

4TH GRADE



Instructional Packet

Week 2

The Ever-Changing Sky

by Megan McGibney



Look up at the sky on a clear day. You will see the sun. It is bright and shiny, warming much of what its light touches. Look up at the sky again at night. You may see the stars. They are also bright and shiny, glimmering in the dark sky. You may also see the moon. It looks bright and shiny, reflecting light from the sun. People have always looked up at the sky with wonder. Some have even studied the sun, moon, and stars. These people, called astronomers, have learned that those objects in the sky do not stay in the same place all the time.

The earth revolves around the sun and also rotates on its axis, which is an imaginary line that runs from the North Pole to the South Pole, through the earth's center. It takes just under 24 hours for the earth to complete one rotation on its axis - a day, that's right! And guess how long it takes the earth to revolve around the sun? A little over 365 days. That's a year, with an

extra quarter of a day.

Let's take a closer look at the moon. The earth does not revolve around the moon. Instead, the moon revolves around the earth. It takes the moon about four weeks to complete a revolution around the earth. The portion of the moon we, here on Earth, see changes over this period of about four weeks as the moon's position around the earth changes. The moonlight we see at night is the moon's reflection of sunlight onto Earth. The different ways the moon appears to us are known as the moon's phases. The moon's phases depend on the moon's position in relation to the earth and the sun.

The four-week period starts and ends with the new moon. The new moon cannot be seen because the side of the moon lit by the sun is facing away from the earth. This is because the moon is nearly between the sun and the earth at this time. After that comes the first quarter moon, which is when we see half of the side of the moon lit by the sun. Then comes the full moon, when we can see the entire side of the moon lit up by the sun. This is because the earth is nearly lined up between the sun and the moon, and the sunlit part of the moon is facing the earth. One of the last phases is called the last quarter moon. This is when we see the other half of the lit side of the moon.

Sometimes the way the sun, moon, and earth are positioned causes an event known as an eclipse. There are two types of eclipses. A lunar eclipse happens when the earth passes between the moon and the sun and when the earth blocks the moon from the sun. The earth's shadow may block the entire moon or just part of the moon from view. A solar eclipse happens when the moon passes directly between the earth and the sun. A solar eclipse can block part of the sun or the entire sun from the earth's view.

Because of the regular orbit of the moon around the earth and the regular orbit of the earth around the sun, astronomers can predict when an eclipse will happen even many years into the future.

Name: _____ Date: _____

1. What does the earth revolve around?

- A. the moon
- B. the sun
- C. the stars
- D. meteors

2. What does the author describe in the passage?

- A. how long it takes the sun to revolve around the earth
- B. when the next solar eclipse will occur
- C. how long it takes the earth to revolve around the sun
- D. the movement of other planets in our solar system

3. The phases of the moon are caused by the moon's orbit around the earth. Which details from the text support this conclusion?

- A. It takes 24 hours for the earth to complete one rotation on its axis.
- B. A lunar eclipse occurs when the earth passes between the moon and the sun and the earth blocks the moon from the sun.
- C. The direction the sunlit side of the moon facing the earth changes as the moon revolves around the earth.
- D. The moon changes from a new moon to a half moon to a full moon.

4. What blocks the sun during a solar eclipse?

- A. the moon
- B. the earth
- C. the earth's shadow
- D. a nearby meteor

5. What is this passage mostly about?

- A. solar and lunar eclipses
- B. the solar calendar
- C. phases of the moon
- D. the movement of the earth and the moon

6. Read the following sentences: "It takes just under 24 hours for the earth to complete one rotation on its axis - a day, **that's right!** And guess how long it takes the earth to revolve around the sun?"

Why does the author say "**that's right!**"?

- A. because the author thinks the reader has made the connection between the rotation of the earth around its axis and the length of a day
- B. because the author was talking to someone while writing the passage
- C. because the author wants to reassure the reader
- D. because the author is waiting for an answer from the reader

7. Choose the answer that best completes the sentence below.

The moon goes through different phases in a month, _____ full moon, half moon, and new moon.

- A. but
- B. including
- C. first
- D. as a result

8. When does a full moon occur?

9. Why can astronomers predict eclipses?

10. Give two examples of how the sky is ever-changing.

WRITING PROMPTS

Week 2

What makes the best pet? Provide evidence for your choice.

