs of increasing carbon dioxide and methane, what trends did you notice?
Lesson 8 – Part 2: Reading “Global Warming: A History of a Hot Debate”

You have learned a lot about how human activity is related to climate change. Read "Global Warming: A History of a Hot Debate" to learn about how scientists explored the role of human activities on climate, then answer the two questions at the end of the article.

When making goods in factories became more common, scientists began to research the effect of burning fuel on the atmosphere and on global temperatures.

Today, scientists around the world agree that our planet is warming and that the rise in temperature is due to human activities over the past two hundred years. However, this level of agreement hasn’t been around long! For hundreds of years, nobody knew exactly how carbon dioxide was affecting the planet or what kinds of effects humans had on the natural world. Many scientists had competing ideas that took centuries to work out.

Beginning in the nineteenth century, scientists understood that carbon dioxide and a few other types of gases in the atmosphere affected energy in the Earth system. They took measurements of the air in the atmosphere and Earth’s temperature and found that global temperatures went up as the amount of carbon dioxide in the atmosphere increased. In 1896, a Swedish scientist named Svante Arrhenius (SVAN-tuh Ah-RAIN-ee-us) calculated that doubling the amount of carbon dioxide in the atmosphere would cause a temperature increase of 5 to 6 degrees Celsius (9 to 11 degrees Fahrenheit), while cutting the level of carbon dioxide in the atmosphere in half would be enough to cause a new ice age! The relationship between these gases in the atmosphere and global temperatures had become especially important in the nineteenth century as the first large factories began putting much more pollution into the air than before. The growth of factory-made goods and then the automobile meant that the atmosphere contained far more carbon dioxide than it had in all of human history.
In the twentieth century, scientists around the world studied the relationship between pollution in the atmosphere and Earth’s temperature. However, they did not always agree about whether the carbon dioxide added to the atmosphere by humans would have effects on global temperatures, or about what those effects might be. Some agreed with Arrhenius and predicted warming due to carbon dioxide in the atmosphere. Others predicted that other types of pollution might cause the planet to cool rather than heat up: some types of pollution include tiny particles floating in the air, which block some of the sun’s energy from reaching Earth’s surface. They thought this cooling effect might be stronger than the heating effect of the carbon dioxide.

To determine what was really happening with Earth’s atmosphere, scientists around the world needed more precise data. That kind of data became easier to get as computer technology improved and scientists were able to use better models to test their ideas. With the help of computers, the evidence began to show clearly that increases in gases like carbon dioxide and methane in the atmosphere happened at the same time as temperatures around the planet began to rise.

Today, scientists agree that Earth is getting warmer quickly, and that the rise in temperature is due to carbon dioxide and other gases released into the atmosphere by human activities. As technology improves today and in the future, scientists will learn even more about our effects on the planet—how we can solve some of the problems we’ve created. However, that is not enough to change how humans affect the planet. Scientists can describe the consequences of our actions, but society needs to decide what to do with that knowledge.

This graph shows the change in global temperature in degrees Celsius between the years 1880 and 2009.
1. What different ideas did scientists in the twentieth century have about the effect of adding carbon dioxide to the atmosphere?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

2. What happened that made it easier for scientists to test their ideas about the effect of gases (such as carbon dioxide and methane) on the atmosphere?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Key Concept**

Carbon dioxide and methane in the atmosphere increase as a result of human activities, such as combustion.
Middle School Math
Grade 6
Topic 8
Lesson 8-3 & 8-4
Display, Describe, and Summarize Data
How to Access & Use Pearson Bounce Pages

The Bounce Page app is a place where you can access Virtual Nerd videos. These are interactive tutorial videos that go over the fundamental math concepts of each lesson.

You can download Pearson Bounce Pages from your Android or Apple store.

TIPS FOR USING BOUNCE PAGE

1. AIM the camera so the FULL page is easily viewable on your screen. For best results, flatten the page, or if scanning a screen be sure the entire page is visible on your phone screen.

