

*Watson Ranch
Elementary Science*

Science in the Beginning

*Lab and Review
Book*

Level 2

Property of:

Section 1: Science in the First Day of the Creation Week Level 2

Lesson 1

1. What does it mean for light to reflect off something?

2. Draw a table that has a flower or something else interesting sitting on top of it. Next, draw a light bulb on the ceiling above the table. Then draw a person looking at the flower. Finally, draw arrows (like you see in the drawing on page 2) that represent light coming down from the light bulb, hitting the flower, and then reflecting into the eyes of the person who is looking at the flower. Explain what the person would see if the light were turned off.

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Section 1: Science in the First Day of the Creation Week Level 2

Lesson 2

1. Draw a rainbow in the box below, putting the colors in the proper place, as is pictured on page 5. Label each color:

2. What is Mr. White Light's name?

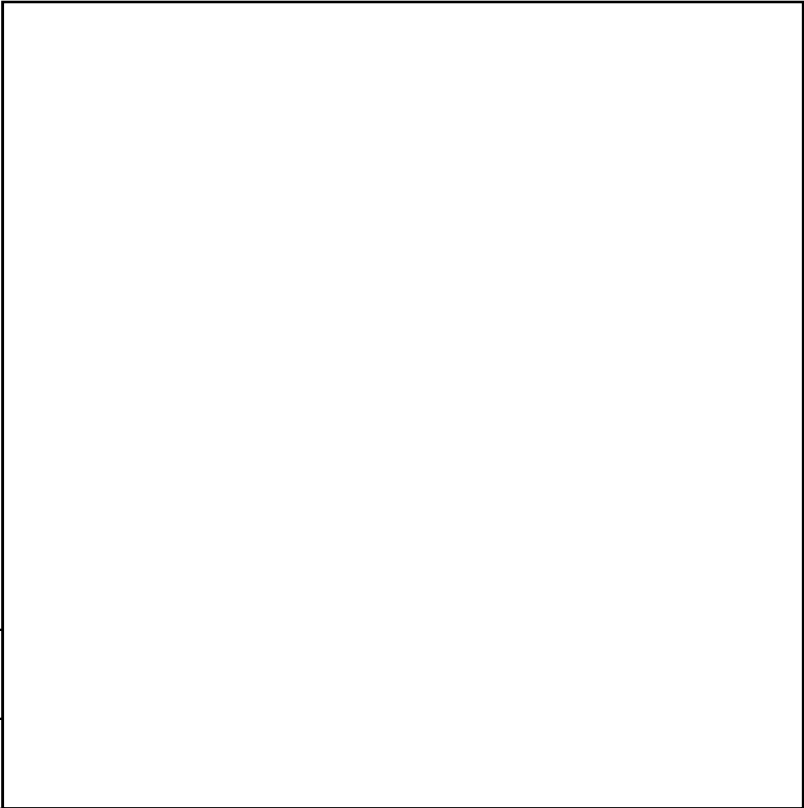
3. What does his name tell you about the colors of light?

4. Think about the experiment that you did in this lesson. Suppose you used a red Christmas tree light instead of a candle. Would you still see the rainbow? Why or why not?

Lesson 3

1. Draw a red rose sitting on a table in a vase and a person looking at the rose. Draw a light bulb above the rose, and then draw seven arrows coming from the light and hitting the rose. Each arrow should be one of the basic colors of the rainbow. Now draw one red arrow reflecting off the rose and hitting the person's eye.

2. Explain how the drawing shows why the rose appears red to the person who is looking at it.



3. Explain what happened to all the other colors of light.

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Lesson 4

1. List the four kinds of energy you learned about today. Either paste a picture next to what you wrote down or draw something that illustrates that particular form of energy.

2. Explain in your own words why a black shirt will be warmer than a white shirt on a bright, sunny day. Be sure to use the terms “radiant energy” and “thermal energy” in your explanation.

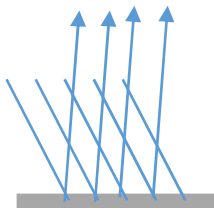
Section 1: Science in the First Day of the Creation Week Level 2

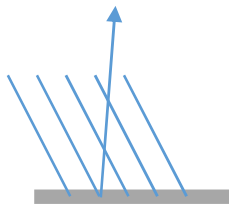
Lesson 5

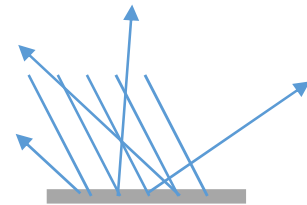
1. In your own words, write an explanation of the experiment you did. Explain what the magnifying glass did as well as why the newspaper got hot, even though it was white where the light hit it.

2. What would be the difference if you used completely black paper in the experiment?

3. For the drawings below, the blue arrows represent light, while the grey bar represents something light is hitting. Label each one as a black piece of paper, a white piece of paper, or a mirror.







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Lesson 6

1. What is the Law of Energy Conservation?

2. How does it explain your experiment?

3. Suppose the experiment had you first move the balloon slowly over the fluorescent light bulb and then later move the balloon quickly over the fluorescent light bulb. Which would give the light bulb a brighter glow? Why?

Section 1: Science in the First Day of the Creation Week Level 2

Lesson 7

1. A battery stores energy in the form of _____ energy.
2. When the chemical energy in a battery gets used up we say the battery is _____.
3. Suppose you have a brand new toy car. The car requires three batteries in order to run. You put in three new batteries and play with the car for a while. List what energy conversions take place in order for the toy car to move.

4. Suppose you play with that toy car so much that the three batteries die. You go to where your family stores batteries but can find only two new ones. You replace two of the batteries with the two new ones and leave one dead battery in the car. If the car still runs, will it run as fast as it did when you first played with it? Why or why not?

5. Suppose those two batteries then run out, and you search high and low but can find only one good battery. You replace one of the dead batteries with the good one, and the car still runs. How fast will it run compared to when you had two good batteries in it?

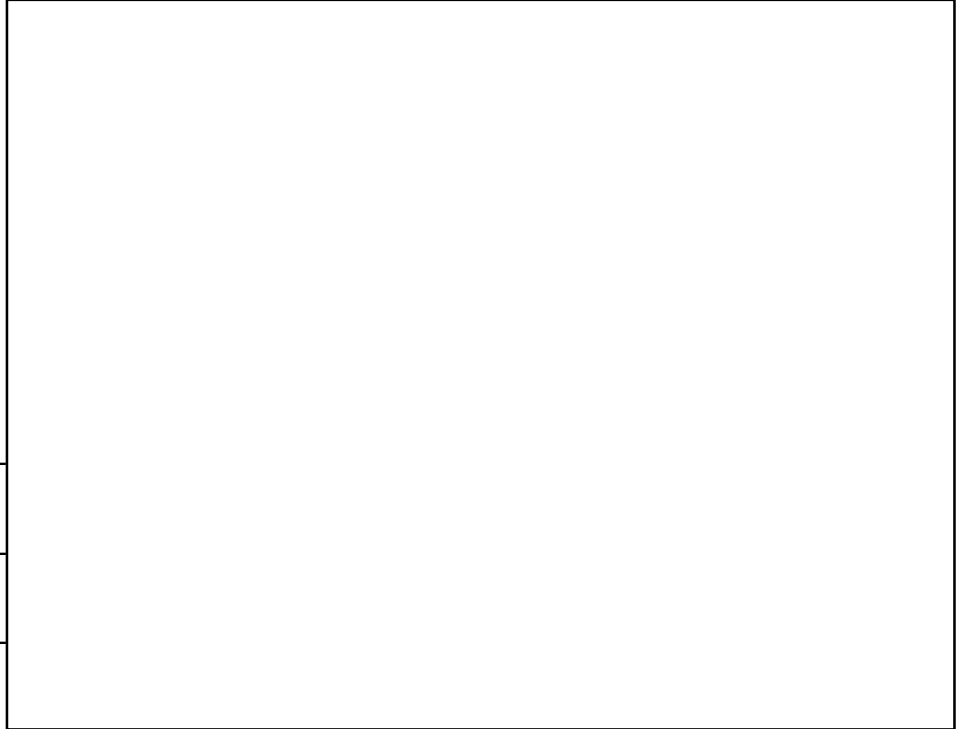
Section 1: Science in the First Day of the Creation Week Level 2

Lesson 8

1. The light we can actually see is called _____.

2. Make a drawing of what happened in the first experiment. Draw the television, the remote, and the paper, and use arrows to show where the infrared light from the remote went so it could turn on the television.

3. What would happen if you pointed the remote at the television but someone stood in between the remote and the television. Would the remote turn on the television? Why or why not?



4. Scientists order the light in creation according to its energy. You have learned about three kinds of light so far: visible light, infrared light, and ultraviolet light. Find out how much energy each of these kinds of light has. Then list them in your notebook in terms of increasing energy. In other words, write the lowest-energy light first, the medium-energy light next, and the highest-energy light last.

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Lesson 9

1. The lens of your eye focuses the light that passes through it onto the _____.

2. The job of the rods and cones is to detect _____. They are located on the _____.

3. Make your own drawing of the eye, based on the one you see on page 25. Label the cornea, lens, retina, and optic nerve. Also, point out in the drawing where the blind spot is.

4. Explain why it is a blind spot.

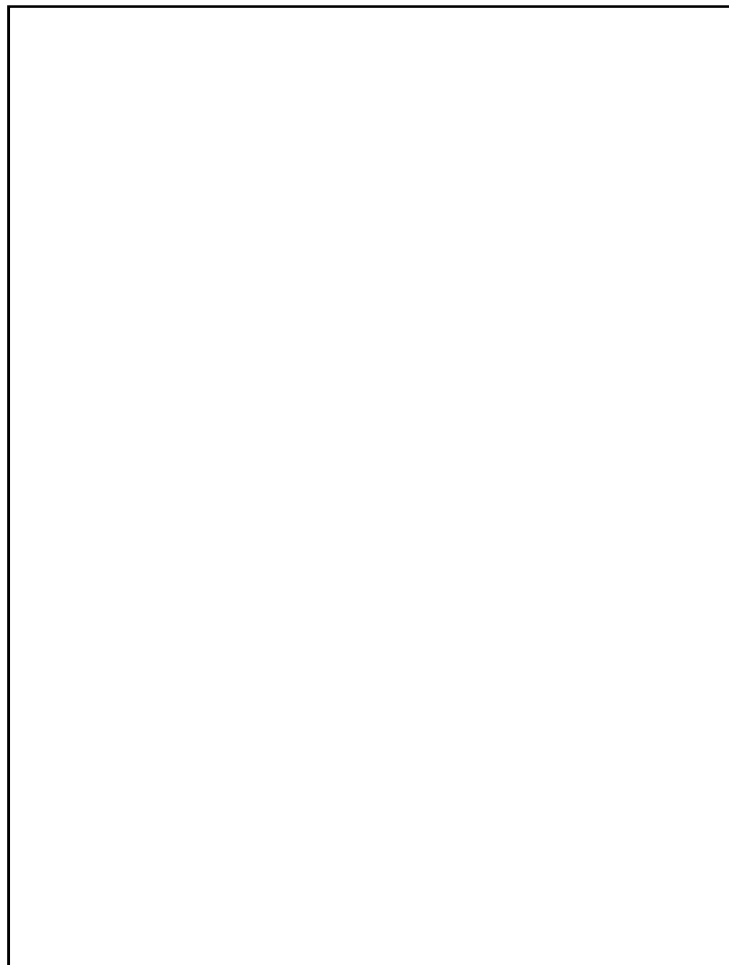
5. Suppose I asked you to hold the book so the red squares are just to the left of your nose. Then, suppose I told you to close your *right* eye and look at the red and blue circles with your left eye. Then, suppose I asked you to bring the book closer and closer to your face. Can you predict what you would eventually see? Write down your prediction, and then see if it was correct by actually doing the experiment that way.

6. Was your prediction correct? If not, what really happened?

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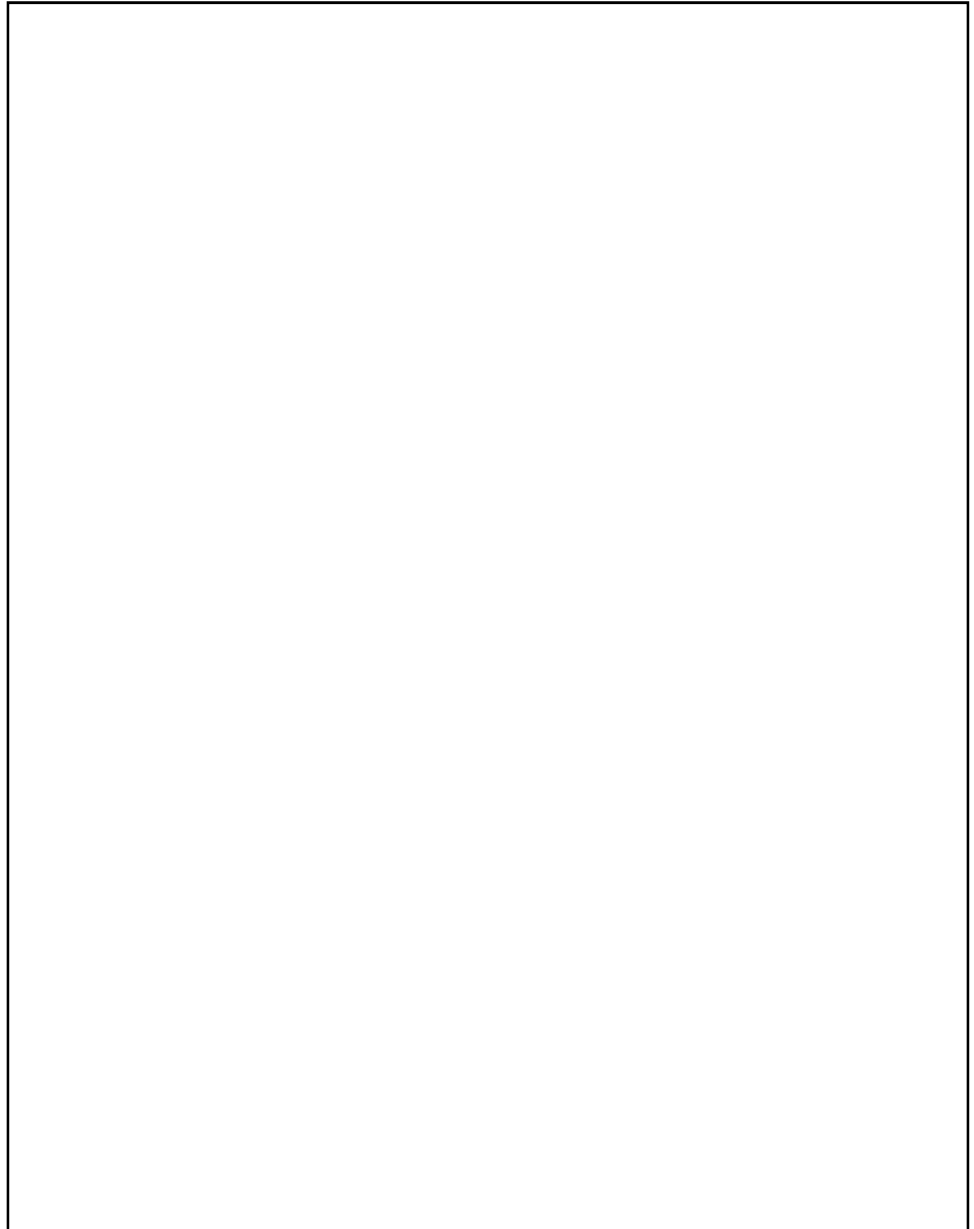
Lesson 10

1. When light hits something, it can be reflected, absorbed or _____.
2. Make two drawings of what happened in the experiment. Start with a view of the bowl from above, where you saw the fork lying on the bottom of the bowl. Use arrows to represent light, showing what the light had to do for you to see the fork. Then make a similar drawing of what happened when you looked at the surface of the water from below.