What Number am I?

36,875 384,568
472,889

1. Solve the following place value riddle.

My ones digit is double three.

My hundreds digit is the sum of 8 plus 1.

My tens digit is the difference between 9 and 4.

My ten thousands digit is the same as four groups of two.

My thousands digit is the same as 63 divided by 7.

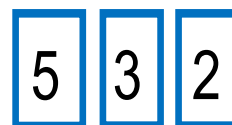
My hundred thousands digit is half of my ten thousands digit.

What number am I?

2. Draft two original place value riddles. Try them out on a friend.

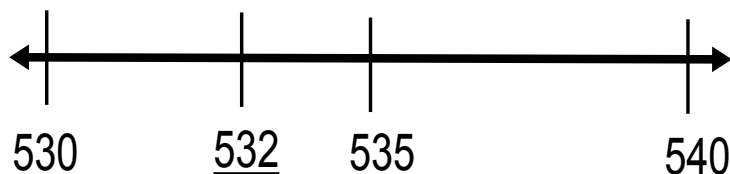
What's the Nearest Ten?

Materials: set of numeral cards (0-9) or 3 number cubes



1. Turn over 3 numeral cards (or roll 3 number cubes) to make a 3-digit number.
2. Identify the multiples of ten that your number falls between. Record the multiples of ten and the midpoint between them on a number line.
3. Plot your 3-digit number on the number line.
4. Which multiple of ten is your number closer to? Justify your reasoning.
5. Repeat five times.
6. Describe any patterns you find to determine when to round to the lesser multiple of ten or round to the next multiple of ten.

Example:



532 is between 530 and 540. It is 2 away from 530 and 8 away from 540. It is closer to 530. Therefore, 532 rounded to the nearest ten is 530.

Numeral, Word and Expanded Form

Materials: pack of numeral cards

1. Turn over five cards from the top of the stack and make the largest five digit number possible. Repeat three times.
2. Create a three column chart. Represent each number you make in numeral, word and expanded form.

Numeral	Word Form	Expanded Form
86,532	eighty-six thousand five hundred thirty two	$86,532 = 80,000 + 6,000 + 500 + 30 + 2$

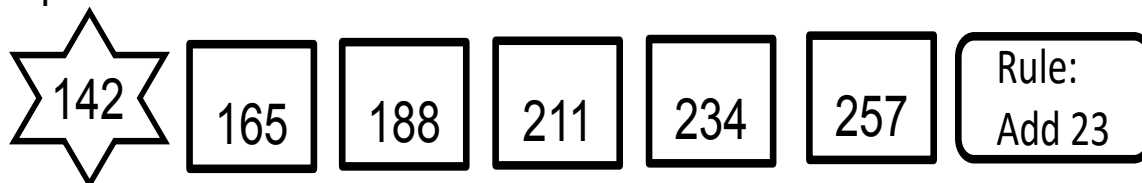
3. Next, turn over five cards from the top of the stack and make the smallest five digit number possible. Repeat three times.
4. Represent each number you make in numeral, word and expanded form.

Numerical Patterns

Materials: numeral cards

1. Turn over 3 numeral cards to make a 3-digit number. Use this number as your starting number.
2. Turn over the next two cards in the pile to create a 2-digit number. Add this number to your starting number. Continue adding this number until you have a sequence of six numbers.
3. Write the rule for your numerical pattern.
4. Repeat steps 1-3 to create 5 different numerical patterns.

Example:



5. Create a numerical pattern using subtraction, multiplication, or division. Choose an appropriate starting number. Describe your rule.

Bones provide great support!



Background knowledge

Inside your body is a *skeleton* made of *bones*. Bones mostly contain a material called *calcium*. Your skeleton protects the soft inner parts of your body.

Muscles pull on parts of the skeleton to make your body move. A *joint* is a place where two bones meet. Some joints allow parts of the skeleton to bend. Your skeleton provides the support you need to give your body a shape—otherwise you would be a ball of jelly!

Science activity

Here is a picture of a human skeleton. On the picture draw the four arrows listed below, and label them A, B, C, and D.

Arrow A should point to the part of the skeleton that protects the brain.

