Dear Parent/Guardian(s),

This year the Arkansas Department of Education is allowing Little Rock School District (LRSD) to participate in Alternative Methods of Instruction (AMI) on inclement weather days, “Snow Days,” or any other day the district chooses to use an AMI day. This means that on these days’ students must complete one day’s worth of assignments for each day school is closed due to snow, ice or unforeseen circumstances.

This packet contains 5 days of assignments, which are labeled “Day 1,” “Day 2,” and so on and so forth. When students return to school, they must return their completed work to their teachers, and they will be counted present for school on the missed day(s).” Therefore, missed days will not have to be made up at the end of the school year, but a high percentage of student participation is required.

Please put this packet in a SAFE PLACE. It will be the family’s responsibility to keep up with all assignments to complete. When there is snow or ice in the weather forecast, you must wait for LRSD to announce that schools will be closed via district website and local news and radio stations. Then let your student get started on this packet. Teachers will be available by email to assist their students as needed.

The Watson staff is excited about the opportunity to participate in AMI. In order to ensure success with AMI, “Snow Day” packets will be accessible on our school page on the LRSD website, Facebook, and Class Dojo. We greatly appreciate your support in this effort!

Thank you,

Stephanie Walker, Principal
Estimado padre / madre / tutor (s),

Este año, el Departamento de Educación de Arkansas permite que el Distrito Escolar Little Rock (LRSD) participe en Métodos Alternativos de Instrucción (AMI) en días inclementes del clima o "Snow Days". Esto significa que en "Snow Days" los estudiantes deben completar un día de el valor de las asignaciones para cada día de escuela está cerrado debido a la nieve o el hielo.

Este paquete contiene 5 días de tareas, que están etiquetadas como "Día 1", "Día 2", y así sucesivamente. Cuando los estudiantes regresan a la escuela, deben devolver el trabajo completado a sus maestros, y serán contados como presentes para la escuela en el "Día de Nieve" que se perdió. Por lo tanto, los días perdidos no tendrán que recuperarse al final de el año escolar, pero se requiere un alto porcentaje de participación estudiantil.

Por favor, ponga este paquete en un LUGAR SEGURO. Será responsabilidad de la familia mantenerse al día con todas las tareas para completar. Cuando haya nieve o hielo en el pronóstico del tiempo, debe esperar a que LRSD anuncie que las escuelas se cerrarán a través del sitio web del distrito y las noticias y estaciones de radio locales. Luego, permita que su estudiante comience con este paquete. Los maestros estarán disponibles por correo electrónico para ayudar a sus estudiantes según sea necesario.

El personal de Watson está entusiasmado con la oportunidad de participar en AMI. Para garantizar el éxito con AMI, los paquetes de "Día de la nieve" estarán disponibles en nuestra página de la escuela en el sitio web de LRSD, Facebook y Class Dojo. Agradecemos mucho su apoyo en este esfuerzo!

Gracias,

Stephanie Walker, directora
<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>heed (19)</td>
<td>to pay attention to; to take notice of</td>
</tr>
<tr>
<td>truce (20)</td>
<td>an agreement by warring parties to stop fighting</td>
</tr>
<tr>
<td>grieved (22)</td>
<td>felt great sadness</td>
</tr>
<tr>
<td>surrender (24)</td>
<td>to give up; to give in to another's power or demands</td>
</tr>
<tr>
<td>poverty (26)</td>
<td>poor, not having enough property, money, or food</td>
</tr>
<tr>
<td>inadequate (26)</td>
<td>less than what is needed; not enough</td>
</tr>
<tr>
<td>betrayed (26)</td>
<td>mislead; failed to fulfill as in hopes, needs, or expectations</td>
</tr>
<tr>
<td>justice (29)</td>
<td>using the law to treat others fairly</td>
</tr>
<tr>
<td>misinterpretations (30)</td>
<td>badly or wrongly (definition of mis-)</td>
</tr>
<tr>
<td>liberty (31)</td>
<td>freedom to do or say what one thinks or feels</td>
</tr>
</tbody>
</table>
**Handout 1D: Assessed Vocabulary Study Guide**

**Directions:** Use this list of vocabulary words and definitions to study for the vocabulary assessment. The number following the word indicates the lesson number in which the word or affix is taught.

<table>
<thead>
<tr>
<th>Word (Lesson Number)</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>culture (1)</td>
<td>the way a group of people lives and understands the world, including its ideas, beliefs, and values; traditions; religion; language; rules; gender roles; food; clothing; art/music, dance, sports, and other ways of life</td>
</tr>
<tr>
<td>beliefs (1)</td>
<td>strong opinions; ideas believed to be true</td>
</tr>
<tr>
<td>impact (1)</td>
<td>to affect directly</td>
</tr>
<tr>
<td>values (1,2)</td>
<td>ideas about what is important and how to live in a way that is good or right</td>
</tr>
<tr>
<td>customs (2)</td>
<td>usual or accepted practices of a social group</td>
</tr>
<tr>
<td>prosperous (2)</td>
<td>having wealth, success, or good fortune</td>
</tr>
<tr>
<td>thriving (2)</td>
<td>doing well or being successful</td>
</tr>
<tr>
<td>homeland (5)</td>
<td>one's native country or region</td>
</tr>
<tr>
<td>sustain (5)</td>
<td>to provide with the basic necessities of life; to keep (something) going or existing</td>
</tr>
</tbody>
</table>
| subsistence (5)      | up from below (definition of sub-)
| descendants (9)      | down, away from (definition of de-)
| conflict (13)        | argument or fight between two opposing sides |
| treaty (14)          | an agreement between two opposing sides; a document that explains the terms of the agreement |
| reservation (14)     | an area of land given to Native Americans by the U.S. government as payment for taking the land of their original homes. The government forced Native Americans to move to and live on reservations. |
| plain words (18)     | words that are clear and easy to understand |
Apply Concepts

2. Tell what property each of the following tools is used to measure.

3. Complete these descriptions of the different states of matter.

   - **Solids**
     - Particles are very close and vibrate in place.
     - Examples:

   - **Examples:**
     - Solids
     - Examples: air; helium in balloons; oxygen in a tank

4. Fill in the name of the processes (such as freezing) that are represented.

   - **a**
   - **b**
   - **c**
   - **d**

   - **SOLID**
   - **LIQUID**
   - **GAS**

Take It Home!

Play a game of 20 Questions with members of your family. Have them choose a simple item that you can see in the room. Try to guess what the item is by asking yes/no questions about the item’s properties.
Word Play

Use the clues below to fill in the words in the puzzle.

1. To squeeze a gas into a smaller space
2. A physical property that describes how something feels
3. The state of matter that keeps its shape and volume when it is placed in a different container
4. The measure of the energy of motion of particles of matter
5. Anything that has mass and volume
6. What happens to a liquid when it releases enough energy
7. Calculated by dividing mass by volume
8. The state of matter that has particles that slide by each other
9. The amount of space something takes up
10. The state of matter that expands to fill its container

Read down the squares with red borders. The word you find will complete the riddle below.

Perry the porcupine's portrait perfectly portrayed his pestering personality and prickly ________ ________ ________ ________
When you're done, use the answer key to check and revise your work.

Read the summary statements below. Each one is incorrect. Change the part of the summary in blue to make it correct.

1. A property is a characteristic of matter that is used to determine the state of the matter.
   
2. A sample of ice has a volume of 1.0 cm³ and a mass of 0.9 g. The density of the ice is 1.1 g/cm³.
   
3. The particles in a solid are close together, but they can slide past each other.
   
4. A solid changes to a liquid during a process known as freezing.
   
5. Solids and liquids can be compressed when put under pressure.
   
6. The mass of an object can be measured by using a measuring cup.
   
---

Summarize

Read the properties below. Write S for solid, G for gas, and L for liquid. Some properties may have more than one answer.

7. Has a definite texture and shape ______
   12. Can condense ______

8. Can melt ______
   13. Can flow ______

9. Can freeze ______
   14. Takes the shape of its container ______

10. Can boil ______
   15. Has a definite volume ______

11. Takes the volume of its container ______
**Solids**

Although clay and a wooden table are both solids, each one feels different. All solids have a shape, but the shape of some solids can be changed easily.

---

**Gases**

A lot of gas has been compressed in this tank. It is under high pressure. Compressed gas from the tank expands, filling many balloons.

---

Complete this main-idea-and-details graphic organizer.

<table>
<thead>
<tr>
<th>Main Idea</th>
</tr>
</thead>
</table>

- **Liquids**
  - Motor oil and milk
  - at different rates.

- **Gases**
  - When you push on the sides of a balloon, the gas inside is
  - ____________.