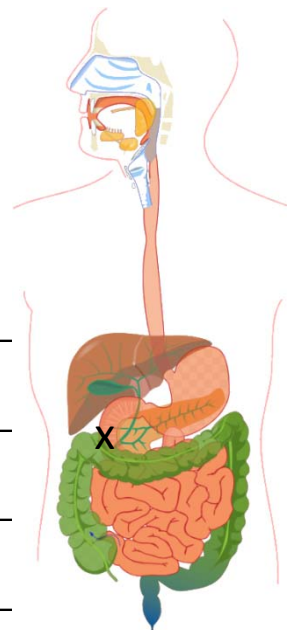


3. Explain why you saw the fork the way you did in each of the situations that you drew.

1. Draw a side view of the experiment you performed. Draw the bottle, a stream of water coming out of the bottle, and the flashlight. Make sure the stream of water is thick enough that you can draw inside it. Draw two arrows (for light) coming out of the flashlight and going straight until they hit the edge of the stream. Draw one arrow leaving the stream. Draw the other arrow reflecting back into the stream. Each arrow you draw must be straight. For the arrow that goes back into the stream, draw it straight until it either reaches the end of the stream or hits the edge of the stream. If it hits the edge, draw it reflecting into the stream again. Continue to draw straight arrows reflecting over and over until you reach the end of the stream. That's what happened to the light that made it to your hand in the experiment.



2. The drawing on the right is of the human digestive system. A person's doctor needs to examine the area marked with an "X." How can fiber optics help the doctor?



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Lesson 13

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Section 1: Science in the First Day of the Creation Week Level 2

Lesson 14

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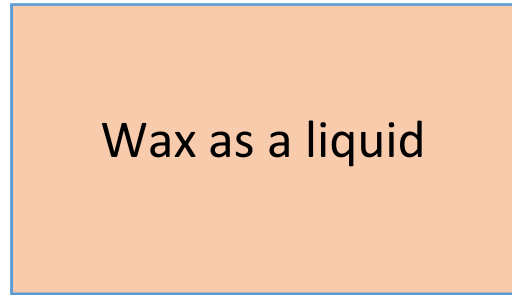
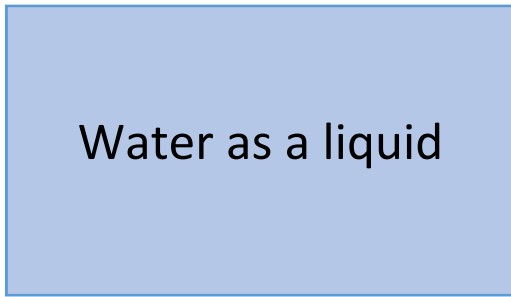
Lesson 15

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 17

1. The two rectangles below represent water and wax as liquids. Below each rectangle, draw a rectangle that represents the same substance as a solid. Label the rectangle “_____ as a solid.” The size of the rectangle should show the difference between the phases.



2. How do the rectangles show what happens when water and wax freeze?

3. Suppose you were able to find pure copper (the stuff pennies are made of). What would happen to the amount of room it would take up if you melted it?

1. Draw two squares in the container of water on the right . One square should be at the bottom of the container, while the other square should be floating in the water. Assume both squares weigh the same, which means they have to be two different sizes. Use the fact that one sank and the other is floating to determine which should be drawn smaller and which should be drawn larger.



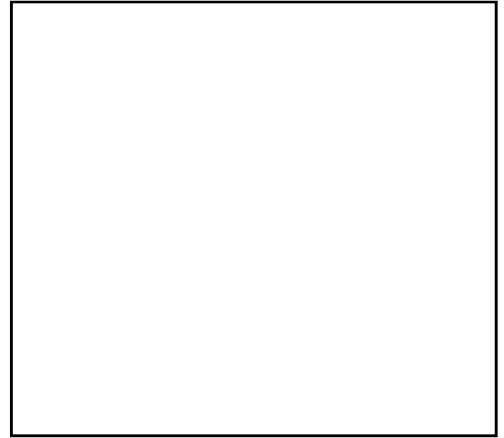
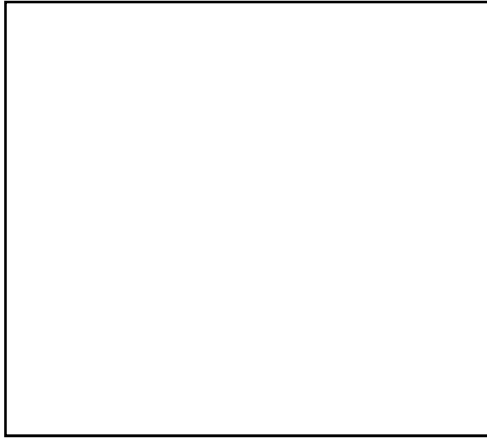
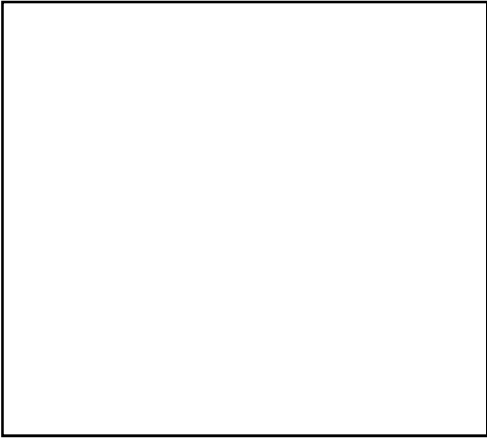
2. Explain why you drew the sizes the way you drew them

3. Think about a big ship that floats easily on the ocean. It weighs 400,000,000 pounds. If you were to collect enough ocean water so that the water had the same volume as the ship, would the water weigh more or less than 400,000,000 pounds? Write your answer in your notebook and explain why.

Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 20

1. In the first box below, draw a cloud forming over a lake. Use wavy lines to represent water vapor rising. In the next box, draw the cloud heavier (darker) and moving away from the lake. In the last box, have the cloud nowhere near the lake and raining.



2. What do these drawings illustrate?

3. What determines whether snow or rain falls from a cloud?

Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 21

1. Write an explanation of what happened in the experiment.

2. Why did you always end up with one drop, even when you started with many?

3. What does "adhesion" mean? _____

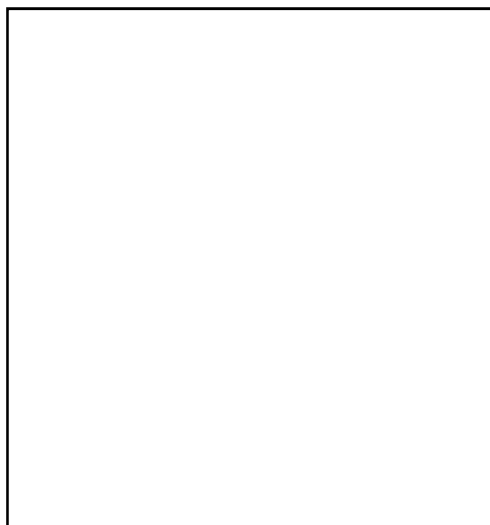
4. What does "cohesion" mean? _____

5. How do both adhesion and cohesion affect whether or not water "beads up" on a surface?

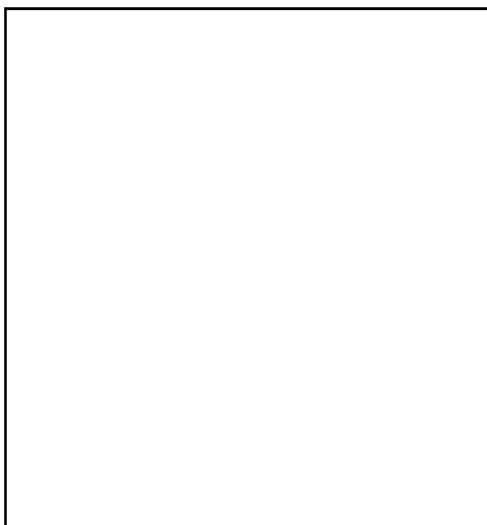
Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 22

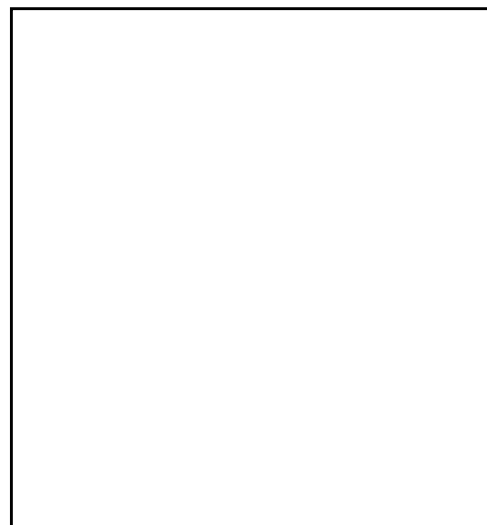
1. In the boxes below, draw a glass with a battery and water. Draw bubbles that represent what you saw in your experiment.



No Epsom Salt



Some Epsom Salt



More Epsom Salt

2. Where did the bubbles come from and what is in them?

3. Draw a molecule of water and explain why it is called H₂O.



Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 23

1. Write a story about a sodium ion and a chloride ion. They start out in a saltshaker, and they become friends. Write about what happens when they are dissolved in water. Make sure you use the terms “solute,” “solvent,” and “solution” in your story.

2. Look around the house for a few solids (other than Epsom salt and table salt) that you can try to dissolve in water. Make sure it's okay with your parents, and then see if they dissolve in water by adding a little bit to water and stirring. Write each attempt in your notebook and indicate whether or not the solid dissolved. For anything that dissolved, what is the solvent and what is the solute?

1. Write an explanation of your experiment.

2. If you had used warm diet coke, the fountain would have been:

Larger **OR** Smaller **OR** The Same

3. Write an explanation of your experiment.

The feathery things you see on this young salamander are its gills. The salamander uses them to absorb oxygen that is dissolved in the water where it lives.



Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 25

1. Explain the results of the experiment in your own words.

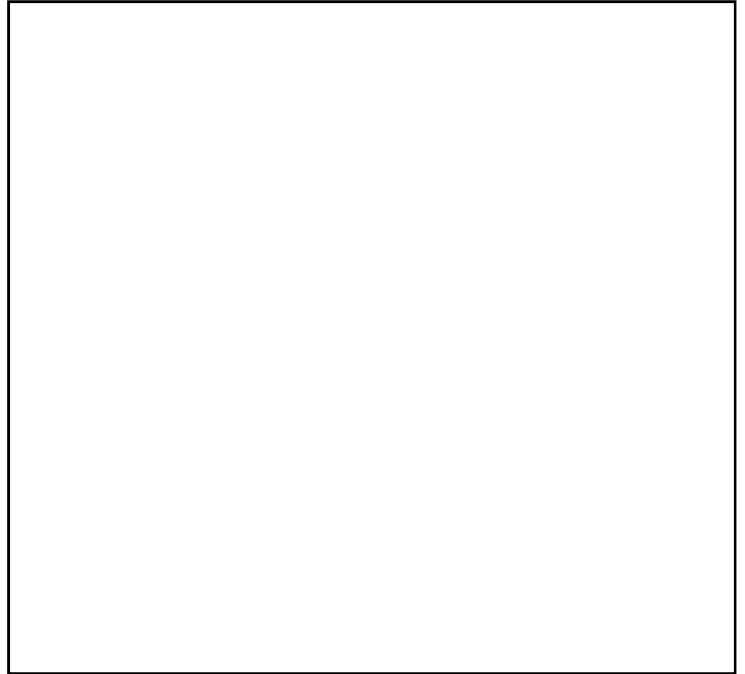
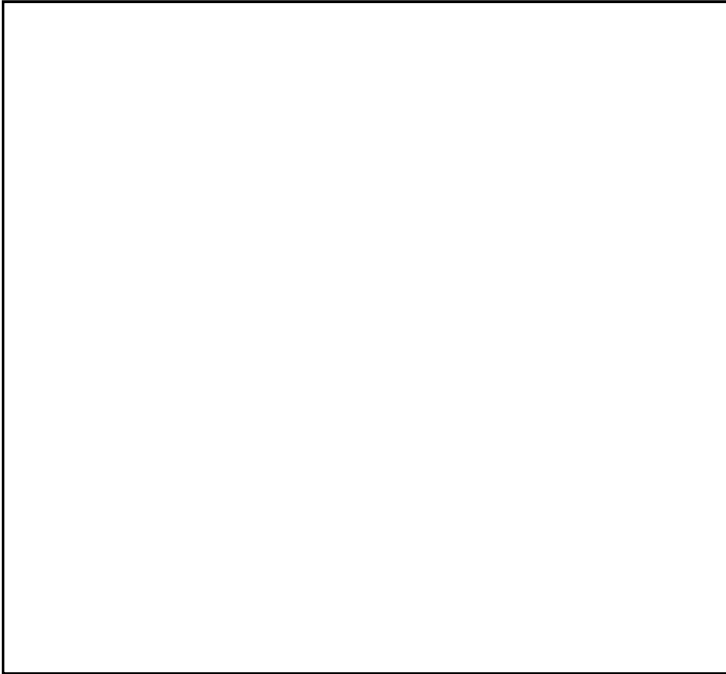
2. How do we know air exists even though we can't see it?

3. Suppose you did the experiment again, but this time, you used a glass that had a hole in the bottom. Would the cork go down like it did before? Why or why not?

Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 26

1. Make two drawings of what happened in the experiment: One before the bottle and balloon were heated and one after.



2. Explain the results you just drew.

3. Try to draw something to illustrate that the molecules in air move more quickly the warmer the air is.

1. What did the Bible tell us about air long before science did?

2. Explain why a hot-air balloon floats when the heat is turned up and comes back to the ground when the heat is turned down.

3. Explain why a hot-air balloon made out of very heavy material will need to be much larger than a hot-air balloon made out of very light material.

Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 28

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 29

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Section 2: Science in the Second Day of the Creation Week Level 2

Lesson 30

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Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 31

1. When a leaf starts to rot away so that it looks like dirt, we say the leaf is starting to

_____.

2. Technically, dirt and soil are the same thing: True **OR** False

3. What is humus?

4. How does humus relate to soil?

5. Why do you think plants grow better in soil that contains a lot of humus?

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 32

1. Besides humus, what is soil made of?

2. Why does freezing and melting cause rocks to break?

3. Looking at your jar from the experiment, concentrate on the layers you see.

a. If a soil is made of only the tiniest bits of rock, will it have very large or small pores?