2. TAP the screen to scan the entire front of the page. Scan the ENTIRE page. Scanning a single problem will not work. Scan the page BEFORE students write on the page.

3. BOUNCE the page to life by clicking your Bounce Pages program icon.

4. Update the operating system on your device and the Bounce Pages app as needed.
A box plot shows a distribution of data values on a number line. The median divides the data in half. Quartiles divide the data into four equal parts. To create a box plot, you need 5 values: the minimum, the maximum, the median, the first quartile, and the third quartile.

1. The data set below represents the heights, in inches, of 11 professional basketball players.
   
   80, 74, 83, 81, 84, 83, 71, 73, 76, 81, 76

   Fill in the blanks to order the data values from least to greatest. Then circle the minimum and maximum heights and label the median and the quartiles.

   71, _____, 74, 76, _____, 80, 81, _____, 83, _____, 84

2. Make a box plot.

   **Step 1** Label the number line with an appropriate scale for the data set.

   **Step 2** Plot the minimum, maximum, median, first quartile, and third quartile.

   **Step 3** Draw a box between the first and third quartiles, and draw a vertical line segment at the median.

   **Step 4** Draw horizontal segments that extend from the box to the minimum and to the maximum.

   **On the Back!**

3. The data set below represents the weights, in pounds, of several pumpkins in a contest. Make a box plot for the data.

   13, 14, 29, 22, 18, 16, 33, 35, 41, 27
8-3 Additional Practice

1. In a bowling tournament, Sofia got the following scores:
   167, 178, 193, 196, 199, 199, 203, 209, 217, 220, 221.
   a. What is the median?
   b. What is the first quartile?
   c. What is the third quartile?
   d. Draw a box plot of the data.
   e. Write two conclusions about the data shown in the box plot.

2. Sabrina grows flowers. In a competition with other flower growers, she earned the following scores: 7, 10, 10, 6, 7, 8, 8, 7, 9.
   a. What is the median?
   b. What is the first quartile?
   c. What is the third quartile?
   d. Draw a box plot of the data.
   e. Write two conclusions about the data shown in the box plot.

In 3 and 4, use this data set, which shows how many miles Tisha ran each week for 10 weeks.
4, 9, 8, 6, 14, 11, 14, 8, 16, 12

3. Find the statistical measures that you need to make a box plot of Tisha’s running distances.

4. Make a box plot to represent Tisha’s running distances.

In 5 and 6, use this data set, which shows the prices, in dollars, of 10 coats.
55, 75, 45, 80, 50, 70, 45, 85, 60, 70

5. Find the statistical measures you need to make a box plot of the coat prices.

6. Make a box plot to display the coat prices.
In 7 and 8, draw box plots using the data provided.

7. The sizes of different computer files, in megabytes:
   114, 134, 191, 216, 255, 181, 189

8. The rainfall, in inches per year, for seven different states:
   83, 57, 48, 97, 20, 36, 31

In 9 and 10, use the box plot to answer the question.

9. How much does the less expensive 50% of trail mix cost?

10. How much does the most expensive sandwich cost?

11. Higher Order Thinking Terence made a box plot showing the number of points scored at football games. Without seeing the values, what part of the scores fall in the range represented by the box? Explain.

12. Critique Reasoning Casey recorded the weights, in pounds, of 10 cats at the vet’s office: 5, 8, 6, 13, 16, 12, 5, 8, 10, 15. Casey then drew a box plot using the weights. What error did Casey make?

Assessment Practice

13. Use the given data to complete the box plot.

Shantay tossed a pair of number cubes numbered 1–6 a total of 10 times. The sums of the numbers on her cubes for each of her tosses are shown in the table.

<table>
<thead>
<tr>
<th>Sum of Pair of Tossed Number Cubes</th>
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<tbody>
<tr>
<td>11 3 9 5 10 7 7 6 6</td>
</tr>
</tbody>
</table>

Complete the box plot to show the distribution of the sums.
A box plot shows a distribution of data values on a number line. The median divides the data in half. Quartiles divide the data into four equal parts. To create a box plot, you need 5 values: the minimum, the maximum, the median, the first quartile, and the third quartile.