- **Glass and sandpaper have different**
  - ____________. 
Lesson Check (CC.5.NBT.1)

1. A movie cost $3,254,107 to produce. Which digit is in the hundred thousands place?
   - A 5
   - B 4
   - C 2
   - D 1

2. Which is another way to write two hundred ten million, sixty-four thousand, fifty?
   - A 210,640,050
   - B 210,064,050
   - C 201,064,500
   - D 200,106,450


3. If the pattern below continues, what number likely comes next? (Grade 4)
   9, 12, 15, 18, 21, ?
   - A 36
   - B 24
   - C 22
   - D 20

4. What is $52 \div 8$? (Grade 4)
   - A 8 r4
   - B 7 r4
   - C 6 r4
   - D 5 r4

5. How many pairs of parallel sides does the trapezoid below have? (Grade 4)

   - A 0
   - B 1
   - C 2
   - D 4

6. Which figure appears to have only 1 line of symmetry? (Grade 4)

   - A
   - B
   - C
   - D
Lesson 1.2

Place Value of Whole Numbers

Write the value of the underlined digit.

1. 5,165,874
   2. 2,814,400
   3. 7,270
   4. 89,170,326

60,000

5. 7,050,423
   6. 646,950
   7. 37,123,745
   8. 315,421,732

Write the number in two other forms.

9. 15,409

10. 100,203

11. 6,007,200

12. 32,005,008

Problem Solving

13. The U.S. Census Bureau has a population clock on the Internet. On a recent day, the United States population was listed as 310,763,136. Write this number in word form.

14. In 2008, the population of 10- to 14-year-olds in the United States was 20,484,163. Write this number in expanded form.

Directions: Read the following article. Refer to the glossary as needed for definitions of unfamiliar words.

The Indian Country, 1800: A Brilliant Plan for Living


The people the Corps of Discovery encountered on their two and a half-year round-trip journey to the Pacific belonged to well-ordered communities. While not a country in the European sense, the region the Americans traversed two centuries ago was bound together by common values and customs.

In 1800, the Native American communities in the Missouri and Columbia River regions were prosperous and thriving. They knew how to take advantage of the abundant natural resources around them, and traded for what they could not produce themselves. They had highly developed social structures to educate their children, care for their elderly, and prevent and resolve community conflicts. As Frederick Baker has commented, they didn’t need schools, police, jails, and social workers, they had “a brilliant plan for living.”

Creators

For the people of the Indian Country, creation was not a distant event. They believed the world was a product of ongoing creative acts involving many supernatural forces.

Elders explained that the cosmic forces that made the world continued to be present above and beneath it. They told stories of spirit beings who wielded immense power, affecting the weather, the hunt, and the size of the harvest and taught that creation was a complex and never-ending process and that human beings were successful only if they acted with the assistance of the spirit world.

The people of the Indian Country communicated their values through stories of creation and tales of the spirit world. This oral literature was passed from elders to young people and provided vivid lessons regarding the values they believed were essential for community well-being.
Gifts

Gift-giving and reciprocal generosity were central to the values that bound community members to each other and to the natural and spirit worlds.

People in the Indian country believed it was wise to show respect and gratitude to the spirit beings by offering them presents and prayers. Gifts from the creators—healthy children, good crops, a successful hunt—called for gifts in return.

The steady flow of generosity within and between communities also facilitated social harmony. In villages and hunting bands, people organized their lives to discourage greed and draw individuals into a web of mutual support. Travelers, diplomats, and traders would greet their hosts with gifts; their hosts would offer them gifts in return, fostering long and peaceable relationships.

Men and Women

Men and women contributed equally to the well-being of Indian country communities. Their distinct but complementary gifts and skills were essential to the flourishing of human life as they transformed animals into clothing, plants into food, and children into adults.

Each gender made its own contribution to community life and each had specific responsibilities to fulfill. Working in groups—whether in hunting, farming, fishing, or processing raw materials into finished goods—drew men and women together, forging powerful bonds that cemented the social unity and cohesion of the community.

prosperous: having wealth, success, or good fortune
thiving: doing well or being successful
natural resources: materials found in nature that can be used by people in many ways (e.g., soil, fresh water)
social structures: how societies of people are organized, based on relationships between people (i.e., parents and children, teachers and students, men and women)
supernatural: having to do with forces separate from or higher than natural laws; having to do with spiritual beings
celestial: of or relating to the universe
oral literature: stories and poems passed down by word of mouth from generation to generation
reciprocal: involving an exchange between two parties; mutual
generosity: willing readiness to give; acts of giving
gratitude: the feeling of being thankful or grateful
facilitated: helped to bring about
harmony: being in agreement; unity
distinct: different or separate
complementary: forming a whole or a perfected combination
cemented: became bonded together
cohesion: a state of being closely united or together
Handout 2B: Boxes and Bullets Organizer

**Directions:** Complete the Boxes and Bullets organizer for the text "The Indian Country, 1800: A Brilliant Plan for Living," including the overall main idea, main ideas, and key details.

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall or “Umbrella” Main Idea:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Main Idea 1—“Creators”:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Key Details:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Main Idea 2—“Gifts”:</strong></td>
</tr>
</tbody>
</table>
Key Details:

-  
-  
-  

Main Idea 3—"Men and Women":

-  

Key Details:

-  
-  
-  

Summary:


Handout 2C: Word Line: Values

Directions: Create a Word Line using the following words. Be sure to consult a dictionary to look up definitions of any words whose meanings you do not know. After completing your word line, explain how you decided where the word values should go.

values, codes of behavior, beliefs, laws, ideas

How did you decide where the word values should go in the Word Line?
Draw Conclusions
Was your prediction correct? Explain.

3. What do you predict would happen to the mass if you put the bag from step 5 in the freezer and then found the mass after the water changed back to ice?

Analyze and Extend
1. Why was the mass of the bag not important in this activity?

4. Suppose you poured the water from step 5 into a container and measured its volume. If you froze the water, would its volume change or stay the same? Explain.

2. What properties of water changed during this activity? What properties did not change?

5. What other questions would you like to ask about how water changes during a physical change? What experiments could you do to answer the questions?
Name __________________________

Essential Question

How Does Water Change?

Set a Purpose
What can you learn from this experiment?

Think About the Procedure
Why do you dry the bag in step 2?

Where did the moisture on the outside of the bag come from?

Make a Prediction
Write your prediction from step 3.

Record Your Observations
In the space below, draw a table to record the masses that you measured.
Every design has its upside and its downside. When a design for an object is chosen to meet one purpose, other features may not be as good. A quality that a designer must give up in order to get a desired quality is called a design trade-off. A designer needs to think of both the upside and the downside of a particular design.

Look at these shoes. List two examples of the upside and two of the downside for each shoe. Think of another type of shoe. Draw it in the empty space, and explain the trade-offs.

**Build On It!**

Rise to the engineering design challenge—complete Design It: Distillation Device in the Inquiry Flipchart.
Carbon fiber is used to make this bike wheel strong and lightweight.

**Strong, Light, or Both?**

A bicycle wheel has to be strong to be safe. You also want it to be lightweight so it takes less energy for you to pedal the bike. You could easily bend one of these wheel spokes all by itself, but arranged together they make the wheel strong enough to support your weight and more!

Carbon fiber is smaller and stronger than a human hair!

Spider silk *is the strongest, lightest natural material. It is stronger than steel! Carbon fiber is a strong, human-made thread that can be woven into fabric. A single carbon fiber is much finer than a human hair. Carbon fiber is one of the strongest and lightest materials made by people.*

Circle a natural material. Put an X on a manufactured material. What are two ways these materials are alike?

________________________

________________________
Lesson Check (CC.5.NBT.6)

1. To find $19 + (11 + 37)$, Lennie added 19 and 11. Then he added 37 to the sum. Which property did he use?
   - A Distributive Property
   - B Commutative Property of Addition
   - C Associative Property of Addition
   - D Identity Property of Addition

2. Marla did 65 sit-ups each day for one week. Which expression can you use to find the total number of sit-ups Marla did during the week?
   - A $(7 \times 6) + (7 \times 5)$
   - B $(5 \times 60) + (5 \times 7)$
   - C $(7 + 60) \times (7 + 5)$
   - D $(7 \times 60) + (7 \times 5)$

Spiral Review (Reviews CC.OA.4, CC.A.4.NBT.6, CC.A.4.NBT.6; CC.5.NBT.1)

3. The average sunflower has 34 petals. Which is the best estimate of the total number of petals on 57 sunflowers? (Grade 4)
   - A 18
   - B 180
   - C 1,800
   - D 18,000

4. A golden eagle flies a distance of 290 miles in 5 days. If the eagle flies the same distance each day of its journey, how far does the eagle fly per day? (Grade 4)
   - A 50 miles
   - B 58 miles
   - C 290 miles
   - D 295 miles

5. What is the value of the underlined digit in the following number? (Lesson 1.2)
   $$2,983,785$$
   - A 80
   - B 800
   - C 8,000
   - D 80,000

6. The number 5 is: (Grade 4)
   - A prime.
   - B composite.
   - C neither prime nor composite.
   - D both prime and composite.
Properties

Use properties to find the sum or product.