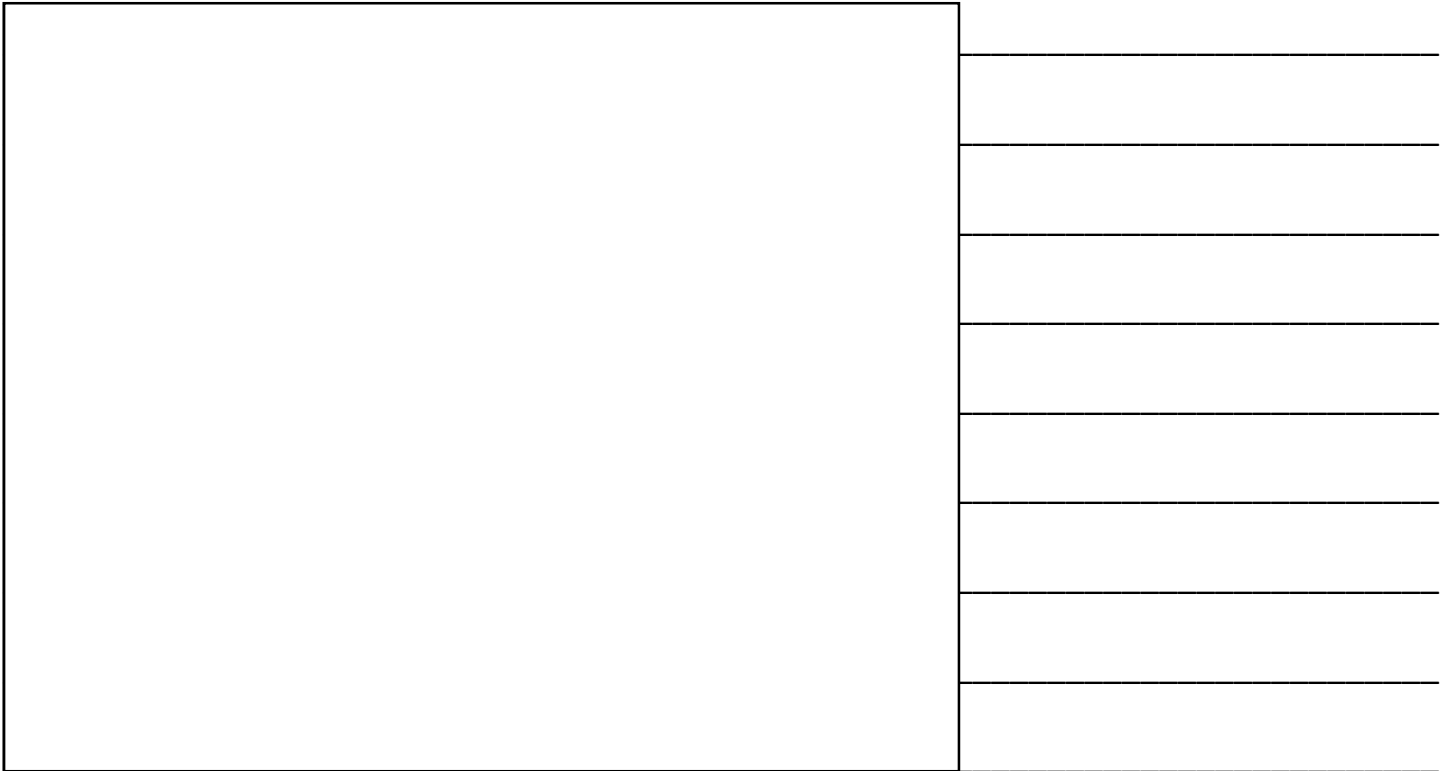
b. If it is made up of only large bits of rock, will it have large pores or very small pores?

c. What size pores do you get with a mixture of all different sizes of rock bits?

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 33

1. Make a drawing like the one on page 101 and use it to explain the rock cycle.



2. Do some research and identify each of the following rocks as sedimentary, igneous, or metamorphic:

marble _____

sandstone _____

slate _____

granite _____

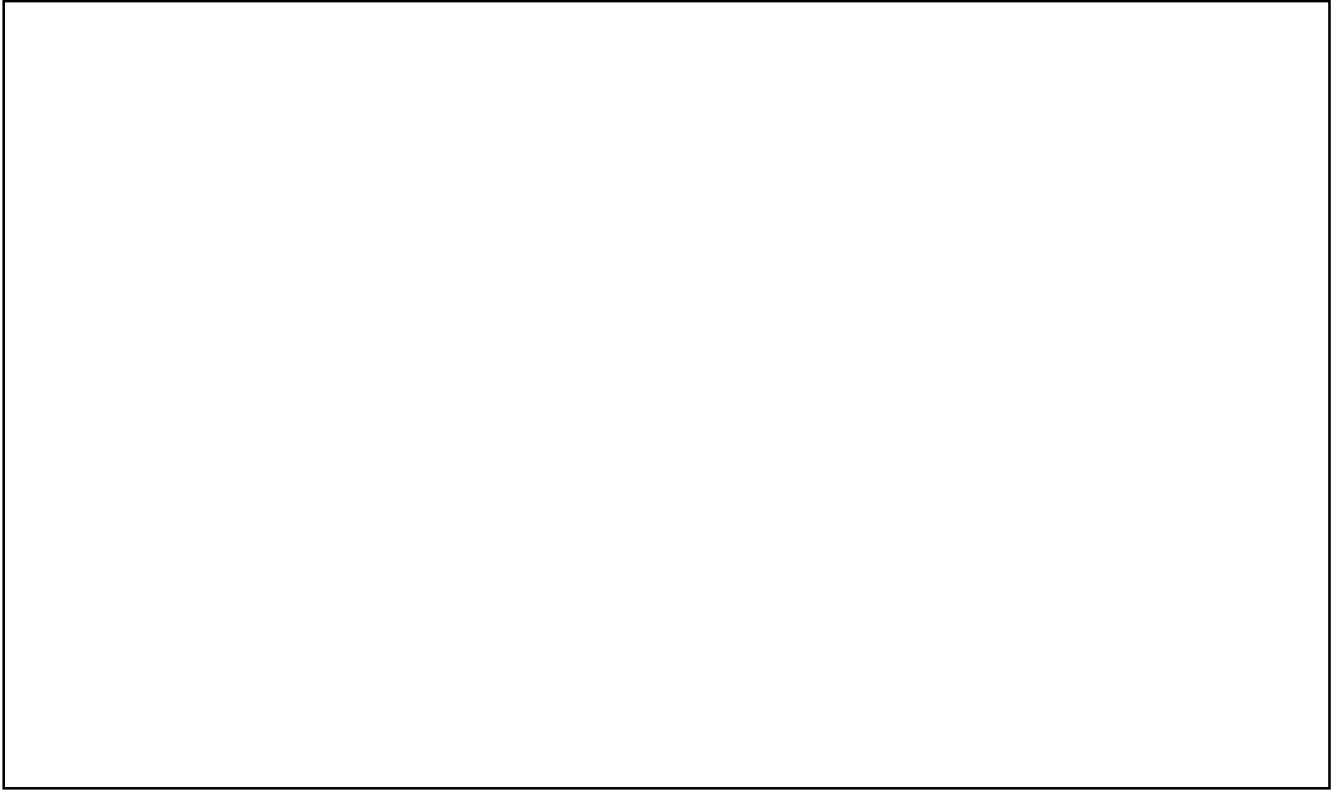
shale _____

obsidian _____

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 34

1. Make a drawing of the glass as it looked in step 11 of the experiment. Label which layer has freshwater and which layer has saltwater.



2. Why did the layers form that way?

3. Suppose you repeated the “Will it Float” experiment, but this time, after you put the can of regular Coke in the water, you started adding sugar to the water and stirring so that the water became sweeter and sweeter. What would eventually happen to the can of Coke?

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 35

1. Which will freeze at a *higher* temperature? freshwater **OR** saltwater

2. Tell the story about a snowflake (from its point of view) that starts at the top of a mountain and ends up floating in the ocean as an iceberg.

3. The experiment you performed is a demonstration of what scientists call **freezing point depression**. Define that phrase in your own words.

4. Suppose you were given a chunk of ice. The person giving you the ice says that it had been floating in the ocean. It was pulled out of the ocean, rinsed off thoroughly, and brought to you. What could you do to determine whether the ice was from an iceberg or a patch of frozen seawater?

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 36

1. Write your own explanation for why ice melts when you put salt on it. Use the word “equilibrium” in your explanation

2. Why doesn't this work when it gets very cold?

3. Suppose you had a bucket with a hole in it. You put it under a faucet and try to fill it. If the faucet isn't on high enough, very little water will stay in the bucket. If you turn the faucet on high enough, the water will fill the bucket and eventually spill over. However, if you turn the faucet on with the right speed, the bucket will fill to a certain point, and then the water will stay at that level. It will never go up or down. Explain why this is an example of equilibrium.

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 37

1. If you make an educated guess about what will happen, you are forming a _____.

2. _____ - _____ means the opposite of what we expect based on what we know.

3. Write down your hypothesis from your experiment:

4. Was your hypothesis correct? _____

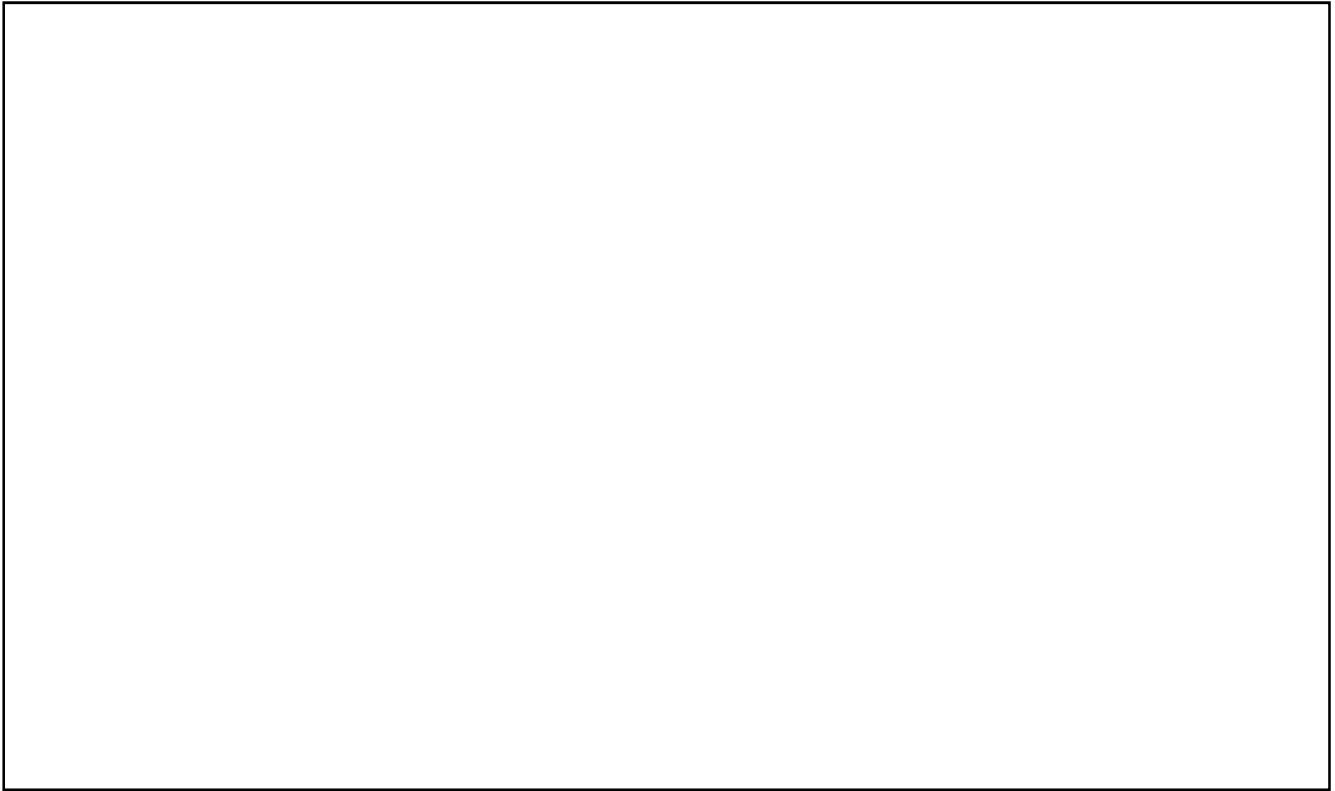
5. Give an explanation for the results of the experiment:

6. Suppose you make a hypothesis and then do an experiment that confirms the hypothesis. What more you could do in order to make sure your hypothesis is reliable?

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 38

1. Draw a picture of your opened-up bean seed, labeling the cotyledons and the embryo.



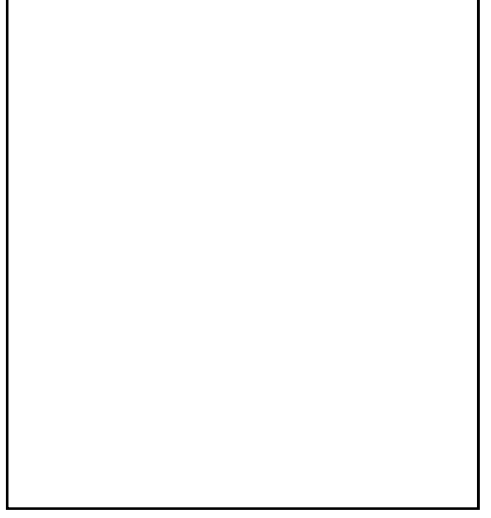
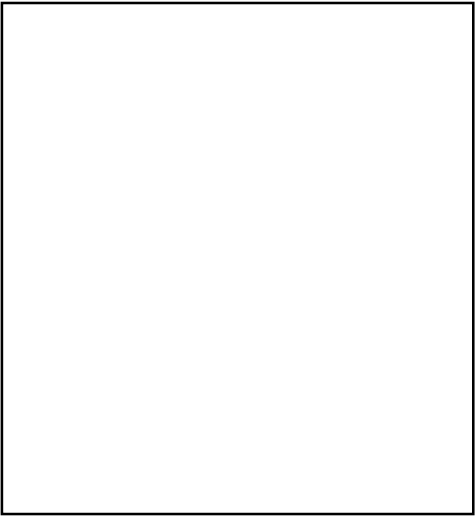
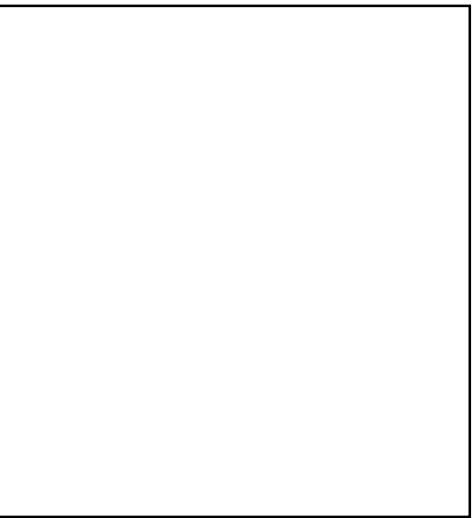
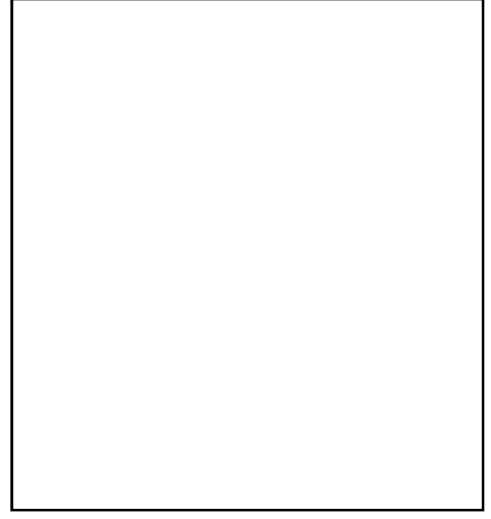
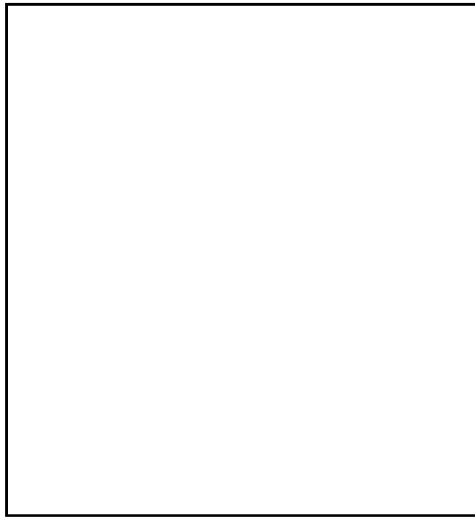
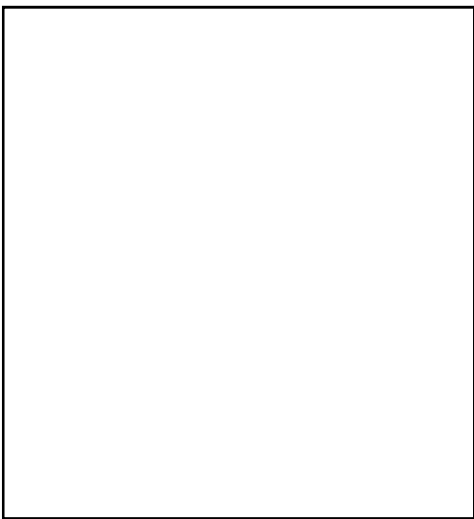
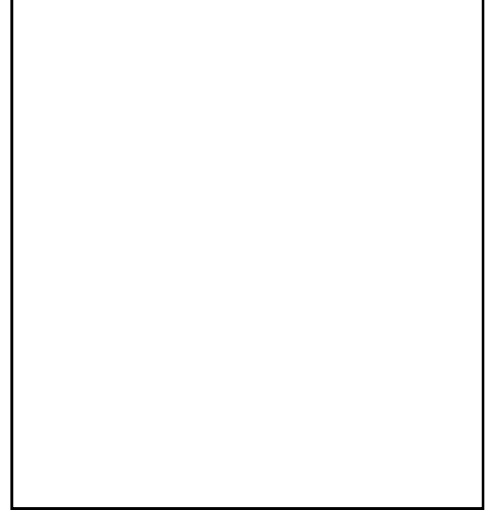
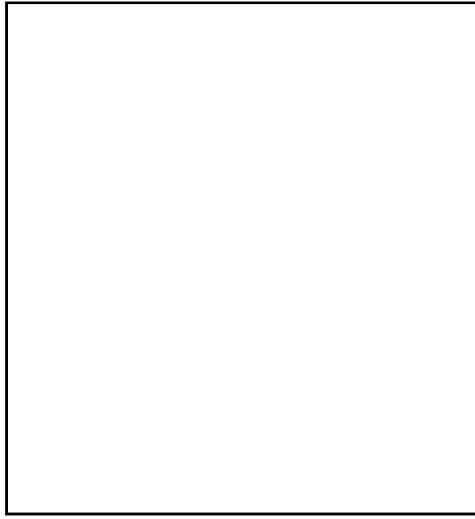
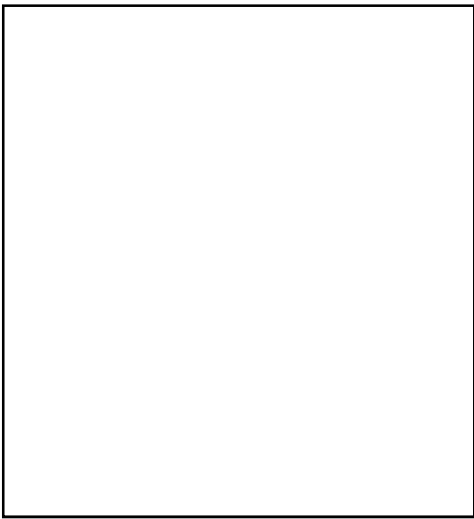
2. What are the cotyledons for, and what will the embryo will end up becoming?