1. The data set below represents the heights, in inches, of 11 professional basketball players.
   80, 74, 83, 81, 84, 83, 71, 73, 76, 81, 79
   Fill in the blanks to order the data values from least to greatest. Then circle the minimum and maximum heights and label the median and the quartiles.
   73, 74, 76, 79, 80, 81, 83, 84, 85
   first quartile, median, third quartile

2. Make a box plot.
   Step 1 Label the number line with an appropriate scale for the data set.
   Step 2 Plot the minimum, maximum, median, first quartile, and third quartile.
   Step 3 Draw a box between the first and third quartiles, and draw a vertical line segment at the median.
   Step 4 Draw horizontal segments that extend from the box to the minimum and to the maximum.

On the Back! Check students’ box plots.

3. The data set below represents the weights, in pounds, of several pumpkins in a contest. Make a box plot for the data.
   13, 14, 29, 22, 18, 16, 33, 35, 41, 27

8-3 Additional Practice

1. In a bowling tournament, Sofia got the following scores:
   167, 170, 193, 196, 199, 195, 203, 201, 217, 220, 221
   a. What is the median? 201
   b. What is the first quartile? 193
   c. What is the third quartile? 217
   d. Draw a box plot of the data.
   e. Write two conclusions about the data shown in the box plot.
   Sample answer: Sofia’s median score is 199. The difference between the second quartile and the median is much less than the difference between the third quartile and the median.

2. Sabrina grows flowers in a competition with other flower growers, she earned the following scores: 7, 10, 6, 7, 8, 8, 7, 9, 8
   a. What is the median? 8
   b. What is the first quartile? 7
   c. What is the third quartile? 8.5
   d. Draw a box plot of the data.
   e. Write two conclusions about the data shown in the box plot.
   Sample answer: Sabrina’s median score is 8. Sabrina’s least score and greatest score are the same distance from the median.

In 3 and 4, use this data set, which shows how many miles Tisha ran each week for 10 weeks.
   4, 8, 10, 6, 14, 11, 13, 8, 12

3. Find the statistical measures that you need to make a box plot of Tisha’s running distances.
   Minimum: 4
   First Quartile: 8
   Median: 10
   Third Quartile: 14
   Maximum: 16
   4. Make a box plot to represent Tisha’s running distances.

In 5 and 6, use this data set, which shows the prices, in dollars, of 10 coats.
   55, 75, 45, 80, 50, 70, 45, 85, 60, 70

5. Find the statistical measures you need to make a box plot of the coat prices.
   Minimum: $45
   First Quartile: $50
   Median: $55
   Third Quartile: $75
   Maximum: $95
   6. Make a box plot to display the coat prices.

In 7 and 8, draw box plots using the data provided.

7. The sizes of different computer files, in megalobytes:
   114, 134, 191, 216, 255, 181, 189
   File Sizes
   0 50 100 150 200 250 300
   Megabytes

8. The rainfall, in inches per year, for seven different states:
   83, 57, 48, 97, 20, 36, 31
   Rainfall
   0 10 20 30 40 50 60 70 80 100
   Inches

9. How much does the least expensive 50% of trail mix cost?
   Costs of Trail Mix
   $0 $1 $2 $3 $4 $5 $6
   Price per Pound
   Between $1.00 and $3.00 per pound

10. How much does the most expensive sandwich cost?
    Costs of Sandwiches
    $3 $4 $5 $6 $7 $8
    Price per Sandwich

   $7.50

11. Higher Order Thinking
    Terence made a box plot showing the number of points scored at football games. Without seeing the values, what part of the scores fall in the range represented by the box? Explain. Sample answer: Half of the values are represented by the box. The box covers an area from the first quartile to the third quartile. Each quartile contains one fourth.