1. $6 \times 89$
   $6 \times (90 - 1)$
   $(6 \times 90) - (6 \times 1)$
   540 - 6
   534

2. $93 + (68 + 7)$

3. $5 \times 23 \times 2$

4. $8 \times 51$

5. $34 + 0 + 18 + 26$

6. $6 \times 107$

Complete the equation, and tell which property you used.

7. $(3 \times 10) \times 8 = _____ \times (10 \times 8)$

8. $16 + 31 = 31 + _____$

9. $0 + _____ = 91$

10. $21 \times _____ = 9 \times 21$

Problem Solving

11. The Metro Theater has 20 rows of seats with 18 seats in each row. Tickets cost $5. The theater’s income in dollars if all seats are sold is $(20 \times 18) \times 5$. Use properties to find the total income.

12. The numbers of students in the four sixth-grade classes at Northside School are 26, 19, 34, and 21. Use properties to find the total number of students in the four classes.
Handout 3A: Informational Text Summary Model

Directions: Read the following information about an informational text summary. Refer to this model as needed to help you write an informational text summary.

Remember, an informational text summary...

- is a much shorter version of a longer text
- tells the main or central ideas and key details of the text;
- does not include your opinions or feelings;
- uses mostly your own words as well as key words from the text.

Model for an Informational Text Summary

<table>
<thead>
<tr>
<th>Topic statement</th>
<th>State the overall main idea of the text</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Idea 1 (Beginning)</strong></td>
<td>Tell the first main idea of the text in your own words, supporting it with key details.</td>
</tr>
<tr>
<td><strong>Main Idea 2 (Middle)</strong></td>
<td>Tell the second main idea of the text in your own words, supporting it with key details.</td>
</tr>
<tr>
<td><strong>Main Idea 3 (End)</strong></td>
<td>Tell the third main idea of the text in your own words, supporting it with key details.</td>
</tr>
<tr>
<td><strong>Concluding Statement</strong></td>
<td>Reinforce the overall main idea of the text.</td>
</tr>
</tbody>
</table>
Handout 3B: “A New Nation Comes to the Indian Country”

Directions: Read the following article. Refer to the glossary as needed for definitions of unfamiliar words.

A New Nation Comes to the Indian Country


Little changed in the Indian country in the first years after Lewis and Clark's journey. The Corps of Discovery had failed to find an easy route to the Pacific and few people wanted to follow their difficult path. But the expedition had put American “boots on the ground” for the first time. In addition, the information it compiled documented a vast new territory ready for national expansion.

West of the Missouri River that expansion began gradually. A profitable fur trade encouraged outposts and new settlements. After 1850, gold rushes in California, Montana, and Oregon built those remote settlements into towns. Over time, open land attracted settlers. The coming of the railroads completed the transformation of the region. By century’s end, Americans had a new name for the Indian country. They now called it the “West.” This process was not a peaceful one, rather it was punctuated by violence and military conflict.

This section...illustrates the ways in which different aspects of American expansion...mining, homesteading, ranching...altered and undermined the traditions and institutions of the Indian Country.

New Settlers

Three events near mid-century unleashed a flood of American settlement across the Indian country. In 1846, a treaty with Great Britain fixed the northern boundary of the United States at the 49th parallel, securing the Americans’ title to the Columbia River country. Two years later, the discovery of gold in California began a rush that attracted 250,000 people to what had been a distant province of the young Republic of Mexico. At almost the same moment, the Treaty of Guadalupe Hidalgo ended the Mexican–American war, and transferred a massive arc of new territory to the United States. Suddenly, the United States had become a continental power.

Settlers, merchants, and entrepreneurs heading west from St. Louis were now eager to set up American institutions across the Indian country. They assumed that the land was theirs, and that their needs superseded those of the existing Indian communities. By the centennial of the Lewis and Clark expedition in 1904, more than six million new people had moved to the territory first visited by the Corps of Discovery.
Miners

From the days of Columbus, European expansion was driven by stories of gold and silver waiting to be gathered up by energetic explorers. In the nineteenth century Americans often rushed to Native lands to claim their share of these rumored riches. Such episodes usually terrified local Indian communities because they attracted groups of young men who were traveling without families and were often prone to violence.

Among the most traumatic gold rushes in the nineteenth century was one triggered by the discovery of gold on lands the Nez Perces had reserved for themselves in their 1855 agreement with Governor Stevens. The invasion of their reservation set off disputes with young miners who were often unaware that they were trespassing on tribal property. Furthermore, there were arguments within the tribe over how best to respond to the crisis.

Ranchers

After the American Civil War, while homesteaders built farms in the West and miners filed claims in remote mountains, cattle and sheep ranchers moved into the arid northern plains and the plateau country of eastern Oregon to raise food for the nation's growing cities. While Native people were unhappy about the displacement of buffalo by stock animals, many tribal communities found ranching offered an attractive way to make a living. It preserved traditional gender roles and allowed for a seasonal round of herding activities.

Ranching attracted thousands of outsiders to the Indian country. These newcomers quickly exhausted the available public lands and pressed western tribes to open new areas for non-Indian ranching. These white ranchers urged federal authorities to permit them to graze their herds on what they saw as unused Indian lands and to build ambitious dam and irrigation projects. Indian communities along the Lewis and Clark route were often hardest hit by these changes. Many groups lost control over their land and water resources, or watched helplessly as federally built dams inundated and destroyed their homes.

_documented_: provided evidence for
_outposts_: outlying settlements or stations
_punctuated_: highlighted or marked
_undermined_: gradually weakened and destroyed
_institutions_: established customs and activities in a society
_treaty_: a formal agreement between two or more countries
_province_: one of the divisions of some countries
_entrepreneur_: people who assume the financial risk of beginning and operating a business
_superseded_: took over the place or position of; replaced
_prone_: having the habit of; being likely to
_traumatic_: having an emotional shock that deeply affects one's life for a long time
_invasion_: an act or instance of invading by an enemy or intruding into another's life
_trespassing_: entering the property of another without permission
_displacement_: the act of forcing out of a home territory or particular place
_federal authorities_: people in the national government who have the right or power, by law, to give orders and make decisions
_irrigation_: the act of supplying of water to land or crops
_inundated_: covered or overspread with a very large amount of water; flooded

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**Handout 3C: Boxes and Bullets Organizer**

**Directions:** Complete the Boxes and Bullets organizer for the text "A New Nation Comes to the Indian Country" including the overall main idea, main ideas, and key details.

<table>
<thead>
<tr>
<th>Text: “A New Nation Comes to the Indian Country” (Newberry Library)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall or “Umbrella” Main Idea:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

| **Main Idea 1—“Creators”:**                                  |
|                                                              |
|                                                              |
|                                                              |

| **Key Details:**                                             |
|                                                            |
|                                                            |
|                                                            |
|                                                            |

<p>| <strong>Main Idea 2—“Gifts”:</strong>                                    |
|                                                            |
|                                                            |
|                                                            |</p>
<table>
<thead>
<tr>
<th>Key Details:</th>
</tr>
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<table>
<thead>
<tr>
<th>Main Idea 3—“Men and Women”:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Key Details:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Summary:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>
Handout 3D: Identifying and Sorting Prepositional Phrases

Directions: Underline the prepositional phrases. Determine what information this detail provides; recopy the prepositional phrase into the corresponding column.

<table>
<thead>
<tr>
<th>Sentence from “A New Nation Comes to the Indian Country”</th>
<th>Where?</th>
<th>When?</th>
<th>What kind?</th>
<th>Which one?</th>
<th>How?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Corps of Discovery had failed to find an easy route to the Pacific and few people wanted to follow their difficult path.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. By the centennial of the Lewis and Clark expedition in 1904, more than six million new people had moved to the territory first visited by the Corps of Discovery.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. From the days of Columbus, European expansion was driven by stories of gold and silver waiting to be gathered up by energetic explorers.

4. Ranching attracted thousands of outsiders to the Indian Country.

Reflection question: How do prepositional phrases impact, or change, sentences?
Handout 5A: “Nimiipuu Homeland” and “Legend Times”

Directions: Refer to the glossary as needed for definitions of unknown words.

Nimiipuu Homeland – Nez Perce Country

Long before Meriwether Lewis and William Clark ventured West; before the English established a colony at Jamestown; before Christopher Columbus stumbled upon the “new world”; the Nez Perce, who call themselves the Nimiipuu, lived in the prairies and river valleys of north Central Idaho, Montana, northeastern Oregon, and southeastern Washington, an area of approximately seventeen million acres.