3. Do some research and find out if all seeds have two cotyledons. If not, what other number of cotyledons can be found in some seeds?

Section 3: Science in the Third Day of the Creation Week Level 2

Lessons 39-41

Record your drawings of the germinating seeds over the next several days in the boxes below.



When you are doing Lesson 39, go to the page for Lesson 42 and answer the first question

Section 3: Science in the Third Day of the Creation Week Level 2

Lessons 39-41

The Germination of a Seed

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

Step 5: _____

Step 6: _____

Section 3: Science in the Third Day of the Creation Week Level 2

Lessons 40-41

1. Based on what you know, what do you think will happen to them several days after the plant has broken the surface of the soil?

2. What actually did happen?

3. Before you remove the plant from your germination jar, count how many seeds fully germinated to produce a seedling, how many didn't even open, and how many opened but didn't produce a seedling.

Number of seeds that fully germinated: _____

Number of seeds that opened but didn't produce a seedling: _____

Number of seeds didn't even open: _____

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Lesson 42

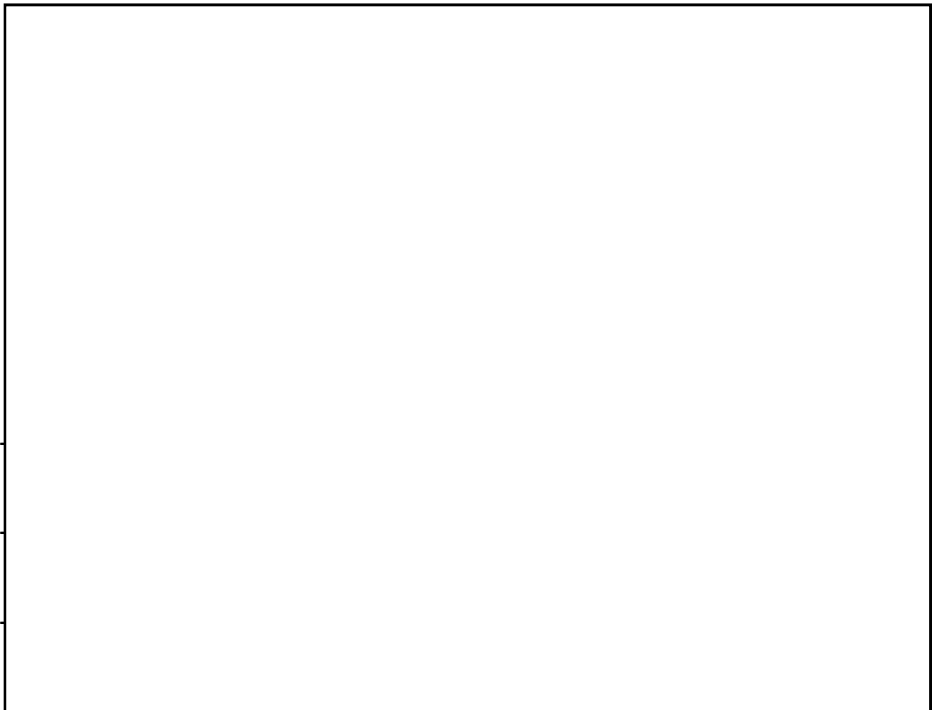
1. You covered a leaf in aluminum foil today. In a few lessons, you are going to uncover that leaf and examine it. Write down a hypothesis about what you will see when you uncover the leaf.

2. What did you actually see when you uncovered the leaf today?

3. What is the process by which plants make their own food, and what three things are needed?

4. Draw a plant showing its roots, stem, and leaves. Label them and explain the job of each:

5. Many companies call their fertilizers “plant food.” Explain why that is not what fertilizer is.



Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 43

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Section 3: Science in the Third Day of the Creation Week Level 2

Lesson 44

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Section 3: Science in the Third Day of the Creation Week Level 2

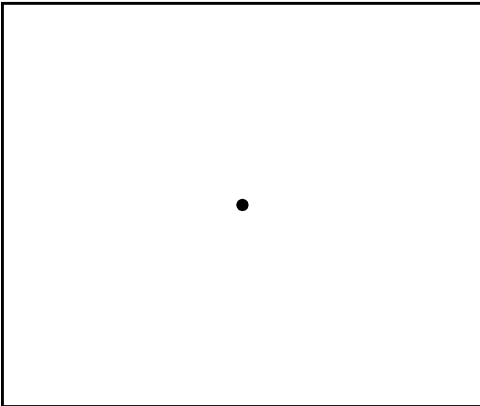
Lesson 45

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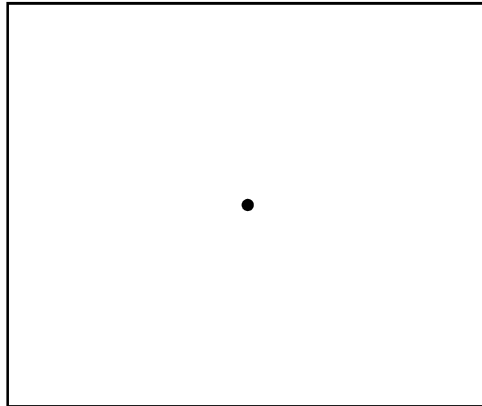
Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 46

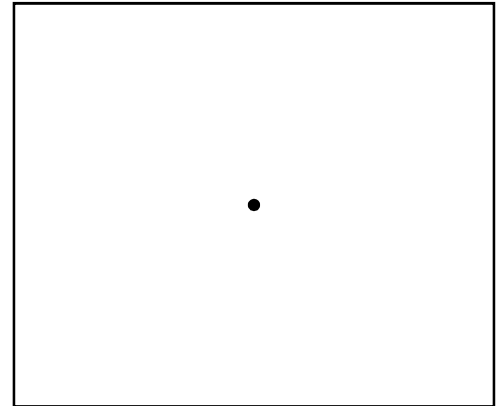
1. Draw what happened in your experiment in the boxes below. Imagine the pictures if you were looking down on them from above. The dot represents the toothpick.



1st Shadow



2nd Shadow

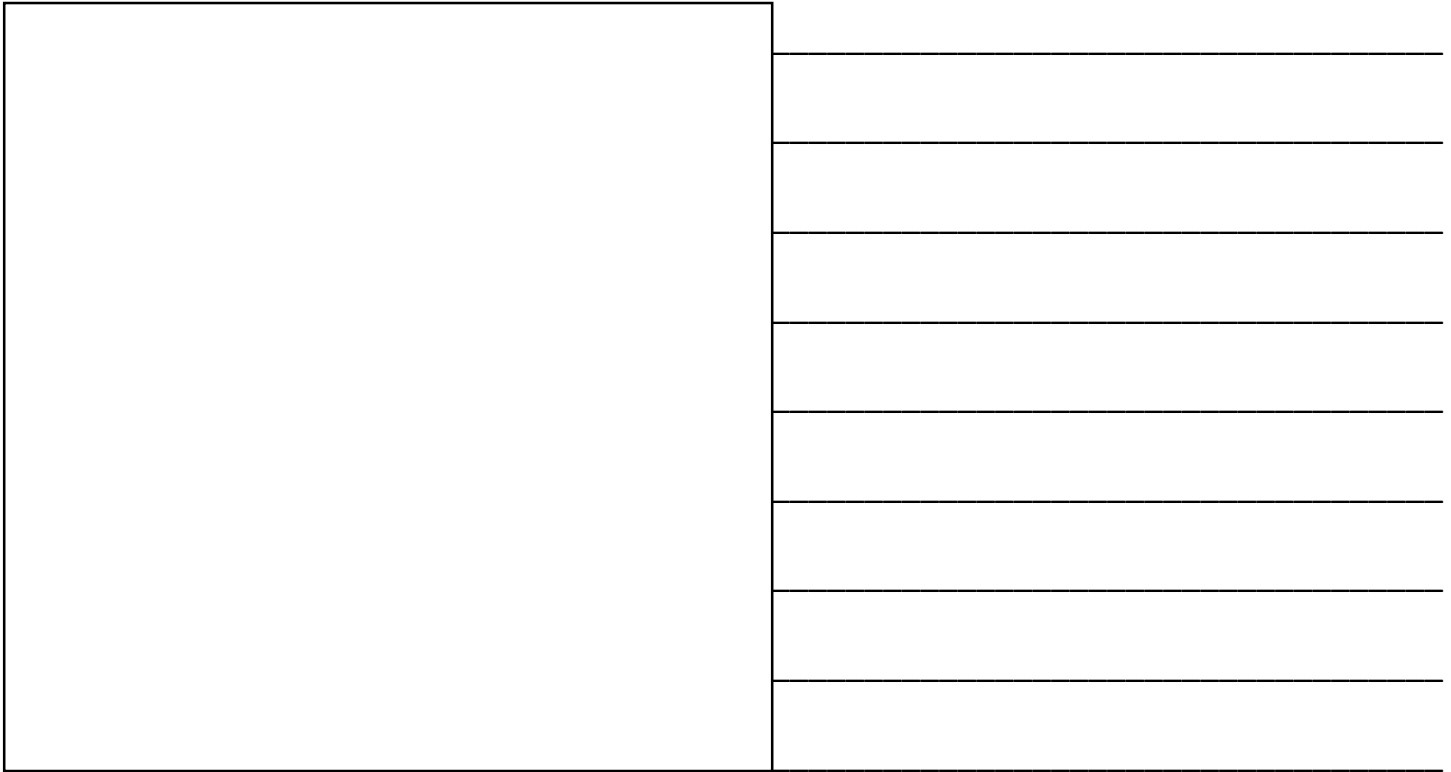


3rd Shadow

2. Why did both the length and position of the shadow change?

3. Think about a tree standing in a clearing. As the sun rises in the morning, it casts a shadow. What will happen to the length of the shadow over the course of the entire day?

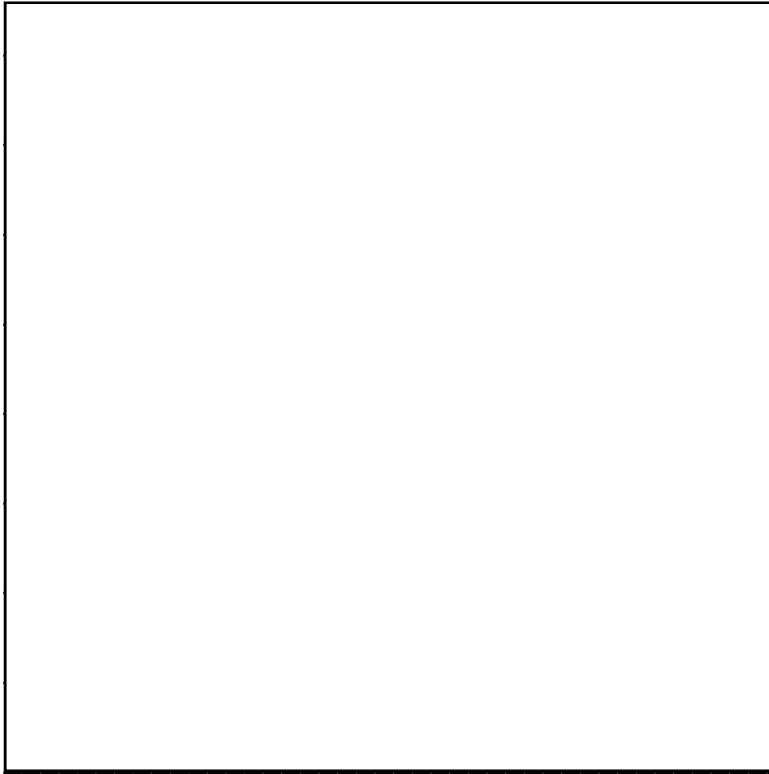
1. Draw a sundial whose gnomon's shadow indicates that it is 11 AM and explain how a sundial tells time.



2. When is the sun highest in the sky?

3. Why do most sundials use a gnomon that is angled?

1. Make a drawing that illustrates why a sunset looks yellow, orange and red. Explain it.



Eight horizontal lines for writing an explanation of why a sunset appears yellow, orange, and red.