12. Critique Reasoning
    Casey recorded the weights, in pounds, of 10 cats at the vet’s office:
    5, 8, 16, 13, 12, 5, 8, 10, 15. Casey then drew a box plot using the weights. What error did Casey make? State the third quartile. The third quartile should be 13, but the box plot shows 12.

C Assessment Practice

13. Use the given data to complete the box plot.
    Shantay tossed a pair of number cubes numbered 1-6 a total of 18 times. The sums of the numbers on her cubes for each of her tosses are shown in the table.

   Sums of Pair of Sided Number Cubes
   2 3 5 6 7 8 9 10 11 12
   Complete the box plot to show the distribution of the sums.
A **frequency table** shows the number of times that data values occur in a data set. You can use tally marks to keep track of the number of times a data value occurs.

<table>
<thead>
<tr>
<th>Hours per Month</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–9</td>
<td>IIII</td>
<td>9</td>
</tr>
<tr>
<td>10–19</td>
<td>IIII</td>
<td>7</td>
</tr>
<tr>
<td>20–29</td>
<td>II</td>
<td>2</td>
</tr>
</tbody>
</table>

A **histogram** is a graph that uses bars to show the frequency of equal ranges or groups of data. The data from the table is displayed in the histogram.

1. Luke recorded the prices of different pairs of sneakers at a store.

$50, 45, 36, 30, 80, 35, 32, 40, 45, 35, 35, 65, 30, 90, 45, 30, 42, 50$

Complete the frequency table and the histogram.

<table>
<thead>
<tr>
<th>Prices of Sneakers</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–39</td>
<td>IIII</td>
<td>11</td>
</tr>
<tr>
<td>40–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70–79</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>80–99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On the Back!

2. Ms. Lin recorded her students’ test scores. Represent the data in a frequency table and a histogram. Use intervals such as 60–69 and 70–79.

8-4 Additional Practice

In 1 and 2, use the data in the chart.

Annual Ticket Sales for Charity Ice-Skating Event

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td>81</td>
<td>88</td>
<td>51</td>
<td>90</td>
<td>89</td>
<td>85</td>
</tr>
<tr>
<td>87</td>
<td>100</td>
<td>80</td>
<td>99</td>
<td>87</td>
<td>96</td>
<td>99</td>
</tr>
<tr>
<td>84</td>
<td>86</td>
<td>94</td>
<td>88</td>
<td>91</td>
<td>85</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90</td>
</tr>
</tbody>
</table>

1. Complete the frequency table below for the number of tickets sold each year for the charity event.

<table>
<thead>
<tr>
<th>Tickets Sold</th>
<th>Tallies</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>45–54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55–64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65–74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75–84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85–94</td>
<td></td>
<td></td>
</tr>
<tr>
<td>95–104</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Use your frequency table to complete the histogram.

Tickets Sold for Charity Event

<table>
<thead>
<tr>
<th>Number of Years</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>45–54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55–64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65–74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75–84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85–94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95–104</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In 3–6, use the data in the frequency table. The frequency table shows the time it took students in a P.E. class to run 1 mile.

3. How many students are in the P.E. class?

4. How many students ran 1 mile in under 9 minutes?

5. How many fewer students ran 1 mile in under 10 minutes than students who took 11 or more minutes to run that distance?

<table>
<thead>
<tr>
<th>Time in Minutes</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00–8:59</td>
<td>♦♦♦</td>
<td>6</td>
</tr>
<tr>
<td>9:00–9:59</td>
<td>♦</td>
<td>2</td>
</tr>
<tr>
<td>10:00–10:59</td>
<td>♦♦♦♦</td>
<td>8</td>
</tr>
<tr>
<td>11:00–11:59</td>
<td>♦♦</td>
<td>6</td>
</tr>
<tr>
<td>12:00–12:59</td>
<td>♦♦♦♦♦</td>
<td>9</td>
</tr>
</tbody>
</table>

6. Be Precise Can you tell from the frequency table how many students, if any, ran a mile in exactly 12 minutes? Explain. MP6
In 7–9, use the chart below and the histogram at the right.

| Ages of Players at Castle Miniature Golf |
|-----|-----|-----|-----|-----|
| 14  | 7   | 6   | 24  | 15  |
| 9   | 19  | 25  | 10  | 17  |
| 51  | 8   | 21  | 48  | 12  |

7. Just as Lilah finished making her histogram, a group of five people started playing. She wants to include their ages, which are 12, 12, 16, 26, and 48. How should Lilah change her histogram to include these ages?