In 1805, when Lewis and Clark met the Nez Perce, they encountered a people well-integrated into their environment. Nimiipuu traditions and knowledge of the surroundings were well-honed over thousands of years. The Nimiipuu homeland’s abundant resources sustained their economy, lifestyle and culture.

Legend Times

Nimiipuu oral history records their presence in Nez Perce country since time immemorial. Archeological evidence indicates that people have occupied the Plateau culture area of the Northwest for at least the last 11,000 years.

According to legend, the world before humans was inhabited by animals that possessed human traits. The primary animal was It'se-ye-ye (Coyote), who at times had supernatural powers. The Nimiipuu creation story reveals that when a monster began to consume the animals, Coyote tricked the monster into swallowing him. While in the monster’s stomach, he killed the monster and set the animals free. Coyote carved the monster into pieces, and scattered the parts throughout the land, where they became the various tribes. It’se-ye-ye left the heart of the monster near Kamiah, Idaho and sprinkled the blood around the surrounding countryside, and created the Nimiipuu, the Nez Perce people. These stories provided instruction in Nimiipuu culture, and often conveyed moral teachings and practical information.

The Nimiipuu have been part of this land for countless generations. Their traditional homeland occupied nearly 13 million acres in what is today Oregon, Washington, and Idaho. The earliest peoples lived in small groups and family units. They were mostly reliant on big game hunting as a
primary means of subsistence. Starting around 6,000 years ago, many aspects of the historic Nez Perce way of life began to appear in the region. This included the use of a much broader base of locally abundant plant, fish, and game resources.

This shift to a more encompassing use of resources was well adapted to the Nez Perce homeland. It enabled the ancestral Nez Perce to develop a much more sedentary lifestyle as evidenced through the emergence of large winter village sites, and the increasing use of semi-subterranean pit houses.

By about 3,500 years ago, the bow and arrow came into common use in Nez Perce country. This technology eventually replaced the atlatl around 2,000 years ago. Over the last 1,000 years, Nez Perce culture became increasingly reliant on seasonally abundant fish and root resources. As the population grew, large villages located along the Clearwater, Snake, and Salmon Rivers and their tributaries became the norm.

A common thread throughout the Nimíipuu existence has been a keen knowledge of the resources present in their homeland. This included a thorough understanding of when, where, and how to obtain and use these items. Local stone, minerals, and various plant species were crafted to make clothing, baskets, tools, hunting and fishing implements, shelter, and other personal items.

Courtesy of the U.S. Department of the Interior/National Park Service

well-integrated: blended into a harmonious, or pleasing, whole; unified
well-honed: perfected
sustained: kept (something) going or existing; provided with the basic necessities of life
oral history: historical data, often recorded, that comprises firsthand oral accounts
time immemorial: reaching back in time beyond memory or record
archaeological: relating to the study of past human life
Plateau culture area: a region between the Rocky Mountains and the Pacific Coast, including parts of present-day Canada, Washington, Oregon, Idaho, and Montana, that was originally inhabited by Native American peoples
primary: main; most important
supernatural: having to do with forces separate from or higher than natural laws
moral: having to do with what is right and what is wrong in how a person acts
subsistence: that which supports life or continued operation
encompassing: including all of (something)
sedentary: living in a fixed location (instead of moving to different places)
semi-subterranean: halfway underground or below the earth's surface
pit houses: ancient shelters made by digging a pit into the earth and roofed over. atlatl: an ancient weapon, used for hunting; a stick used to throw a spear or a dart
Essential Question

How Does Matter Change?

Engage Your Brain!

As you read the lesson, look for the answer to the following question and record it here.

A piece of iron can change in different ways. How is iron bending different from iron rusting?

Active Reading

Lesson Vocabulary
List each term. As you learn about each one, make notes in the Interactive Glossary.

Main Idea and Details
Detail sentences give information about a topic. The information may be examples, features, characteristics, or facts. Active readers stay focused on the topic when they ask, What fact or information does this sentence add to the topic?
Matter has properties, but matter also undergoes changes. How many different ways does matter change?

**Active Reading** Each visual on these two pages has an empty bubble. Write a C if the visual shows a chemical change. Write a P if it shows a physical change.

Materials have physical properties that can be observed without changing the type of matter. Matter can also change in ways that do not affect the type of matter. These changes are called physical changes.

When an apple pie cooks, chemical changes occur. Cooked apples do not have the same properties as a raw apple.

When you sharpen a pencil, the pencil goes through a physical change. The wood shavings and bits of graphite don't look like a pencil any more. But the wood is still wood, and the graphite is still graphite.

Slicing a pie is another physical change.
Matter has other properties that cannot be observed without changing the identity of the matter. These properties are chemical properties. For example, you don’t know if a type of matter will burn unless you burn it. When matter burns, it changes identity.

In the same way, chemical changes result in a change in the identity of matter. When a strawberry rots, it undergoes chemical change. The rotten strawberry’s properties are quite different from those of a fresh strawberry. A chemical reaction is the process in which new substances are formed during a chemical change.

When you eat apple pie, chemical changes in your body digest the food.

Place a P by each physical change and a C by each chemical change.

<table>
<thead>
<tr>
<th>Change</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria decompose leaves.</td>
<td></td>
</tr>
<tr>
<td>A newspaper turns yellow in sunlight.</td>
<td></td>
</tr>
<tr>
<td>Water evaporates.</td>
<td></td>
</tr>
<tr>
<td>Gasoline burns in a car engine.</td>
<td></td>
</tr>
</tbody>
</table>
Swelling and Shrinking

Why do you think many car owners use one tire pressure in summer and another one in winter? When temperature differs, volume often differs.

Active Reading As you read this page, draw two lines under each main idea. Circle an example of matter expanding when it becomes warmer.

Most matter expands when the temperature goes up and contracts when the temperature goes down. Some kinds of matter expand and contract more than others. People may run hot water over the metal lid of a glass jar. This expands the lid so that it’s easier to take off the jar.

One exception is water. It expands when it freezes. Because ice takes up more volume than the same amount of liquid water, ice is less dense than water. That’s why ice floats in a glass of water. In winter, ice first forms at the surface of a lake.

One of water’s unique properties is that it expands when it freezes.
Sometimes water flows into cracks in rocks and freezes. The expanding water makes the cracks in the rock larger and breaks large rocks into smaller pieces.

**Expansion Joints**

**Explain why bridges have expansion joints in them.**

This photo shows the same balloon at two different temperatures. The size of a sample of gas depends on its temperature. The gas in a balloon expands when it is warmed. The gas compresses when it is cooled.

Temperature = -80 °C
Volume = 1.9 L

Temperature = 35 °C
Volume = 3.0 L
Tampering with Temperature

When a burner on a stove is really hot, it glows red. A change in color is just one way temperature can affect matter.

**Active Reading** As you read this page, underline examples of how temperature affects physical changes in matter.

Some physical changes, such as tearing a piece of paper, are not affected by temperature. Other physical changes happen faster or slower at different temperatures. How quickly a change occurs is called the rate of change.

For example, ice on a lake will melt if the air temperature is above 0 °C. It will melt even faster if the air temperature is warmer. In the same way, water condenses more quickly on the outside of a very cold soft drink can than it does on a cool can.

**WOW!** This metal rod has been heated to more than 500 °C (932 °F).

**OUCH!** The filament of a light bulb is made of a metal called tungsten. It is glowing because it is heated to 2,500 °C!
Do the Math!

Graph Data

The data table shows how long it takes identical ice cubes to melt when placed in equal amounts of water at different temperatures. Make a line graph of these data.

<table>
<thead>
<tr>
<th>Temperature of water (°C)</th>
<th>Melting time of ice (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>450</td>
</tr>
<tr>
<td>19</td>
<td>300</td>
</tr>
<tr>
<td>27</td>
<td>170</td>
</tr>
<tr>
<td>42</td>
<td>140</td>
</tr>
<tr>
<td>48</td>
<td>90</td>
</tr>
<tr>
<td>70</td>
<td>25</td>
</tr>
</tbody>
</table>

When grass and the air around it cool at night, water vapor in the air might condense, forming dew. As morning sunlight warms the air, the dew evaporates. In this photograph, the grass in the shade is wet but the grass in the sun has dried.
Adding it **Up**!

What happens to the mass of substances during physical or chemical changes?

**Active Reading** As you read these pages, underline examples of conservation of mass.

During physical and chemical changes, matter may change its appearance or its identity. In either type of change, the total mass of the matter before and after the change remains the same. This is called **conservation of mass**. To *conserve* means "to save."

For example, as water boils, it seems to disappear. However, the total mass of the particles of water vapor in the air equals the mass of the water that boiled away. Suppose you tear a 100-gram cardboard box into pieces. The total mass of all the pieces will also be 100 grams. The mass of the cardboard box stays the same. In this example, however, the volume of the cardboard box changes because tearing it into pieces causes it to lose its shape.