2. Make a drawing that illustrates why the sky is blue. Explain it.

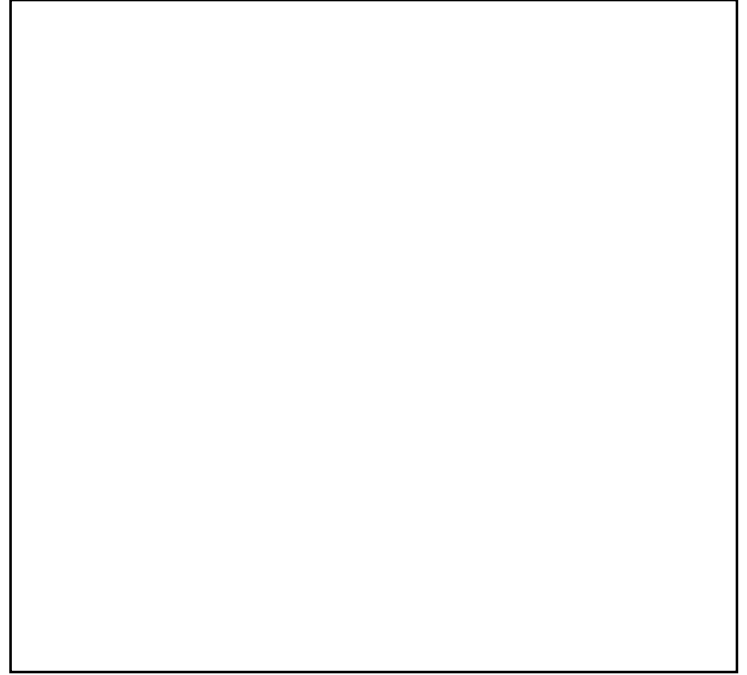
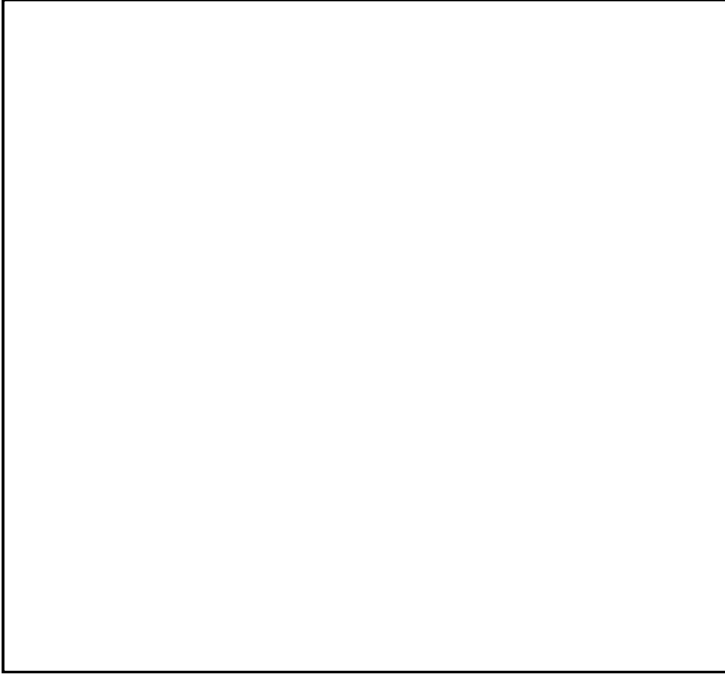


Eight horizontal lines for writing an explanation of why the sky is blue.

Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 49

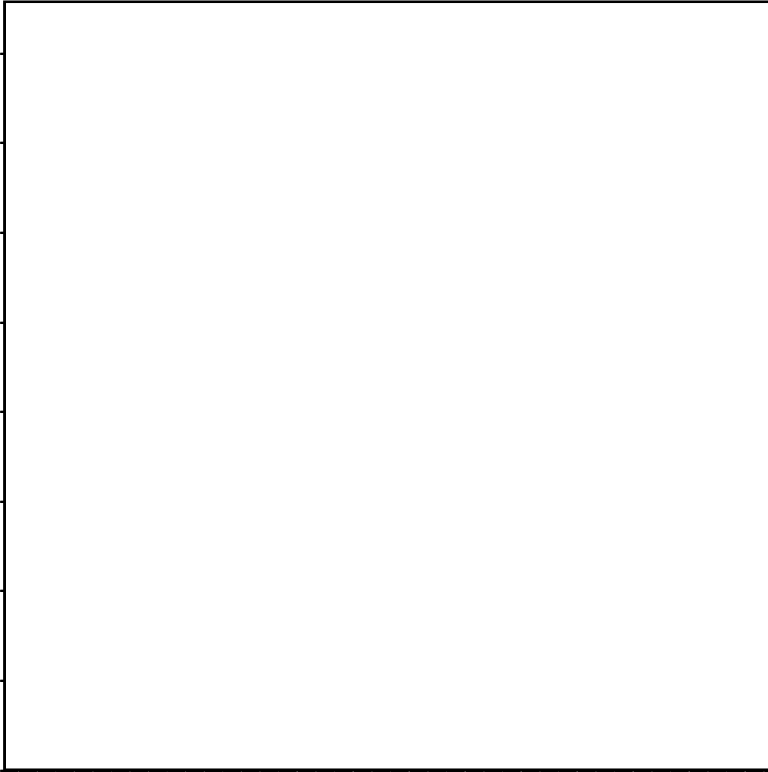
1. Make two drawings. One should show how the sun orbiting the earth could cause night to turn to day. The other should show how the rotation of the earth and a stationary sun could do it.



2. Circle the drawing that shows what actually happens.

3. We don't feel the earth moving because everything else is _____ too.

1. Make a drawing of the earth orbiting the sun and rotating. Explain how we use the orbit of the earth around the sun to keep track of the years and the rotation of the earth to keep track of the days. Note how many times the earth rotates when it makes one full orbit around the sun.

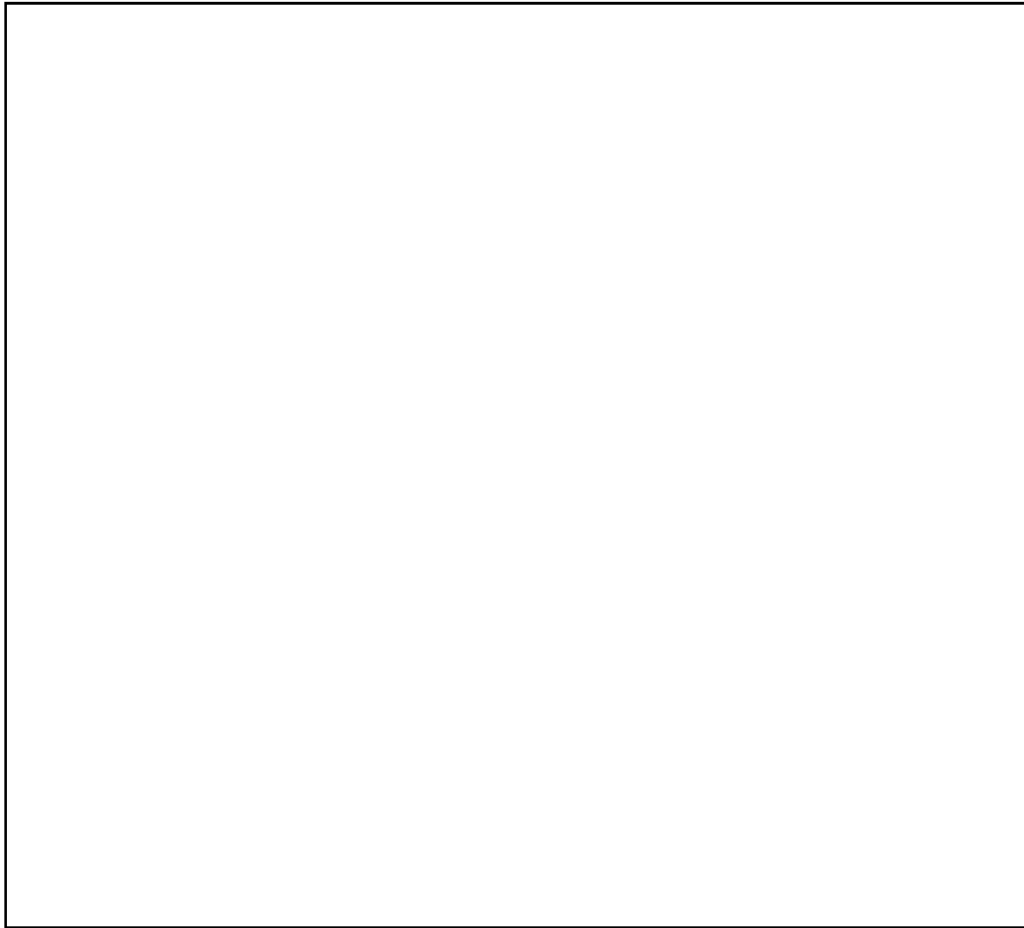


2. It takes about 29½ days for the moon to go through all its phases. In the lunar calendar, there are some months with 29 days in them. However, there are some months with a different number of days in them. How many days you think are in those other months? Why?

Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 51

1. Write your own mnemonic for the solar system. Use it to draw the solar system without looking at the book.



2. Which planets probably take less than a year to orbit the sun? _____

3. Which planets probably take more than a year? _____

Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 52

1. List the planets in terms of size, starting with the smallest and ending with the largest.

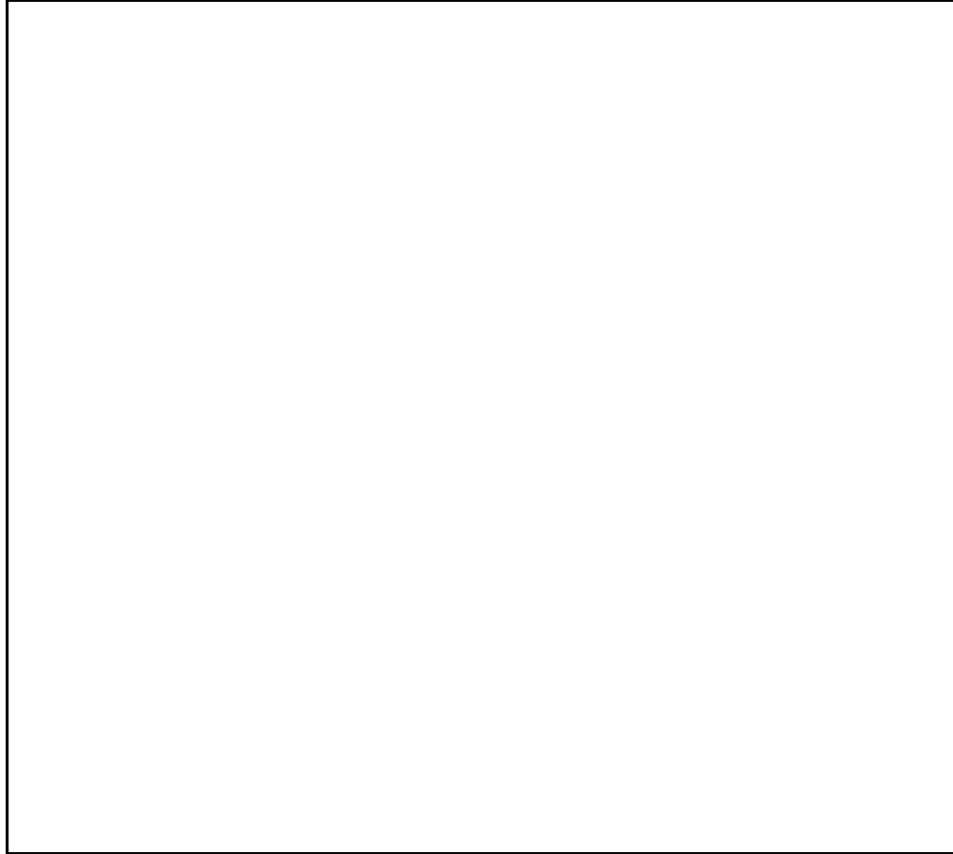
2. What are two differences between planets and stars?

3. Go back to the drawing on the previous page and point out the inner planets and the outer planets.

4. What are the differences between the two?

Lesson 53

1. Make a drawing of what the baseball looked like in the four positions discussed in the experiment.



Fill in the following blanks with a phase of the moon:

2. When your back was to the flashlight, the part of the ball facing you looked like a _____ moon.
3. When you were facing the flashlight, the ball looked like a _____ moon.
4. When one of your sides faced your helper, the ball looked like a _____ moon.
5. List the phases of the moon in order, starting with the new moon.

Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 54

1. An _____ is a trick your mind plays on you because of something you see.

2. Which is actually bigger: the moon **OR** a star

3. Why does the moon look bigger than the stars?

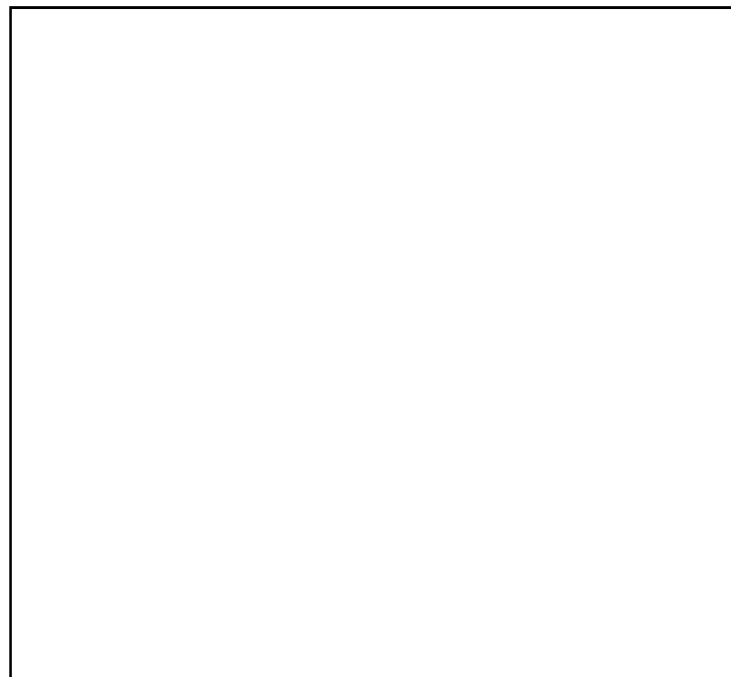
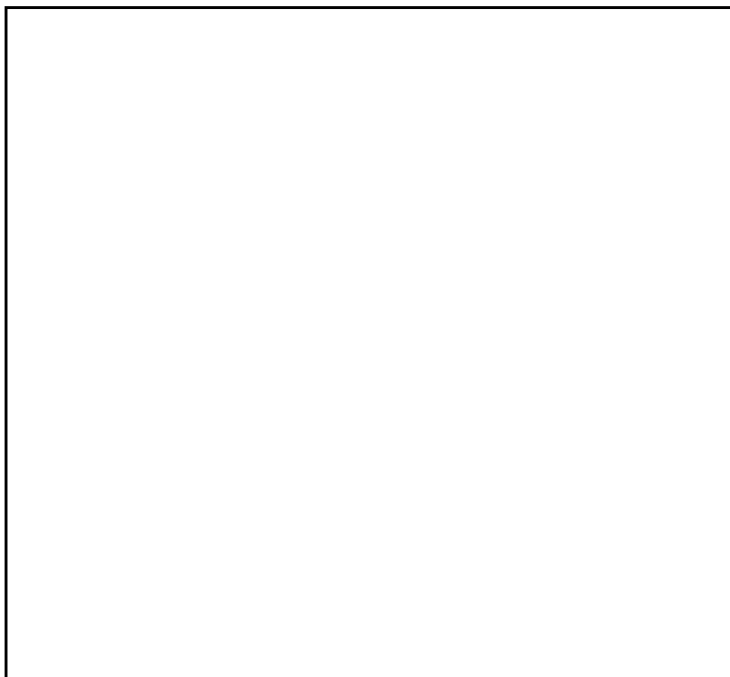
4. Why does the moon appear to be larger the closer it is to the horizon?