8. **Reasoning** Lilah recorded the ages of the miniature golf players at 3:00 P.M. How might her data change if she recorded the ages of players at 7:00 P.M.?  

9. **Higher Order Thinking** Suppose a 65-year-old brings her two granddaughters to play miniature golf. The granddaughters are both 5 years old. How can Lilah adjust the intervals to include these ages?

**Assessment Practice**

10. Each day for a month, Bo timed himself to see how many free throws he could make in 60 seconds.

<table>
<thead>
<tr>
<th>Bo’s Free Throw Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Days</td>
</tr>
<tr>
<td>0–4</td>
</tr>
<tr>
<td>6</td>
</tr>
</tbody>
</table>

Using the histogram, select all of the true statements that describe Bo’s data.

- There were 31 days in that month.
- Bo made 15–19 free throws 6 times.
- More than half of the days in the month, Bo made at least 10 shots.
- The greatest number of shots made in 60 seconds was between 10 and 14.
- Bo made fewer than 10 shots more often than he made more than 14 shots.
A frequency table shows the number of times that data values occur in a data set. You can use tally marks to keep track of the number of times a data value occurs.

A histogram is a graph that uses bars to show the frequency of equal ranges or groups of data. The data from the table is displayed in the histogram.

1. Luke recorded the prices of different pairs of sneakers at a store.
   $50, $54, $36, $30, $80, $53, $54, $82, $40, $74, $50,$35, $50, $50, $65, $50, $90, $94, $50, $42, $50

   Complete the frequency table and the histogram.

   **Prices of Sneakers**
   - **Price ($)**  |  **Tally** |  **Frequency**
   - 20–29  |  |  
   - 40–49  |  |  
   - 60–69  |  |  
   - 80–99  |  |  

   **Histogram**

   On the Back! Check students’ frequency tables and histograms.

2. Ms. Lin recorded her students' test scores. Represent the data in a frequency table and a histogram. Use intervals such as 60–69 and 70–79.
   7, 9, 9, 19, 25, 10, 17
   19, 10, 17
   7, 9, 9, 25, 10, 17

   Just as Lilah finished making her histogram, a group of five people started playing. She wants to include their ages, which are 12, 12, 16, 26, and 48. How should Lilah change her histogram to include these ages?
   Add 2 to the first bar, 1 to the second bar, make a new bar for ages 26 to 35 that is 1 unit tall, and add 1 to the last bar.

3. Reasoning: Lilah recorded the ages of the miniature golf players at 3:00 p.m. How might her data change if she recorded the ages of players at 7:00 a.m.?
   Sample answer: There may be more people that are 26 to 45 years old at that time because they will be off from work.

4. Higher Order Thinking: Suppose a 55-year-old brings her two granddaughters to play miniature golf. The granddaughters are both 5 years old. How can Lilah adjust the intervals to include these ages?
   Sample answer: Lilah can change the intervals to 0–8, 9–10, 10–11, 10–12, 20–29, 30–39, 40–49, 50–59, and 60–69.

5. Each day for a month, Bo timed himself to see how many free throws he could make in 60 seconds.

   Using the histogram, select all of the true statements that describe Bo’s data.
   - There were 31 days in that month.
   - Bo made 15–19 free throws 6 times.
   - More than half of the days in the month, Bo made at least 10 shots.
   - The greatest number of shots made in 60 seconds was between 10 and 14.
   - Bo made fewer than 10 shots more often than he made more than 14 shots.