Arrow B should point to the joint that allows the leg to bend at the knee.

Arrow C should point to the part that protects the lungs.

Arrow D should point to the part that protects the heart.



Science investigation

Trace your hand onto a piece of paper. Feel your bones and see if you can draw a map of the bones on your hand.



Can you make a muscle?



Background knowledge

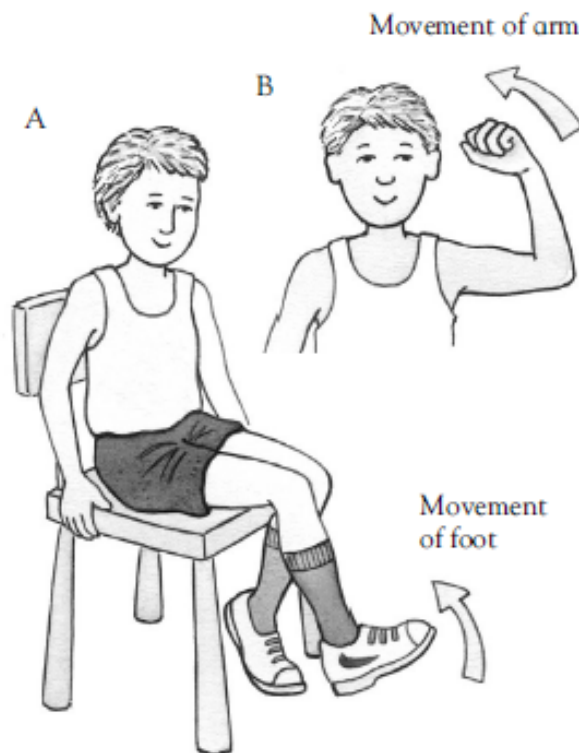
The muscles all over your body move your skeleton. When muscles work, they get thicker and shorter. We say that muscles *contract*. When a person “makes a muscle,” you see their muscle contract. A contracting muscle pulls on a bone, making it move. Muscles need energy to work. They get their energy from sugars in your blood. Most muscles rest or relax after they have been used. They get longer and flatter. The heart is a muscle that works very hard—every time you feel a pulse, your heart muscle has contracted!

Science activity

When you move your legs, feet, hands, or arms, the muscles that move them get thicker and shorter.

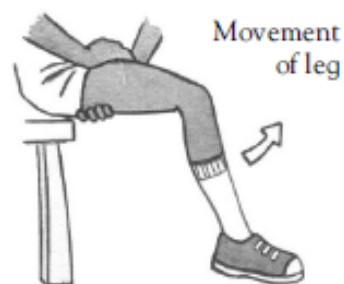
On picture A, draw arrows pointing to where you think the muscles moving the foot will get thicker.

On picture B, draw an arrow pointing to where you think the muscle raising the forearm will get thicker.



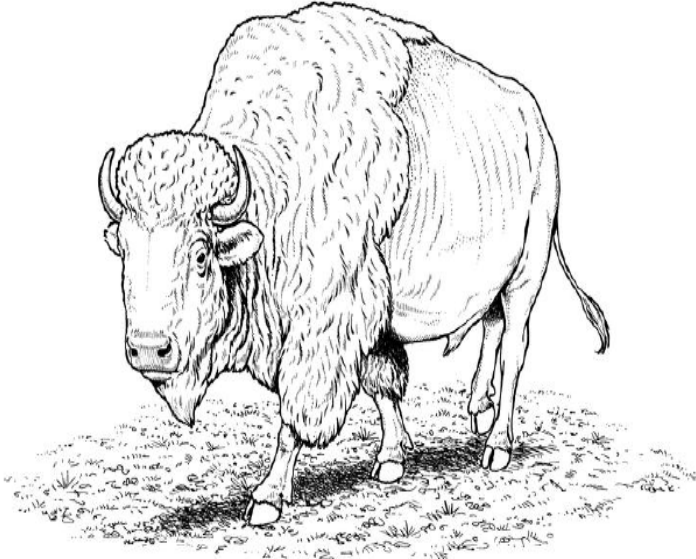
Science investigation

Design and conduct an experiment to see how your muscles move your arms and legs. Which muscles thicken and shorten when you move different parts of your body?