The total mass of the mixed salad is the sum of the masses of the vegetables in it.

What is the mass of the salad?
A chemical change turns one kind of matter into another. However, the mass of the matter stays the same. It can be tricky to compare, though. First, you must collect and measure the mass of everything you begin with. Then, you must collect and measure the mass of everything you are left with.

When wood burns, it combines with oxygen from the air. Burning produces ashes, smoke, and other gases. The mass of the wood and oxygen equals the mass of the ashes, smoke, and gases that are produced.

**Do the Math!**

**Solve Problems**

In a physical change, sugar is dissolved in water to form sugar water. In a chemical change, iron combines with oxygen to form rust. Fill in the missing values in the table.

<table>
<thead>
<tr>
<th>Physical Change</th>
<th>Mass (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sugar</td>
<td>125</td>
</tr>
<tr>
<td>water</td>
<td></td>
</tr>
<tr>
<td>sugar water</td>
<td>198</td>
</tr>
<tr>
<td>Chemical Change</td>
<td></td>
</tr>
<tr>
<td>iron</td>
<td>519</td>
</tr>
<tr>
<td>oxygen</td>
<td>23</td>
</tr>
<tr>
<td>rust</td>
<td></td>
</tr>
</tbody>
</table>

During this chemical reaction, the flask is sealed. Nothing can enter or leave, so the final mass equals the starting mass.
Faster or Slower?

Temperature affects the rate at which chemical changes occur, too. Read to find out how.

**Active Reading** As you read this page, circle two clue words or phrases that signal a detail such as an example or an added fact.

Increasing temperature often speeds up the rate of a chemical change. For example, increasing oven temperature speeds up the chemical changes that occur when a cake bakes or a potato cooks.

Decreasing temperature usually slows down the rate of chemical change. This is why food stays fresh longer when it is kept cool. Also, unused batteries stay charged longer when kept in the refrigerator.

The chemical changes that make food spoil are slowed down by keeping the food in the refrigerator.
Fevers

You feel awful. Your head hurts, and you have a fever. Why might having a fever be a good thing?

When you have a fever, your temperature rises above your normal body temperature (about 37 °C). A low fever is between 38 °C and 39 °C. A high fever is greater than 40 °C. Low fevers help the body fight disease. High fevers can cause severe problems.

Temperature can increase for many reasons. For example, certain bacteria have materials that your brain identifies as harmful. The brain sends out signals that cause an increase in the chemical changes that produce energy. Your temperature increases. Bacteria cannot survive at this higher temperature.

Do the Math!
Use a Number Line

On the number line below, plot the following values in °C.

a. normal body temperature
b. a slight fever
c. a high fever

36 38 40 42 44 46
When you’re done, use the answer key to check and revise your work.

The outline below is a summary of the lesson. Complete the outline.

I. Matter undergoes changes.
   A. One type of change is a (1) ________________
      1. Matter does not change identity.
      2. Example: (2) _____________________________
   B. (3) ________________
      1. Matter changes identity.
      2. Example: (4) _____________________________

II. Temperature affects matter.
   A. When temperature increases,
      1. the speed of a chemical change (5) ________________
      2. the rate of melting and boiling (6) ________________
   B. When temperature decreases,
      1. the speed of a chemical change (7) ________________
      2. the rate of freezing or condensing (8) ________________

III. During physical or chemical changes, the total mass of matter (9) ________________

Tell whether each change is a physical change or a chemical change.

(10) ________________ (11) ________________ (12) ________________

Answer Key: 1. Physical change 2. Sample answer: wood burning 3. chemical change 4. Sample answer: burning paper 5. Another type of change is a chemical change
Word Play

It's easy to get tongue-tied when talking about how matter changes. Look at the statements below. Switch the red words from one sentence to another until each statement makes sense.

A. In a chemical change, the identity of matter does not change.

B. Water will melt faster on a very cold soft drink can than it will on a cool soft drink can.

C. Another name for a chemical change is a chemical property.

D. Ice will condense more slowly in cold water than in warm water.

E. In a physical change, the identity of the matter changes.

F. When water freezes, its mass decreases.

G. A reaction of matter will stay the same during a physical change.

H. When water freezes, it contracts.

Challenge The words in the boxes below are jumbled. Put them in the correct order to make a meaningful sentence.

changes are rusting and chemical burning

is physical and mass changes in chemical conserved
Apply Concepts

2. Each of the pictures shows a change. Write a P by the pictures that show physical changes and a C by the pictures that show chemical changes.

3. Make a list of physical changes and chemical changes that you observe or see the effects of in your school.

Physical Changes

Chemical Changes
4. What would make each of the following processes happen faster? On each line, write increase in temperature or decrease in temperature.

- Ice cream melting
- Boiling water to cook potatoes
- Water condensing on the outside of a glass
- Water freezing overnight on a street

5. Explain what is happening in these pictures. Tell whether the changes are physical or chemical.

6. Why is it important to follow the instructions on this jar of food?
7. Draw a picture of a chemical reaction. Then explain what happens and why mass is conserved during the reaction.


8. Explain why most sidewalks have built-in cracks every few feet.


   Wood is made of cellulose, lignin, and other substances.

   The wood is set on fire, and a change occurs.

   The cellulose and lignin are changed into other substances, including _______ and _______.

---

Take It Home!

Ask an adult to help you practice taking the temperature of someone in your family. Determine whether any of your family members have a fever. Explain to family members why people get fevers.
Lesson Check (CC.5.NBT.2)

1. Which of the following is NOT equivalent to "3 times the sixth power of 10?"
   - A $3 \times 10^6$
   - B 3,000,000
   - C $3 \times 10 \times 6$
   - D $3 \times 1,000,000$

2. Gary mails $10^3$ flyers to clients in one week. How many flyers does Gary mail?
   - A 10
   - B 100
   - C 1,000
   - D 10,000

Spiral Review (Reviews CC.4.NBT.5, CC.4.NBT.6)

3. Harley is loading 625 bags of cement onto small pallets. Each pallet holds 5 bags. How many pallets will Harley need? (Grade 4)
   - A 125
   - B 620
   - C 630
   - D 3,125

4. Marylou buys a package of 500 jewels to decorate 4 different pairs of jeans. She uses the same number of jewels on each pair of jeans. How many jewels will she use for each pair of jeans? (Grade 4)
   - A 100
   - B 125
   - C 200
   - D 2,000

5. Manny buys 4 boxes of straws for his restaurant. There are 500 straws in each box. How many straws does he buy? (Grade 4)
   - A 20,000
   - B 2,000
   - C 200
   - D 125

6. Cammie goes to the gym to exercise 4 times per week. Altogether, how many times does she go to the gym in 10 weeks? (Grade 4)
   - A 4
   - B 10
   - C 20
   - D 40
Powers of 10 and Exponents

Write in exponent form and word form.

1. \(10 \times 10 \times 10\)  
   exponent form: \(10^3\)  
   word form: the third power of ten

2. \(10 \times 10\)  
   exponent form: \(10^2\)  
   word form: the second power of ten

3. \(10 \times 10 \times 10 \times 10\)  
   exponent form: \(10^4\)  
   word form: the fourth power of ten

Find the value.

4. \(10^3\)

5. \(4 \times 10^2\)

6. \(9 \times 10^4\)

7. \(10^1\)

8. \(10^5\)

9. \(5 \times 10^1\)

10. \(7 \times 10^3\)

11. \(8 \times 10^0\)

Problem Solving REAL WORLD

12. The moon is about 240,000 miles from Earth. What is this distance written as a whole number multiplied by a power of ten?

13. The sun is about \(93 \times 10^6\) miles from Earth. What is this distance written as a whole number?
Handout 5B: Exemplar Informative Paragraph

Directions: Read the exemplar informative paragraph about the Nez Perce Homeland. Then, listen for instructions from your teacher.

The Nez Perce Homeland

(1) For generations, the Nez Perce tribe have called an area of land in present-day Oregon, Washington, Idaho, and Montana their native home. (2) The Nez Perce homeland was rich in resources the people relied on in their daily lives and in the stories that sustained their culture. (3) The forests, prairies, and rivers of the Nez Perce homeland provided a variety of resources for people to use. (4) The Nez Perce hunted game, gathered plants and other natural materials, and fished the rivers. (5) They counted on their homeland for food, shelter, clothing, and other tools. (6) The tribe's connection to this particular land traces back to a time before human beings existed. (7) The tribe's creation story tells of how Coyote killed a monster and scattered its pieces over this land to create tribes, including the Nez Perce, who were made from the monster's heart. (8) This story reveals how deeply the Nez Perce people are connected to this specific area of land. (9) The high mountains, open meadows, deep forests, and rushing rivers of the Nez Perce homeland shaped an entire culture and way of life for the Nez Perce people.
**Handout 5C: Fluency Homework**

**Directions:**

1. **Day 1:** Read the text carefully and annotate to help you read fluently.
2. **Each day:**
   a. Practice reading the text three to five times.
   b. Evaluate your progress by placing a √+, √, or √- in each unshaded box.
   c. Ask someone (adult or peer) to listen and evaluate you as well.
3. **Last day:** Respond to the self-reflection questions.

