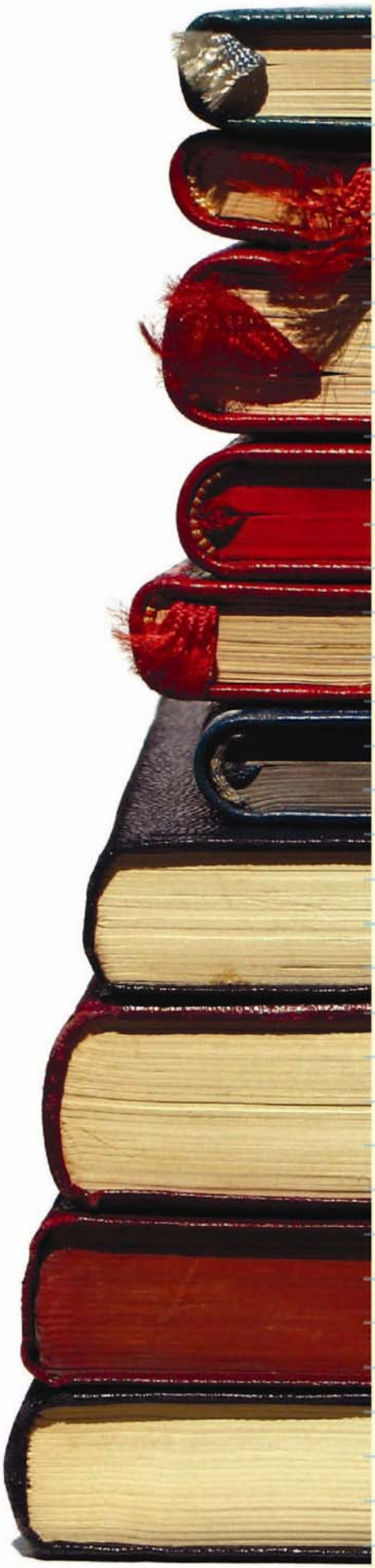

# Comprehensive Curriculum

Revised 2008

## Grade 4
## Science


Louisiana Department of
EDUCATION

Paul G. Pastorek, State Superintendent of Education

# Science Safety Contract

1. I will follow the teacher's written instructions and ask questions if I do not understand what to do.
2. I will not taste, eat, drink, or inhale anything used in science activities unless the teacher tells me to.
3. I will always wear goggles when using chemicals, glass containers, or heat in a science activity.
4. I will keep my hands away from my face, eyes, and mouth during science activities and will wash my hands after lab.
5. I will ask the teacher's permission before I try any experiments on my own.
6. I will tell the teacher if I see something/someone being unsafe.
7. I will tell the teacher immediately if I have an accident or an injury.
8. I know the class emergency plan.

Student Signature _____ Date _____

Dear Parents,

I would like to keep you informed about our effort to create and maintain a safe science classroom/laboratory environment. Your signature indicates that you have read this contract and are aware of my efforts to ensure the safety of your child.

Teacher Signature _____ Date _____

Parent Signature _____ Date _____

## Toy Measurement Chart

**Group Members: _____**

| | Toy Measurements Metric Units | Toy Measurements Standard Units | My Body Measurements Metric Units | My Body Measurements Standard Units |
|---|---|---|---|---|
| Arm Measurement | | | | |
| Leg Measurement | | | | |
| Height Measurement | | | | |

## FILM CANISTER RACING DATA TABLE

| | 10 seeds<br>_____ g | 25 seeds<br>_____ g | 50 seeds<br>_____ g | 100 seeds<br>_____ g |
|---|---|---|---|---|
| Height #1<br>_____ cm | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds |
| | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second |
| Height #2<br>_____ cm | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds |
| | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second |
| Height #3<br>_____ cm | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds | trial #1 _____ seconds<br>trial #2 _____ seconds<br>trial #3 _____ seconds |
| | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second | avg. time _____ seconds<br>Speed _____ cm/second |

# Temperature Effects Data Table

| | Temperature of Water in °C | Time Intervals | Appearance |
|---|---|---|---|
| **Cold Water** | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| **Hot Water** | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| **Sound Mock Lab Data Table** | | |
|---|---|---|
| Substance | Temp (Degrees C) | Speed (m/s) |
| Steel | 20 | 5960 |
| Air | 20 | 343 |
| Water | 20 | 1482 |


| **Sound Mock Lab Data Table** | | |
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FOUR QUESTION STRATEGY PLANNING GUIDE

Topic for Investigation: What affects the pitch of a sound?

Question 1: What materials are readily available for conducting experiments on the pitch of sound?

Question 2: How does the pitch of a sound change?

Question 3: How can I change the set of sound materials to affect the action?

Question 4: How can I measure or describe the response of the pitch of the sound to the change?

FOUR QUESTION STRATEGY PLANNING GUIDE Answer Sheet

Topic for Investigation: What affects the pitch of a sound?

Question 1: What materials are readily available for conducting experiments on the pitch of sound?

*straws, scissors, measuring tape, strings of various thicknesses, rubber bands of various thicknesses, and spring scales*

Question 2: How does the pitch of a sound change?

*The pitch goes higher or lower.*

Question 3: How can I change the set of sound materials to affect the action?

*I can change the length, thickness, or tension of the materials.*

Question 4: How can I measure or describe the response of the pitch of the sound to the change?