5. Suppose you are looking at a very tall tree outside. It is next to a pole that you know is six feet high. How you could use the pole to measure the height of the tree without touching either the pole or tree?

Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 55

1. Make two drawings. One should show how a solar eclipse happens, and one should show how a lunar eclipse happens. Explain beneath each drawing.



2. Why do lunar eclipses only happen during a full moon?

1. A star that is very bright might appear very dim in the sky, while a dimmer star might appear brighter. Why?

2. Why does the sun appear to be larger than all the other stars, even though it is smaller than many of them?

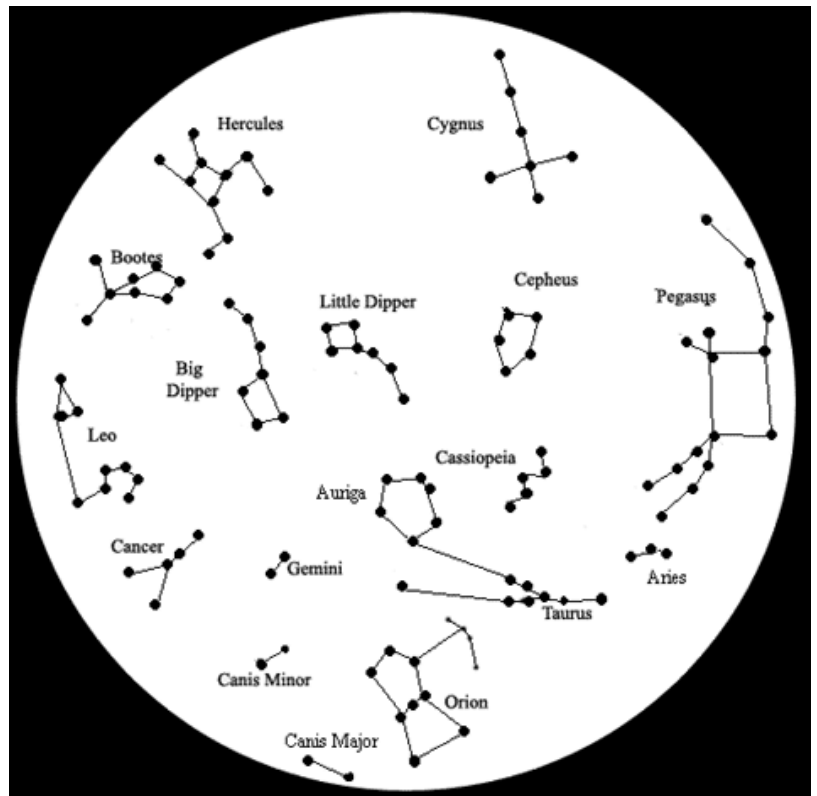
3. Do some research to find out why I sometimes have to use "A" and "B" when discussing stars, like "Sirius A" and "Sirius B."

1. Why don't we see stars during the day?

2. What is light pollution and how does it affect the way we see stars?

3. Some stars form patterns in the sky called constellations. Look at the picture on page 173. In the picture on the left, do you notice a shape like a "K"? It is called "Orion." The three stars that form a diagonal line are called "Orion's belt" because they look like they form a belt. The next time you are looking at the night sky, see if you can find the same pattern in the sky. If you live in the Southern hemisphere, the pattern is upside down and pointing in the other direction.

The drawing on the right gives you some other constellations to look for. That drawing is only good for the Northern Hemisphere. You will need to look online for Southern Hemisphere constellations.



Author: unknown

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Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 58

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 59

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

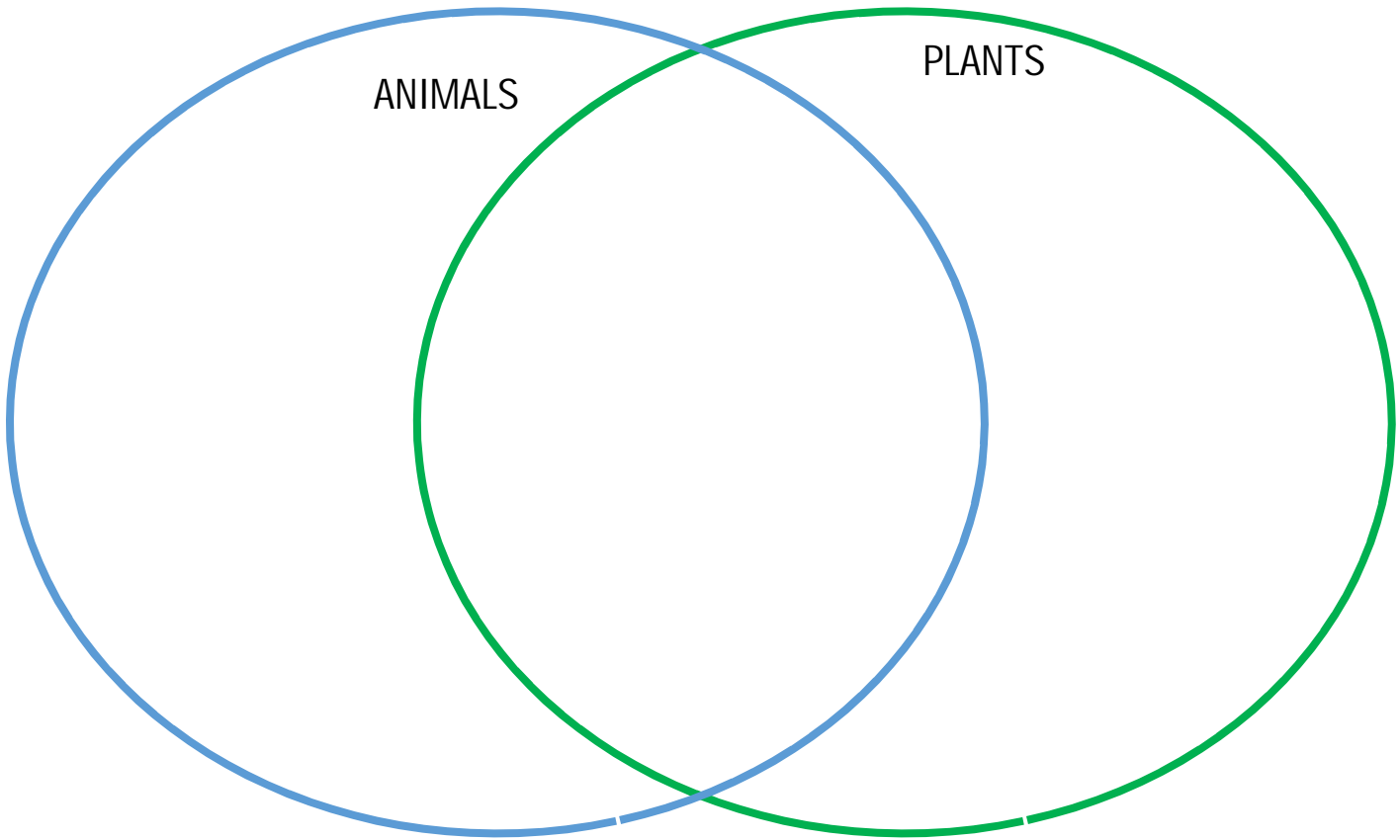
Section 4: Science in the Fourth Day of the Creation Week Level 2

Lesson 60

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Lesson 61

1. Fill out the following Venn diagram as described in the activity for this lesson



2. What is an organism?

Lesson 61...cont.

Paste pictures of animals here:

ANIMALS

Lesson 61...cont.

Paste pictures of plants here:

PLANTS

Section 5: Science in the Fifth Day of the Creation Week Level 2

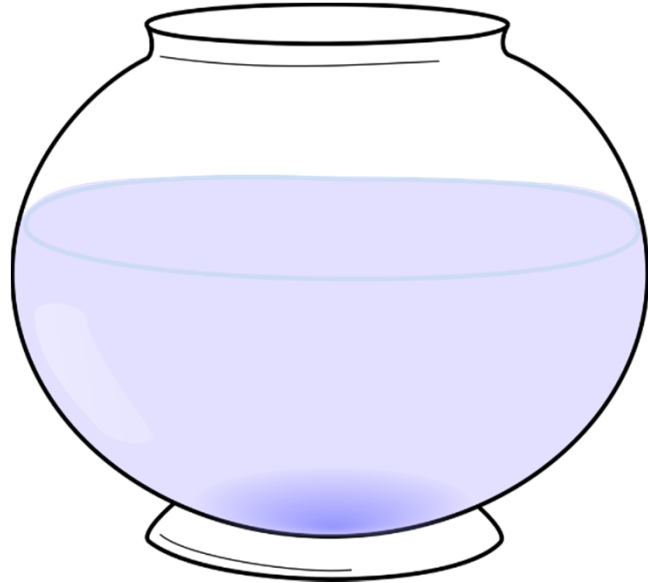
Lesson 61...cont.

Paste at least one picture of a plant that doesn't have all the characteristics listed for plants in your Venn diagram or an animal that doesn't have all the characteristics of animals listed in your Venn diagram.

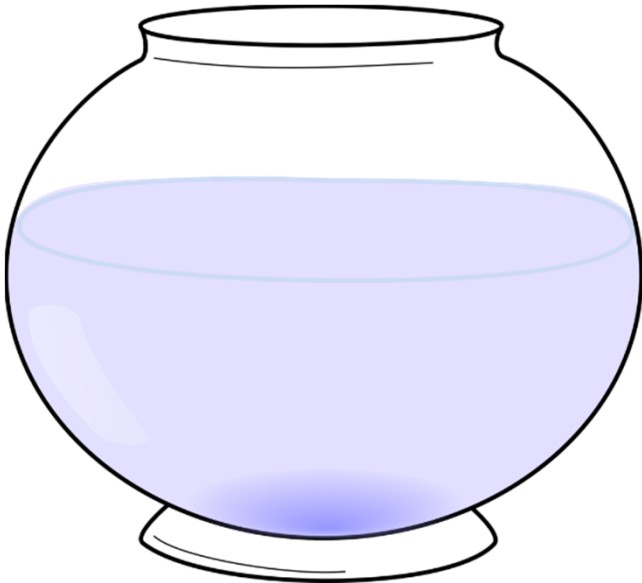
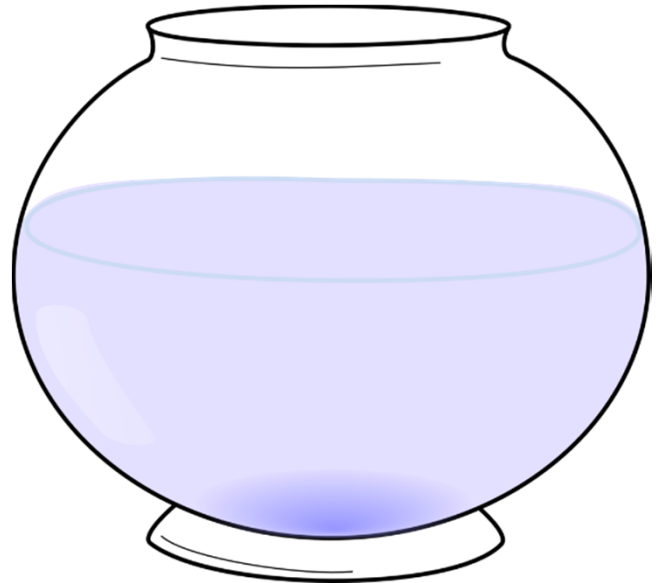
EXCEPTIONS

Lesson 62

1. Draw a fish in the bowl on the right:



2. In bowl "A," draw what would happen with a freshwater fish that didn't urinate a lot. In "B," draw what would happen with a saltwater fish that didn't drink a lot.

**A****B**

3. What is the name for the process that causes this? _____

4. Suppose a fish was swimming in water that had exactly the same amount of solutes in it as the solutes in the fish's body. What would happen to the water in the fish's body over time?

Lesson 63

1. Where do solutes tend to go?

toward areas that have a lot of solute and only a little solvent

OR

toward areas where there is a lot of solvent and only a little solute

2. What do we call that movement of solute described above? _____

3. How does a jellyfish get oxygen?

4. How does a fish get oxygen?

5. Use diffusion to explain why you don't necessarily have to stir a powdered drink like Kool-Aid or lemonade to get it to dissolve evenly in water.