Name _____

Bison (American Buffalo)



The Bison is the largest native land mammal in North America. A Bison bull (male) stands five to six feet at the shoulder, is up to 10 feet long, and weighs about 2,000 pounds. They have horns that curve upward and a large hump of muscle which supports their head and thick skull. A Bison has a heavy coat of thick brown fur to help keep it warm in the winter. Full-grown cows (females) are smaller than bulls but have been known to weigh over 1,000 pounds.

Bison are strong, hearty animals that live an average of 15 years in the wild. They are grazing, migratory animals, and

Bison Facts

Bulls and cows have horns.

Bison can run up to 35 miles per hour.

The bison is featured on the Buffalo Nickel.

Taxonomy

Class: Mammalia

Order: Artiodactyla

Family: Bovidae

Genus: Bison

Species: Bison bison

can be found living in the plains, river valleys, prairies, and forests. The Bison have very few predators and are mainly threatened by coyotes, wolves, and grizzly bears. Although Bison appear to be gentle and slow, they are quite agile and can run about 35 miles per hour.

In the past, the Bison was a very important animal to American Indians. It provided shelter, food, clothing, glue, thread, trail-ropes, strings for their bows, coverings for their saddles, vessels to hold water, and a form of currency that could be used with traders. At one time the Bison was almost extinct but conservation efforts have been successful in increasing the Bison population.

Name _____

Careers

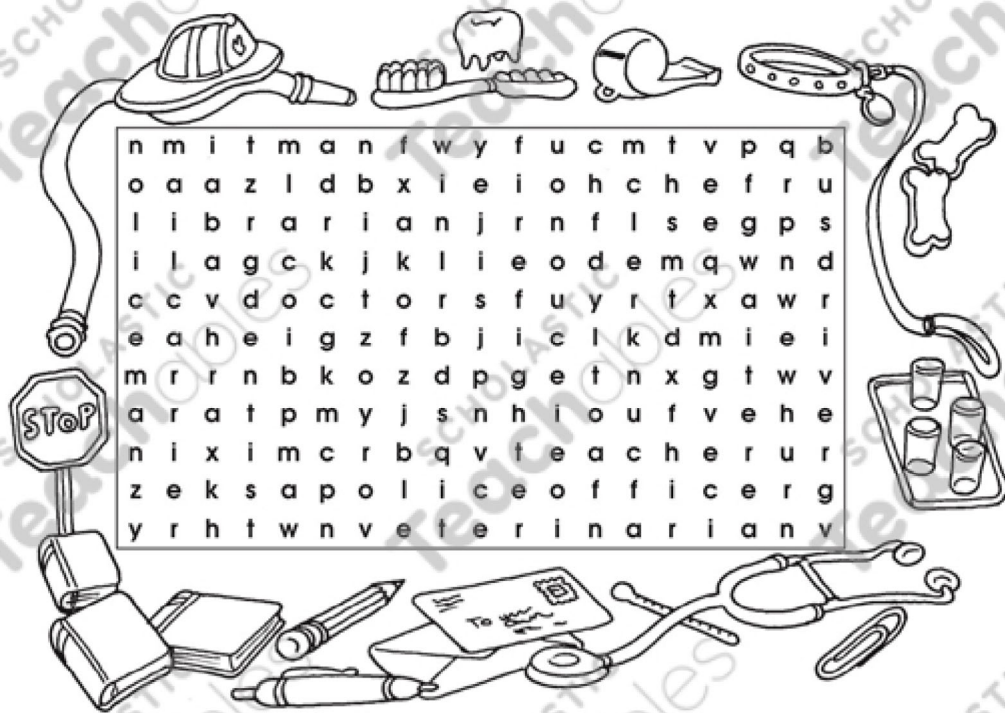


Career Choices

Use the clues below to circle the names of different careers in the puzzle. The names go across and down.

- helps students learn
- works in a library
- keeps neighborhoods safe
- takes care of teeth
- treats sick people
- takes care of pets

- puts out fires
- delivers mail
- drives students to school
- serves food at a restaurant
- sells things at a store
- cooks food at a restaurant



On another sheet of paper, write about what you want to be when you grow up. Give three reasons why.