---

Long before Meriwether Lewis and William Clark ventured West; before the English established a colony at Jamestown; before Christopher Columbus stumbled upon the “new world”; the Nez Perce, who call themselves the Nimipuu, lived in the prairies and river valleys of north Central Idaho, Montana, northeastern Oregon, and southeastern Washington, an area of approximately seventeen million acres.

In 1805, when Lewis and Clark met the Nez Perce, they encountered a people well integrated into their environment. Nimipuu traditions and knowledge of the surroundings were well-honed over thousands of years. The Nimipuu homeland's abundant resources sustained their economy, lifestyle, and culture.

<table>
<thead>
<tr>
<th>Student Performance Checklist:</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurately read the passage 3-5 times.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read with appropriate phrasing and pausing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read with appropriate expression.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read articulately at a good pace, and an audible volume.</td>
<td></td>
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</tbody>
</table>

Self-reflection: What choices did you make when deciding how to read this passage, and why? What would you like to improve on or try differently next time? (Thoughtfully answer these questions on the back of this paper.)
Engage Your Brain!

As you read the lesson, look for the answer to the following question and record it here.

How are a smoothie and a salad alike?
How are they different?

---

Problem and Solution

Ideas in this lesson may be connected by a problem-solution relationship. Active readers mark a problem with a P to help them stay focused on the way information is organized. When multiple solutions are described, they mark each solution with an S.
Matter Mix-Up

A box of colored pencils. A basket of footballs, tennis balls, and hockey pucks. A toy box full of toys. All these things are mixtures. But what is a mixture?

Active Reading As you read the next page, draw two lines under the conclusion. Draw one line under each fact that leads to the conclusion.

This fruit salad is a mixture of different pieces of fruit.
Look at the mixtures on these pages. They have a few things in common. First, two or more substances or objects were combined. The fruit salad has several types of fruit. The laundry pile has several types of clothing. Second, each type of matter in a mixture keeps its own identity. The peach in the fruit salad is the same type of matter as it was before it was mixed into the fruit salad. The jeans in the laundry pile are still jeans.

By now, you've probably figured out that a mixture is a combination of two or more substances that keep their identities. The parts of a mixture don't undergo a chemical change. Making a mixture is a physical change.

➤ These clothes are all jumbled together. How do you know this pile of laundry is a mixture?

[Blank lines for response]
In some mixtures, it’s easy to see the individual pieces that are mixed together. In other mixtures, small parts are very evenly mixed. What are these special mixtures?

Active Reading As you read these two pages, underline lesson vocabulary words each time they are used.

Each bite of fruit salad contains different combinations of fruit. You can separately taste peaches and different kinds of berries. But what do you notice when you drink a glass of lemonade? Every sip tastes the same. This is because lemonade is a solution. A solution is a mixture that has the same composition throughout.

When food coloring is added to water, the two liquids evenly mix, forming a solution.
A solution forms when one substance dissolves in another. When something dissolves, it breaks up into particles so tiny they can't be seen even with a microscope. These particles then evenly mix with the other part of the solution. Not everything dissolves. If you put a rock and salt in water, the rock won't dissolve, but the salt will.

Solutions are commonly liquids, such as the mixture of the different liquids that make up gasoline. But not all solutions are liquids. Air is a solution of different gases. Tiny particles of nitrogen, oxygen, and other gases are evenly mixed in air. Brass is an example of a solid solution formed from solid copper and solid zinc.

A mixture of sand and water forms where waves wash over the sand. Such a mixture is not a solution.

Ocean water itself is a solution. It contains several different dissolved substances.

What makes a solution different from other mixtures?

_________________________

_________________________
Separating Mixtures

Suppose you really don’t like olives. How are you going to get them off that deluxe pizza your friend ordered? Sometimes you need to separate the components of a mixture.

**Active Reading** As you read this page, put brackets [ ] around the sentence that describes the problem and write P next to the sentence. Underline the sentence that describes the solution and write S next to it.

Mixtures are not always easy to separate. But since mixing is a physical change, each component in a mixture keeps most of its physical properties. Physical properties such as color, size, melting point, boiling point, density, and ability to dissolve can be used to separate mixtures. Separating a mixture can be very simple. Or it can involve several, complex steps when one method is not enough.

What property was used to separate the items on this tray?

Every substance has its own density. A less-dense substance will float on a denser substance. Objects will float in water if they are less dense than water. They will sink if they are denser than water.
When One Isn't Enough

**sieve/mesh screen**
A sieve or mesh screen has holes that matter can pass through. Matter that is smaller than the holes passes through the mesh screen while matter that is larger than the holes stays above the mesh screen.

**magnetic force**
A magnet attracts matter that contains iron, separating it from the other parts of the mixture.

**filtration**
A filter works like a mesh screen with very tiny openings, or pores. Only the smallest bits of matter—like water particles and dissolved particles of salt—can pass through the pores.

**evaporation/boiling**
Boiling is when a liquid rapidly changes to a gas at the boiling point of the liquid. Evaporation also changes a liquid to a gas, but it occurs at temperatures below the boiling point. During these processes, only the liquid particles leave the solution. Dissolved particles stay behind.
Proportions and Properties

When you make lemonade, it’s important to get the amounts of lemon and sugar right. If it’s too sweet or too sour, it doesn’t taste right. How do proportions affect the properties of a mixture?

Mixtures of metals are called alloys. The properties of the alloy depend on how much of each metal is in the mixture. Chemists first decide on the properties they need their alloy to have. Then they decide how much of which metals will give them those properties.

Steel is an alloy. It is made from iron and other substances. Different substances give steel different properties. For example, adding chromium will make steel shiny. Metals such as nickel and titanium can keep it from rusting. Carbon is often added to steel to make it stronger. Other substances help steel used in tools stay sharp or keep from wearing down.

To make an alloy, metals and other elements are melted together and then allowed to harden.
For each steel object on this page, list at least two properties that the steel must have.

**Do the Math!**

**Use Graphs**

Compare and contrast the metals and other substances in stainless steel and tool steel by making two circle graphs.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Stainless Steel %</th>
<th>Tool Steel %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>74</td>
<td>94</td>
</tr>
<tr>
<td>Chromium</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Nickel</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Carbon</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>
Write S if the photo and caption describe a mixture that is a solution. Write M if they describe a mixture that is NOT a solution.

(1) When you combine ingredients to make a sandwich, each ingredient keeps its identity. You could easily separate them.

(2) Soft drinks are made by dissolving a gas and other ingredients in water. The dissolved particles are much too small to be seen.

(3) The solid bits of orange pulp do not dissolve in the liquid. Because the pulp particles are large, they will eventually settle out.

(4) Particles of several different gases make up air. Air on one side of a room is just like the air on the other side.

Summarize

Fill in the missing words to tell how to separate mixtures.

To sort the items in your junk drawer, you'd use observable (5) ________________ such as size, color, shape, and (6) ________________ attraction. But how would you separate table sugar, sand, and pebbles? Because the pebbles are (7) ________________ than the grains of sugar and sand, you could remove them using a sieve, or mesh (8) ________________.

You could then add water and shake until the sugar (9) ________________.

If you poured this mixture through a coffee (10) ________________ into a beaker, the (11) ________________ would be left on the filter, but the sugar solution would pass through. Adding heat would cause the water to (12) ________________, leaving solid sugar behind.
Word Play

Complete the crossword puzzle. Use the words in the box if you need help.

Across
1. Another name for a mesh screen
4. Type of change that doesn’t involve the formation of a new kind of matter
5. Tool that attracts objects that contain iron
6. What an object that is less dense than water will do when placed in water
7. Object used to separate very small particles from a mixture
8. The amount of matter in a given volume

Down
1. A physical property; for example, round, square, rectangular, or flat
2. Process by which a liquid changes slowly to a gas
3. Kind of mixture that has the same composition throughout
5. A combination of two or more substances that keep their individual identities

sieve    shape    evaporation    solution*

magnet   mixture*    float    filter    physical density

* Key Lesson Vocabulary
Apply Concepts

2. Circle the substances below that are solutions.
   - brass trumpet
   - trail mix
   - shells
   - sandwich
   - drink from a mix

3. Make a list of solid mixtures in your classroom.
   - 
   - 
   - 
   - 
   - 

4. Draw and label a diagram to show how you would separate each mixture.
   - 
   - 

624
Answer these questions in terms of what you know about mixtures.

a. How would changing the proportions of substances in an alloy change its properties?

b. Why is it possible to use physical properties to separate a mixture?

c. Recycling help us conserve resources. Draw a line connecting each piece of garbage in a mixed bag with the bin it should be thrown in.