Lesson 64

1. What are the two basic kinds of animals?

2. Paste pictures of each kind of animal below:

VERTEBRATES

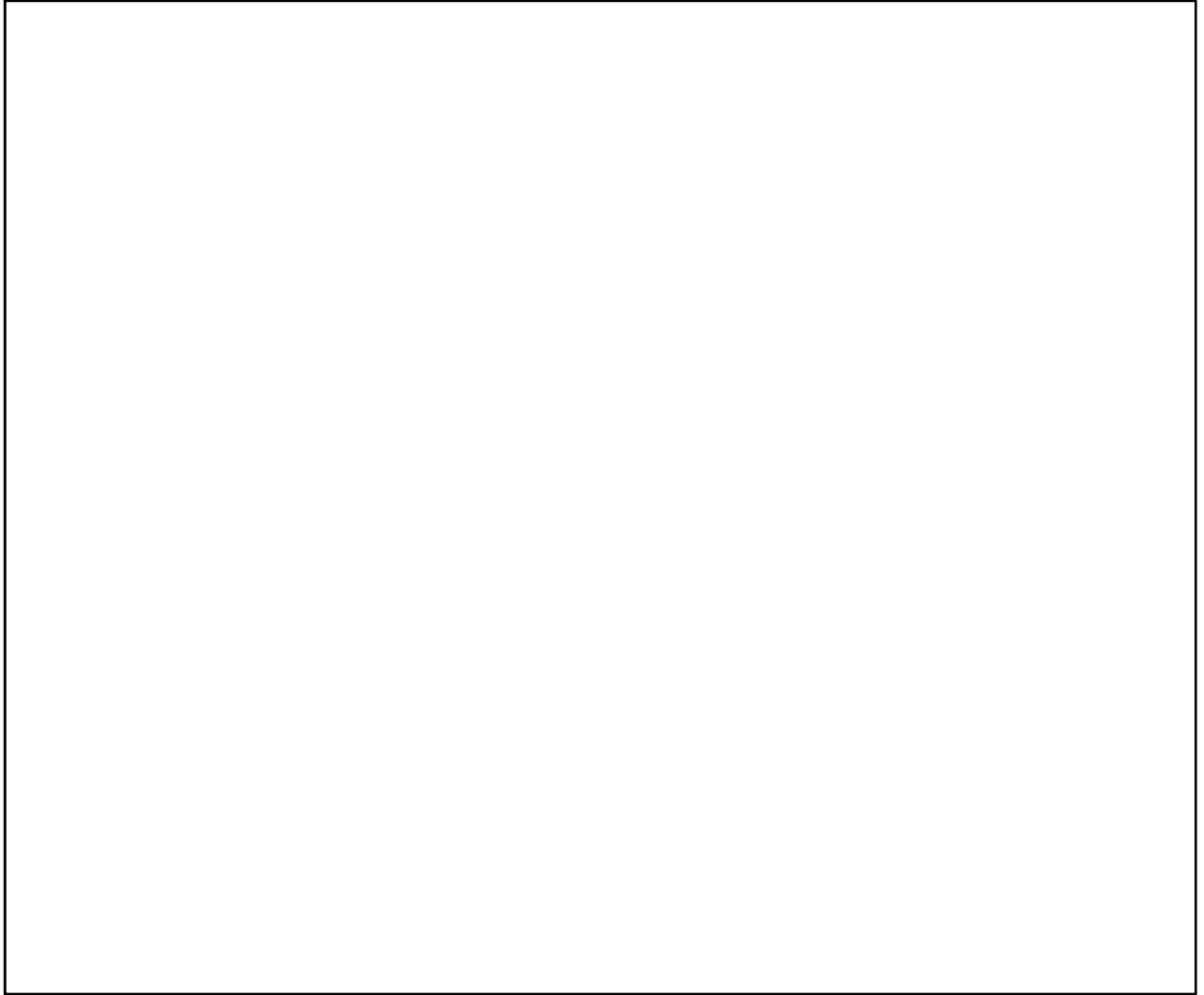
INVERTEBRATES



3. Do some research and find out which kind of animal is more plentiful on earth.

Lesson 66

1. Draw a picture of a fish, labelling each fin and describing what it is used for.

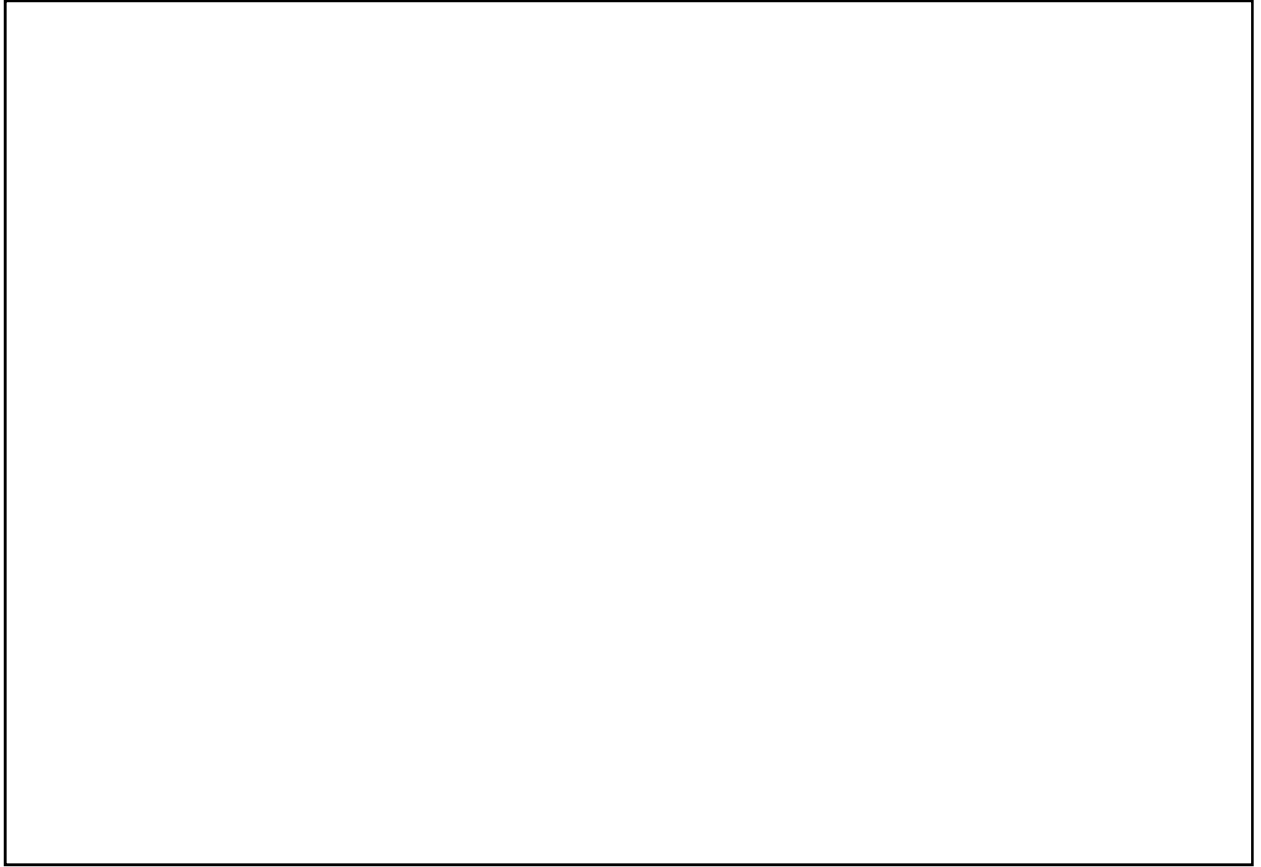


2. Explain how a fish uses its swim bladder to control its depth.

3. Do some research to find out another way some fishes use their dorsal fin.

Lesson 67

1. Draw the feather you examined and label the shaft, quill, vane, and barbs.



2. Explain how the barbs connect to each other to make the vane.

3. Why is the shaft hollow?

4. Are pillows stuffed with down feathers or contour feathers? Why?

1. Most birds use _____ to waterproof their wings. They get it from a special gland called the _____ gland.

2. When a bird uses its beak to clean and smooth its feathers it is _____.

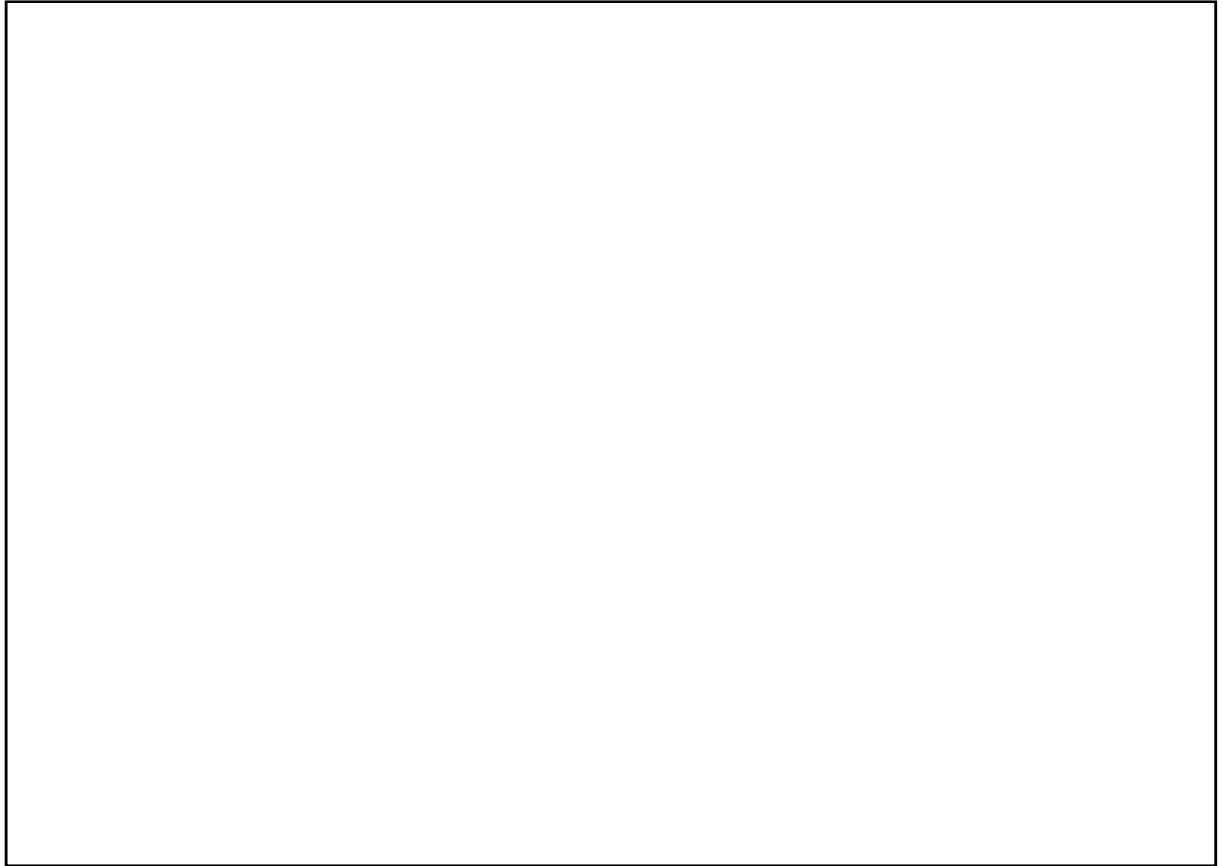
3. Why don't oil and water mix?

4. Why are waterproof feathers important for most birds, but especially for waterfowl?

5. Suppose you see two waterfowl floating on a lake. They appear to be the same size, but one is so low in the water that you can only see its neck, head, and the very top of its back. The other is floating so high that you can see most of its body. If one is a goose and the other is a cormorant, indicate which is which. Also, explain how you know.

Lesson 69

1. Make a drawing like the one on page 211, but use dots to represent air. The more dots there are, the more air pressure exists in that region.

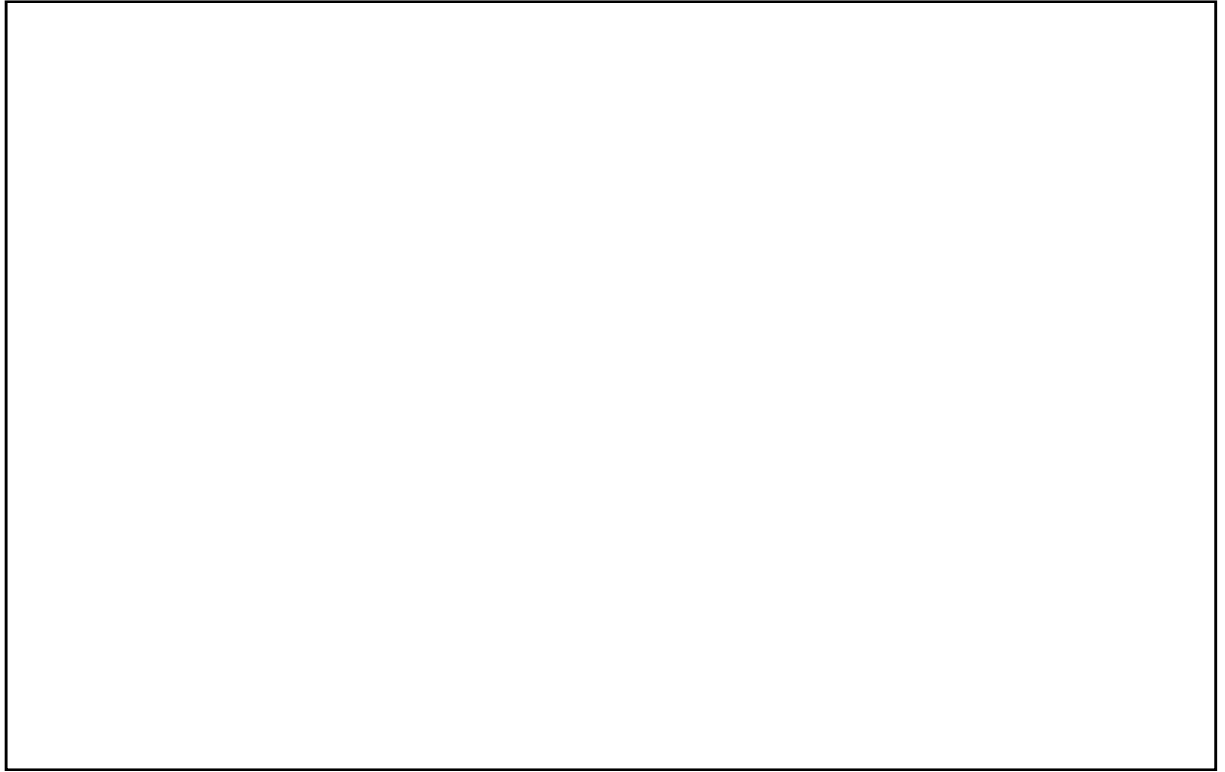


2. Explain how this allows something with a properly-shaped wing to fly.

3. In order for lift to be generated, a wing must be passing through air. The faster the wing passes through air, the greater the difference between the air pressure above the wing and the air pressure below the wing. Given that information, explain why an airplane rolls along a runway for a while before it starts rising in the air.

Lesson 70

1. Make a drawing similar to the one you made in the previous lesson, but for a bird's wing as it is flapping down.



2. How does that give the bird lift?

3. Why does a bird bring its wings closer to its body when it flaps them upwards?

4. Why do some birds face into the wind when they are taking off?

Lesson 71

1. Paste a picture of an airplane below.

2. How does it compare to the Royal Tern on page 216?

3. Why are the bird and the plane so similar?

4. Why is a canoe shaped similarly?

Lesson 72

1. A student is given two bones. One comes from a bird, and another comes from a cat. What should the student do to determine which came from which?

2. Why are bird bones like that?

3. A student weighs two different bones. The first is larger than the second, but it weighs less than the second. Which bone (the first or the second) is most likely from a bird? Why?

Lesson 73

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Lesson 74

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Lesson 75

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

EXAMPLES OF CATTLE

(Identify each as an invertebrate or a vertebrate.)

1. What do we call the kinds of animals that the Bible is probably talking about when it says “cattle”?

EXAMPLES OF CREEPING THINGS

(Identify each as an invertebrate or a vertebrate.)

EXAMPLES OF BEASTS OF THE EARTH

(Identify each as an invertebrate or a vertebrate.)

Lesson 77

1. Make a drawing of an insect. Indicate the legs and antennae.

2. How many legs must an insect have?

Insect

3. Make a drawing of a spider.

4. How do you know that the spider is not an insect?

Spider

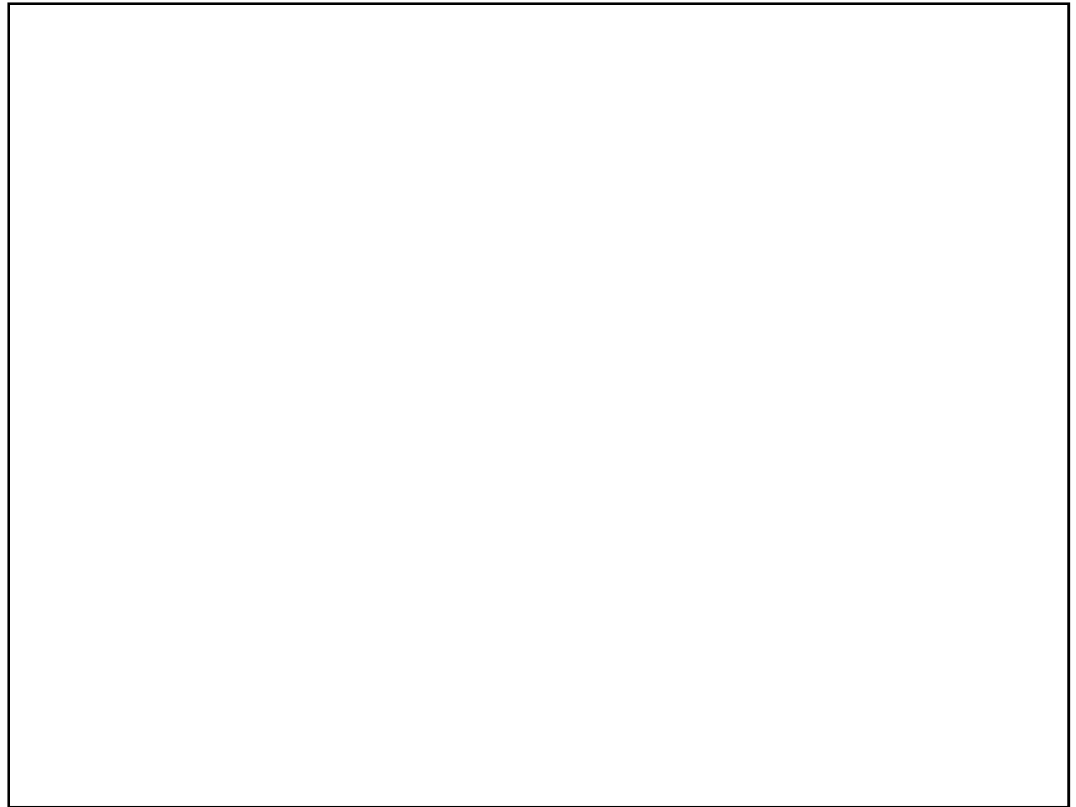
5. Draw a centipede.

6. How do you know that the spider is not an insect?

Centipede

Lesson 78

1. Make a drawing of an earthworm. Point out the clitellum, the anterior end, the posterior end, the dorsal side, and the ventral side.



2. What is the earthworm's method of locomotion?

3. Do some research and find out what scientists call earthworm poop.

Lesson 79

1. Find pictures of an amphibian, a reptile, and a mammal. Paste each below, and under each picture, identify which it is, and identify what it is covered in. Also indicate whether each type of animal is warm- or cold-blooded.

Lesson 79...cont.

2. There are five basic kinds of vertebrates in creation. You covered three of them today (amphibians, reptiles, and mammals). Find pictures of the other two types of vertebrates (you learned about them when you studied the fifth creation day) and paste them below. For each type, indicate how you can tell it from other vertebrates, and indicate whether it is warm-blooded or cold-blooded.

1. Describe your experiment. Explain why the experiment demonstrates that fat is good insulator.

2. Explain why the fat didn't dissolve away into the water in your experiment.

3. What do animals use fat for besides insulation?

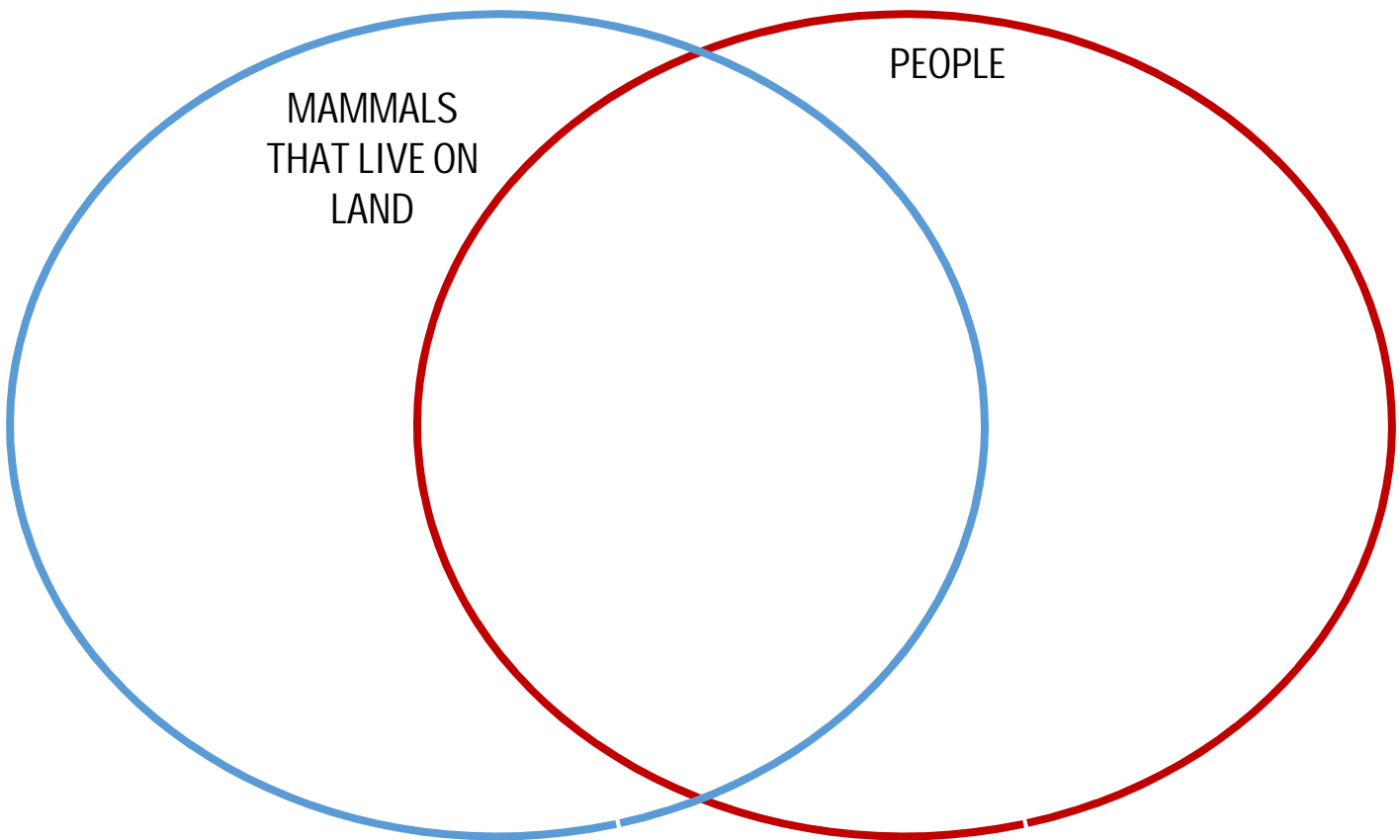
4. Think about a polar bear that is having trouble finding enough food. He hunts and hunts, but he just doesn't find enough to eat. As the months pass by, will he feel the cold of the arctic more, less, or about the same as the year before, when he found plenty of food to eat?

Lesson 81

1. With what kind of animals do people have the most in common?

2. With what kind of mammals do people have the most in common?

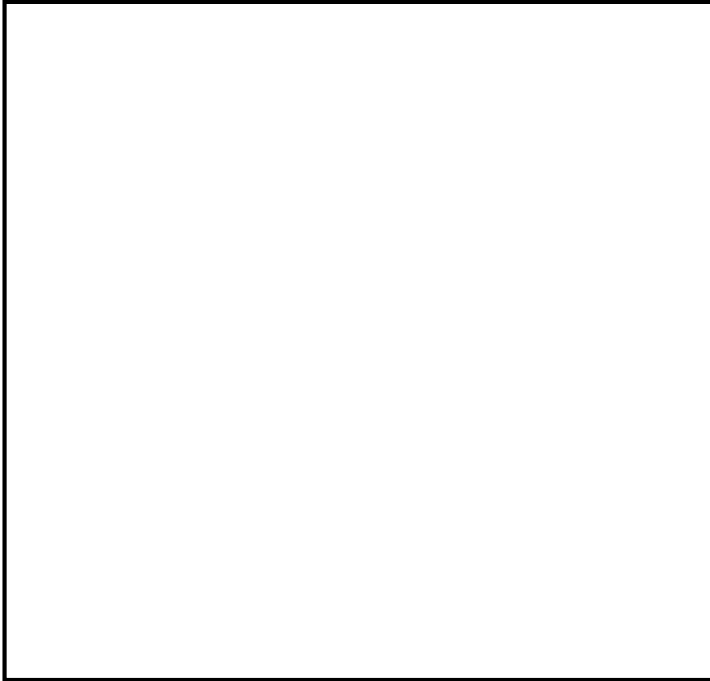
3. Fill out the following Venn Diagram:



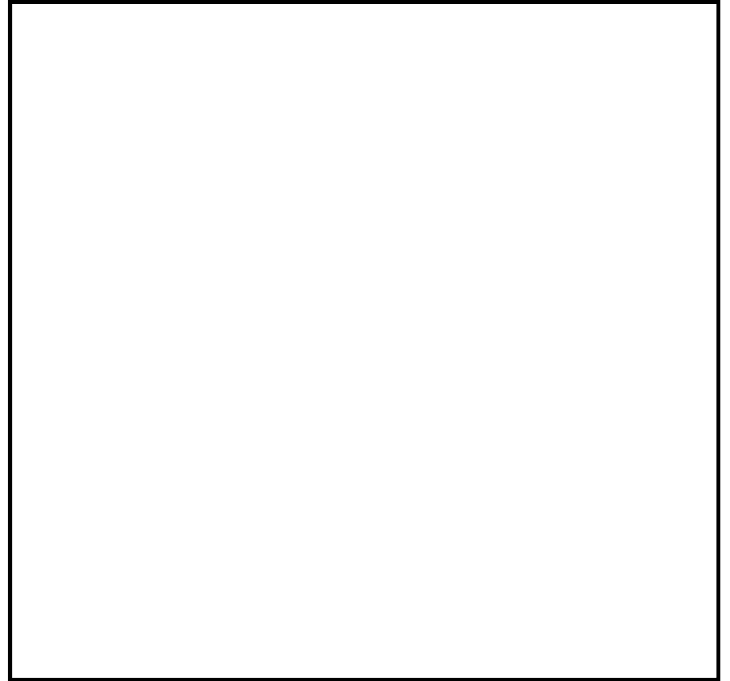
4. Give some examples of mammals that don't live on land.

Lesson 82

1. In the boxes below, draw or paste pictures you find of animals that have very different eye positions (on the front of the face vs. on the side of the head). Be sure to place them appropriately.

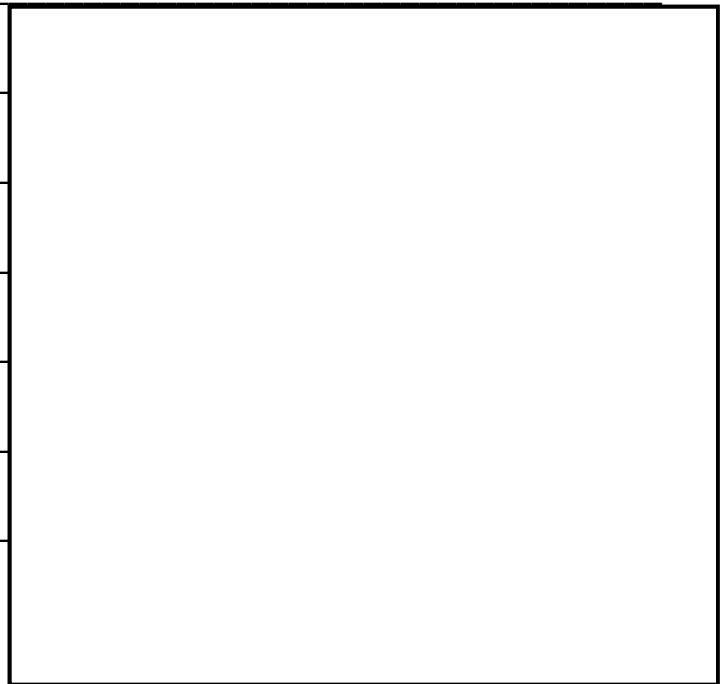


Good Depth Perception



Wide Field of View

2. Explain why the animal with eyes close together on the front of the face has good depth perception and the one with eyes on the sides of its face has a wider field of view. Use the term "binocular vision" in your answer.



3. Find or draw another picture of an animal that has depth perception and field of view that are in between the animals in the other two pictures.

In Between the two above.

Lesson 83

1. Draw a picture like the one on page 253. You don't have to have all the detail of the inside of the nose. Just draw the person, what he or she is smelling, and chemicals in the air going into the nose. Also, point out the nare through which the air is entering.



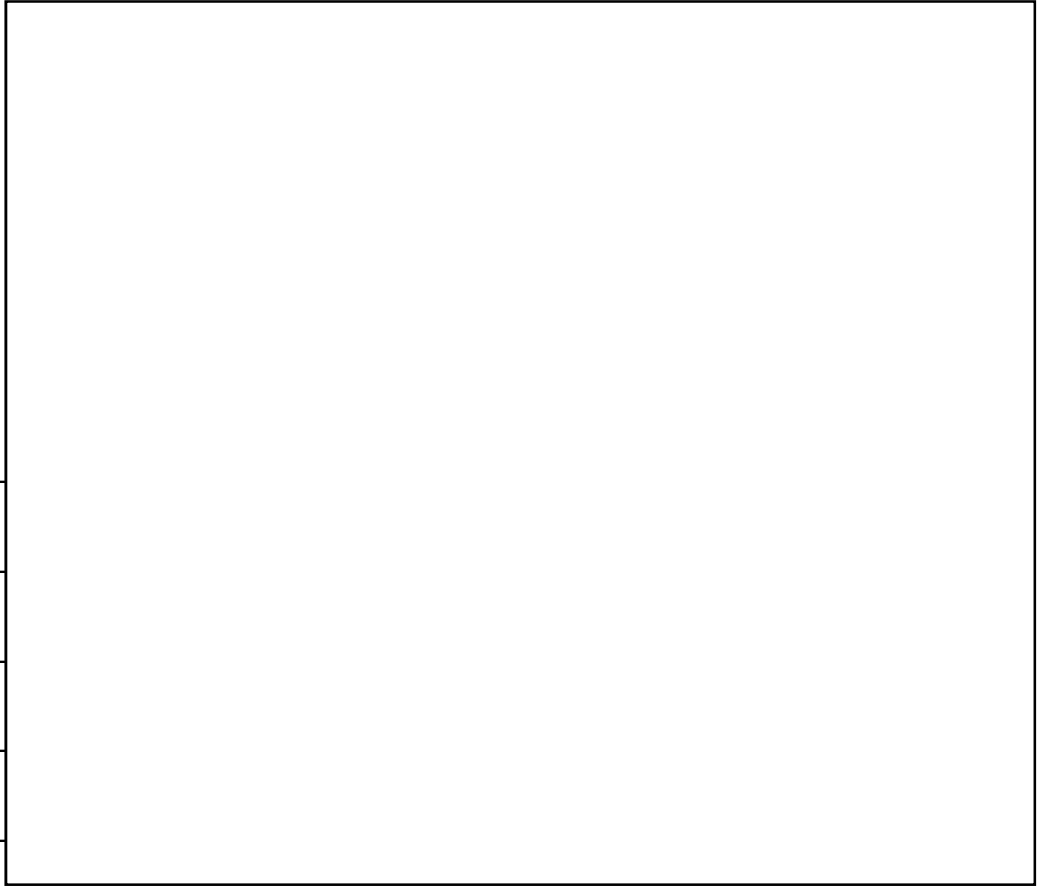
2. Explain how this makes a sense of smell.

3. How does a snake make its sense of smell even better?

Lesson 84

1. Draw a picture like the one on page 256. You don't have to have all the detail that is in the drawing. Just draw the things that are labeled in black.

2. Explain how this allows you to hear.



3. Imagine two astronauts – one in the spaceship (which is filled with air) and one outside, where there is no air. The one outside has a spacesuit on, but it has a microphone that can pick up sounds and transmit them to a speaker so the other astronaut can hear. If the astronaut inside the ship bangs against the ship's wall with a hammer, who will hear the sounds being made? Explain your answer.

Lesson 85

1. Write an explanation in your own words for how your static sense of balance works. Use the terms “vestibule” and “otoliths” in your explanation.

2. Write an explanation for how your dynamic sense of balance works. Use the terms “cupula” and “semicircular canals” in your explanation.

3. Do some research and explain why the stones in your vestibule are called “otoliths.”

Lesson 86

1. What do we call the things that give you your sense of taste? _____

2. Name the five tastes.

3. How can you taste all the wonderful flavors that you experience?

4. Suppose you burn your tongue really badly – so badly that it destroys all your taste buds. If that happens, will you lose your sense of taste forever? Why or why not?

Lesson 87

1. Write a story about what happened in the experiment. It should involve the receptors talking to the brain. Write what they “say” to the brain as they feel the different things they felt in the experiment.

2. Suppose you are swimming on a day that is just a bit cool. You come out of the water and quickly become cold. Your teeth start chattering. You jump back into the water because you can’t stand being so cold. Does the water feel warmer, cooler, or the same as it did before? Explain your answer.

Lesson 88

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Lesson 89

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!

Lesson 90

This is a challenge lesson, so I want to challenge you to make your own notebook page for it!