- milk jug
- soup can
- envelope
- cardboard box
- soda can
- water bottle
- broken pencil

---

Salt seems to disappear when it is poured into water. Use the terms mixture, solution, and dissolve to explain what happens.
Tell how you would use one or more of these tools to separate the mixtures.

- Rice from dried soup mix
- Salt from saltwater
- Nails from gravel

Tell what would happen if you stirred each of these cups faster.

- Water and Sugar
- Water and Sand

Share what you have learned about mixtures with your family. With a family member, identify examples of mixtures at mealtime, or in places in your home.
Handout 6A: Food and Drink

**Directions:** Read the following text. Then, reread the text and annotate three to five things you notice and three to five things you wonder about.

*From the Nez Perce National Historic Trail website*

**Food and Drink**

Fish were an important food for Indian families. They were caught in many different ways. Some tribes made hand-knotted nets, both large and small. Some of the tribes in the Pacific Northwest still fish with large dipnets, from a platform built up above the edge of the riverbank. Others use a seine net (pronounced “sayn”) to catch many fish at once. Some tribes made a fish trap from sticks. Others built dams with rocks, dirt, and fallen trees; they would then scoop the fish from the water with baskets.

The Nez Perce and other tribes picked and ate many kinds of wild berries—strawberries, blueberries, wild grapes, huckleberries, serviceberries, currants, cranberries, and many more. Researchers have found there were 36 different kinds of fruit that Indians dried to eat in the winter. They knew what the plants looked like, where they grew, and when they got ripe every year. Berries were carried home in baskets and eaten fresh, but they were also dried and saved for winter.

Huckleberries and other berries—such as serviceberries and currants—were often used by the Nez Perce to make a staple food called pemmican. Meat is sliced very thin, then dried, and then pounded or ground with stones to a dry powder. Chopped dried berries are added to the powdered meat, and then melted fat (such as deer fat or buffalo fat) is mixed in. This mixture, when finished, would keep well and was very tasty and nutritious.

In addition to the staple food pemmican, camas roots and “biscuit root” were other reliable and favorite food sources. Both are small flowering plants that grow in the mountains and hills; when the plants were mature, the Indians would dig up the roots and collect them.
The roots can be cooked fresh (sort of like a potato dumpling in your stew) or they can be dried and peeled and ground into a flour. A grinding stone was used for this—some grinding stones were small enough to travel with the people when they moved. They were flat, with a kind of hollowed-out section in the middle. A smaller smooth rounded stone was held in the hands and rolled or pounded over dried roots and other materials to pulverize them on the grinding stone.

Thirsty children usually drank ice cold water from mountain streams or rivers. They also had special drinks now and then. For example, honey or maple syrup was mixed with water to make a punch, and leaves were used to flavor other drinks. The dried leaves of snowberry, wintergreen, and spruce and twigs of raspberry, chokecherry, and wild cherry were dropped into boiling water to make teas. Many kinds of flowers were dried and used to make teas. Wild mint leaves were used to flavor teas and punch.

_Courtesy of the U.S. Department of Agriculture_
Handout 6B: Clothing

Directions: Read the following text. Refer to the glossary as needed for definitions of unfamiliar words. Then, reread the text and annotate three to five things you notice and three to five things you wonder about.

Clothing

The Nez Perce and other tribes made warm and beautiful clothing from animal hides or fabric they traded for.

Vests were useful, easy to make, and often beautifully decorated. Geometric designs were favored, but floral designs were often used, too.

Buckskin was a favorite material. It is made from the hide of a deer. (Buckskin can be made from elk hide, also, but it is much heavier!) First the hide is soaked, then the hair is scraped off using a sharp tool. It's a lot of work to get all the hair off. After the hide is scraped very clean, it's like thin dry leather. It's soaked again overnight in a special mixture to make it soft, like a conditioner, and then it's stretched and pulled and stretched as it dries to make it soft and pliable like a nice suede or velvet fabric. After that the buckskin is smoked—not like a pipe but a different way. It is hung up above a slow and gentle fire in a lot of smoke for a long time. The smoke conditions and preserves the buckskin and makes it kind of waterproof and gives it a special color and fragrance.

Decorated bands were often worn by the Nez Perce and other tribes on the wrists and arms. They weren't very practical for daily work or hunting, but were worn for ceremonies, feasts, and dances—and they still are today. These cuffs usually made from buckskin or rawhide were decorated with beads, shells, and fringe.

Not meant for everyday wear, anklets were worn for dancing—and they are worn today at powwows and Indian dance competitions. Their graceful sway and bounce adds to and enhances the dancer's movements. Some of the Indians in the Northern Rocky Mountain areas used the long white hair of mountain goats for their anklets. People in other areas used grass, plant fibers, or yarn made from sheep's wool.

Courtesy of the U.S. Department of Agriculture

hides: the skins of one of the larger animals such as a buffalo or cow
conditions: makes something softer and less dry
preserves: keeps safe from loss or harm
pow-wows: North American Indian ceremonies, usually with ritual dancing, feasting, and chanting

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Handout 6C: Shelter—The Tipi

Directions: Read the following text. Refer to the glossary as needed for definitions of unfamiliar words. Then, reread the text and annotate three to five things you notice and three to five things you wonder about.

From the Nez Perce National Historic Trail website

Shelter—The Tipi

The Indians on the Plains hunted the huge herds of buffalo that roamed the grasslands. They used the meat, the hides, the bones, and virtually all parts of the buffalo to make almost everything they needed. The buffalo didn’t stay in one place, but roamed across the prairies in search of areas where grass was plentiful. The people followed them, and so they needed portable homes that could be moved quickly and easily.

The Nez Perce and other tribes called their beautiful portable homes “tipis.”

Tipis were made from buffalo skins held up by poles. The poles were most often made from lodgepole pine—so named because the trees grow tall and slender and strong and are just the right size and strength for tipi poles or “lodge” poles. The bark is removed from the tree as soon as the tree is cut down; if the bark is left on the tree for very long it hardens up and can’t be removed. The peeled poles are pretty and strong.

It took between 10 and 40 hides for one tipi, depending upon how big the buffalo were and how big the tipi was, and new tipis were made in the spring to replace old ones that had worn out. Modern tipis are made from canvas.

The inside and outside of a tipi was often decorated with “paint” made from natural dyes and colors. The front of the tipi was laced together with sticks, and the top of the tipi had “smoke flaps” that could be held open with poles to let smoke out, or folded shut to keep out snow and rain. In the heat of summer, the bottom could be rolled up to let a cool breeze pass through.
The big difference between a tent and a tipi is the tipi’s liner. This is a short wall of hides that is strung around the poles on the inside of the tipi cover. It makes the tipi like an “envelope house” where the cold air from outside enters at the bottom of the tipi cover, goes up several feet between the cover and the liner, then enters the tipi already pre-warmed. It creates a ventilation system that ensures that the tipi is cool in summer, warm in winter, and not nearly so smoky or wet as a tent. It’s an engineering marvel.

Oftentimes in the spring, all the members of a tribe gathered at one great camp. A council tipi or “lodge” was built in the center and different bands or family groups put their tipis in a circle around it. Each band had a certain section of the circle so that people could find each other easily. A person would always know where to find an old friend because their tipi would be in the same place each spring.

When women gathered together to work on a new tipi, they enjoyed a special feast. It took about a day for them to make a new tipi.

When it was time to move the tipis, the women did the work, too. Generally speaking, two people who are taking their time can put up or “pitch” a large tipi in about 20 minutes. In contests, though, two Indian women could put up a tipi in less than three minutes! When it was time to move, the women would take down (or “strike”) the tipi; it was rolled up and tied to a travois, along with the other things to be moved.

*Courtesy of the U.S. Department of Agriculture*

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**hides**: the skins of larger animals such as buffalo or cow
**ventilation**: the movement of air in a space
**engineering**: the practice of using mathematics and science to do practical things such as designing and building structures, tools, and machines
**travois**: a type of sled used by native peoples to carry goods, consisting of two poles joined by a frame and drawn by a horse or dog

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Handout 6D: Getting Around

Directions: Read the following text. Refer to the glossary as needed for definitions of unfamiliar words. Then, reread the text and annotate three to five things you notice and three to five things you wonder about.

From the Nez Perce National Historic Trail website

Getting Around

The Nez Perce made large bags, or suitcases, like envelopes to store and carry their food and clothing. Parfleche, pronounced “parflesh,” were made from hides, and were often beautifully decorated. They were easy to store inside the tipis, and could be hung from the tipi poles. They could also be stacked on a travois for moving.

The Indians who lived on the Plains traveled a lot, following the herds of buffalo and moving seasonally to areas with good supplies of other foods. They didn’t use carts or wagons, but instead made a travois to carry their belongings. Two long poles were tied together, and a person could hold the ends of the poles over their shoulders. The other ends of the poles would drag on the ground. Tipis, clothing, and other items were packed and tied onto the poles. Parfleches full of food and tools were tied on top. For many years, Indians used dogs to pull travois poles that were fastened to a harness made of strips of rawhide. After the Spanish ships brought horses to the New World, the Indians used horses to pull the travois piled with their belongings. Children could ride on top of the load. Some tribes made small pole carriages on top of the travois for young children to ride in, so they wouldn’t fall off and get hurt during travel.

People living near rivers or lakes build small boats from whatever was available. They used reeds, sewn skins, hollowed-out tree trunks, or tree bark. Most canoes were steered with wooden paddles. On rivers where the water was too fast or too shallow, the canoe could be carried across land for a ways, or “portaged.”

Courtesy of the U.S. Department of Agriculture

parfleche: an article such as a pouch, case, or shield made of cleaned, dried rawhide
travois: a type of sled used by native peoples to carry goods, consisting of two poles joined by a frame and drawn by a horse or dog

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Handout 6E: Spirituality

**Directions:** Read the following text. Refer to the glossary as needed for definitions of unfamiliar words. Then, reread the text and annotate three to five things you notice and three to five things you wonder about.

*From the Nez Perce Museum Collections, National Historic Park website*

**Spirituality**

The Nimiipuu, like many Pacific Northwest people, had a close spiritual connection with their environment. Their belief system is based on respect for other beings, and a recognition that humans are a link in the chain that binds together all of creation. The Nimiipuu philosophy is one of equality. No human or creature is superior or inferior to another. The Nimiipuu belief system honors the environment, while rejecting its exploitation for personal gain. Activity associated with the spiritual world was preceded by cleansing in the sweat lodge, to purify spirit, mind, and body.

Individual tribal members sought, but did not always find a wayekin, or guardian spirit, which is in the form of an animal, plant, or any life form, including the wind or the seasons. Others obtained wayekins that enabled one person to help their people. This effort to find one's individual wayekin often resulted in a journey to the mountains or other sacred places so that total attention could be devoted to the search.

Ceremonies were conducted during mid-winter. They dramatized and honored the spirit powers associated with wayekin. Once received, a wayekin was never to be spoken of to others.

*Courtesy of the U.S. Department of the Interior/National Park Service*

**Glossary:**
- philosophy: the personal values and rules that guide one in life
- superior: much better than others in quality
- inferior: of less value, importance, or quality
- exploitation: the selfish or unfair using of something for one's own advantage
- purify: to make clean or pure
- dramatized: made exciting or dramatic, sometimes by exaggerating
Handout 6F: Transport and Trade

Directions: Read the following text. Refer to the glossary as needed for definitions of unfamiliar words. Then, reread the text and annotate three to five things you notice and three to five things you wonder about.

From the Nez Perce Museum Collections, National Historic Park

Transport and Trade

The Nimipuu were skilled participants in a vast trade network that extended west to the Pacific, east through the Great Plains, south to Mexico and north into the Canadian sub-arctic.

Trade was a complex arrangement that involved the exchange of commodities, the sharing of resources, marriage, alliances, and the diffusion of new ideas from other cultures. It was not just an economic activity in the Euro-American sense. The distribution of food and animal hides, for example, benefited an entire village rather than one individual.

The trade network allowed for the flow of valued decorative items such as dentalia, cowry, and clam shells from the west. Buffalo robes, dried meat, and pipestone came from the Plains in the east. Baskets, berries, salt, herbs, dried salmon, furs, hides, roots, stone for tool making, and, later horses were moved freely through this vast network.

For generations, trade routes followed the route systems of the Nimipuu homeland, the Snake, Clearwater, and Columbia Rivers. Dugout canoes made it easier to transport goods and people quickly and safely. Given the alignment of trade networks along the river systems, trading centers such as Celilo Falls on the Columbia River, near present-day The Dalles, Oregon became the primary centers of Plateau trade.

Courtesy of the U.S. Department of the Interior/National Park Service

commodities: things that can be bought or sold
alliances: groups that share certain goals and agree to work together
diffusion: the spreading or wide scattering of something
dentalia: tooth or tusk shells used for ornament and by native peoples as a form of money
cowry: a tropical marine mollusk having a glossy and colorfully marked shell, used as money in some cultures
Handout 6G: Model for an Informative/Explanatory Paragraph

Directions: Read the following information about an informative/explanatory paragraph. Refer to this model as needed to help you write informative or explanatory paragraphs.

Model for an Informative/Explanatory Paragraph

...with two points

<table>
<thead>
<tr>
<th>ToS</th>
<th>Topic Statement</th>
<th>Statement your essential idea about a topic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(State a point that proves your essential idea.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Evidence</td>
<td>Cite evidence that develops your topic, including necessary context.</td>
</tr>
<tr>
<td>E</td>
<td>Elaboration</td>
<td>Explain how the evidence develops the topic.</td>
</tr>
<tr>
<td>(Transition from your last point and...)</td>
<td>...state another point that proves your essential idea.)</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Evidence</td>
<td>Cite evidence for your point.</td>
</tr>
<tr>
<td>E</td>
<td>Elaboration</td>
<td>Explain how the evidence relates to the point.</td>
</tr>
<tr>
<td>C</td>
<td>Concluding Statement</td>
<td>Reinforce your essential idea.</td>
</tr>
</tbody>
</table>

...with one point
<table>
<thead>
<tr>
<th>ToS</th>
<th>Topic Statement</th>
<th>State your essential idea about a topic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Evidence</td>
<td>Cite evidence that develops your topic, including necessary context.</td>
</tr>
<tr>
<td>E</td>
<td>Elaboration</td>
<td>Explain how the evidence develops the topic.</td>
</tr>
<tr>
<td>C</td>
<td>Concluding Statement</td>
<td>Reinforce your essential idea.</td>
</tr>
</tbody>
</table>

Remember, aim "To-SEEC"...To SEE Clearly!
Handout 6H: Experiment with a Topic Statement

**Directions:** Read the prompt below. This writer has been closely studying children's play in Nez Perce culture and has chosen to write about this topic in an explanatory paragraph. However, the paragraph is missing a topic statement! Read the paragraph “Children's Play in Nez Perce Culture” and then complete the tasks that follow to help you draft a topic statement for this paragraph.

**Experiment with a Topic Statement in an Explanatory Paragraph**

**Prompt:** How did the Nez Perce homeland sustain or shape one aspect of Nez Perce lifestyle or culture? Write a paragraph to explain your ideas. Support your ideas with information and evidence from the article you read about your topic.

The writer has been closely studying children's play in Nez Perce culture and has chosen to write about this topic. The writer's response to the prompt is below—but it is missing a topic statement!

**Children's Play in Nez Perce Culture**

The Nez Perce homeland in present-day Oregon, Washington, Idaho, and Montana shaped the culture and ways of life of the Nez Perce people, including how children played. **TOPIC STATEMENT:**  

The Nez Perce used materials available on the land to make toys such as baskets, bows and arrows, tipis, and travois. For example, children made small travois, which were like sleds, by tying tree branches together. Children learned what resources were available on their homeland and how they could use them to make toys. Play was also important way that children
learned how to rely on their homeland to survive. Children played “house” in pretend tipi villages and “hunted” with toy bows and arrows. This type of play helped Nez Perce children understand how adults in their culture relied on the land for food and materials to make tools and homes. For Nez Perce children, play helped them learn about their natural environment and how to live off their homeland.

The **topic statement** for an explanatory paragraph should:
- clearly state the essential idea about a topic
- address the prompt question (i.e., How did the Nez Perce homeland sustain or shape the way Nez Perce children played?)

What two **points** does the author make about children's play in this paragraph?

Point 1:

Point 2:

Remember, a topic statement clearly states the essential idea about a topic and addresses the prompt question. Reread the paragraph, and compose a topic sentence that meets these criteria and includes both of the writer's points (point 1 and point 2) above.
Handout 6I: Expanding Sentences with Prepositional Phrases

Directions:
1. Recopy your topic statement from Handout 6H into the box labeled “Original Sentence.”
2. Think about the kind of information you could add. Use the questions Where? When? What kind? Which one? and How? to help you come up with ideas.
3. Add prepositional phrases into three of the boxes that would add details to your topic statement.
4. With a partner, discuss which phrase(s) would add the most meaning to your sentence. Circle your choice(s).
5. Rewrite your expanded sentence in the last row, underlining the added prepositional phrase(s).

<table>
<thead>
<tr>
<th>Original Sentence</th>
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</table>

Expanded Sentence (Remember to underline the added prepositional phrase[s].)
How did the prepositional phrase(s) impact, or change, your original topic statement?