*I can describe the change in pitch of the material as going higher or lower.*

Energy Word Grid

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **sound** | | | | | | | | |
| **light** | | | | | | | | |
| **heat** | | | | | | | | |

| Word | + (under-stand well) | √ (limited under-standing or unsure) | -- (don't know) | Example | Definition |
|---|---|---|---|---|---|
| **chlorophyll** | | | | | |
| **photosynthesis** | | | | | |
| **germinate** | | | | | |
| **decomposer** | | | | | |
| **cotyledon** | | | | | |
| **embryo** | | | | | |
| **pollination** | | | | | |
| **carbohydrates** | | | | | |
| **metamorphosis** | | | | | |
| **tuber** | | | | | |
| **bulb** | | | | | |
| **pistil** | | | | | |
| **stamens** | | | | | |

# Here We Grow!

## Plant # _____ Week # _____

| | Height in Inches | Height in Centimeters | Description (color; number of leaves, flowers, or seed pods) |
|---|---|---|---|
| **Day 1** | | | |
| **Day 2** | | | |
| **Day 3** | | | |
| **Day 4** | | | |
| **Day 5** | | | |

## Plant # _____ Week # _____

| | Height in Inches | Height in Centimeters | Description (color; number of leaves, flowers, or seed pods) |
|---|---|---|---|
| **Day 1** | | | |
| **Day 2** | | | |
| **Day 3** | | | |
| **Day 4** | | | |
| **Day 5** | | | |

# *Observing Seeds!*

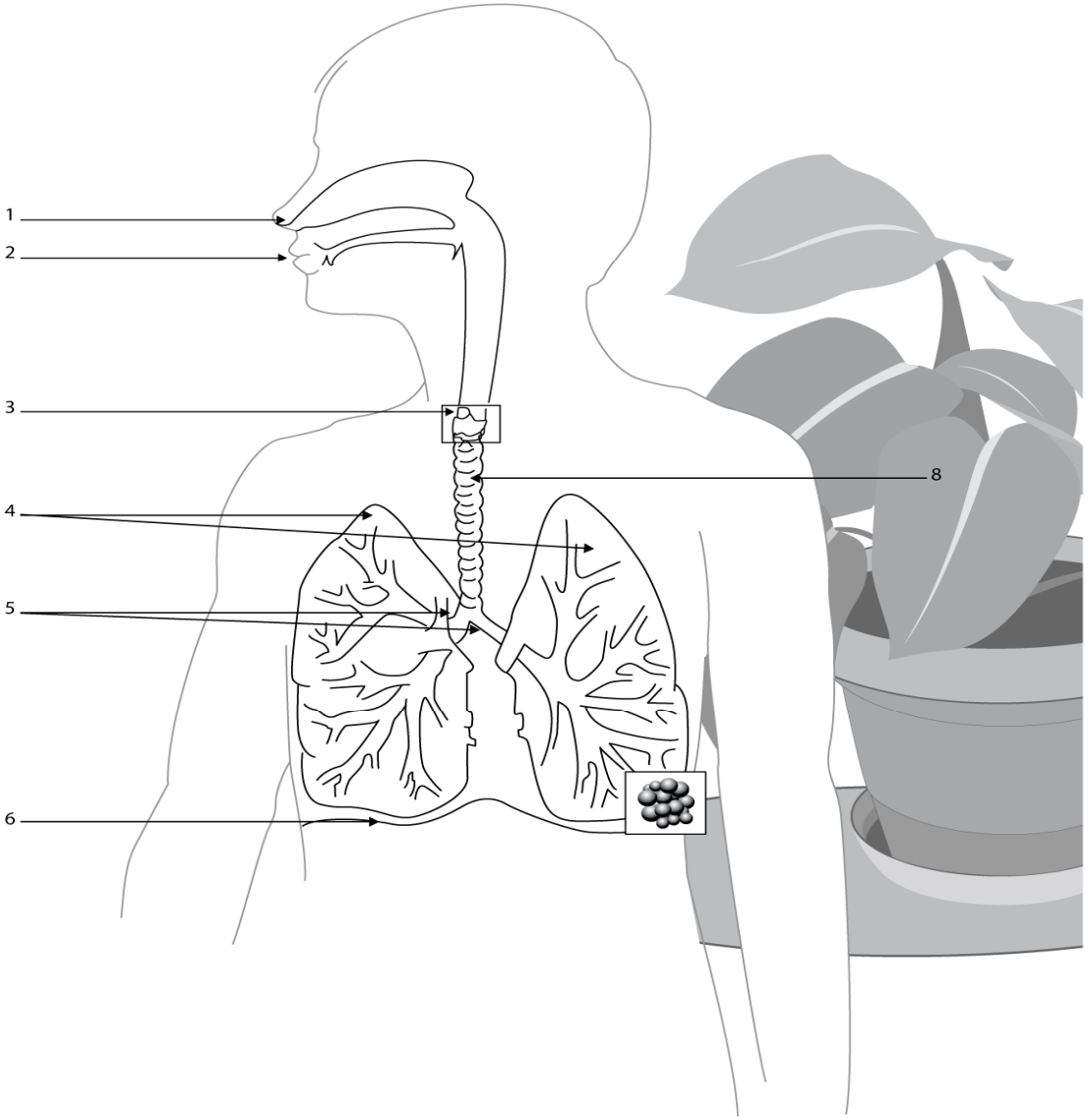
| *Dry Bean* | *Soaked Bean* |
|---|---|
| | |

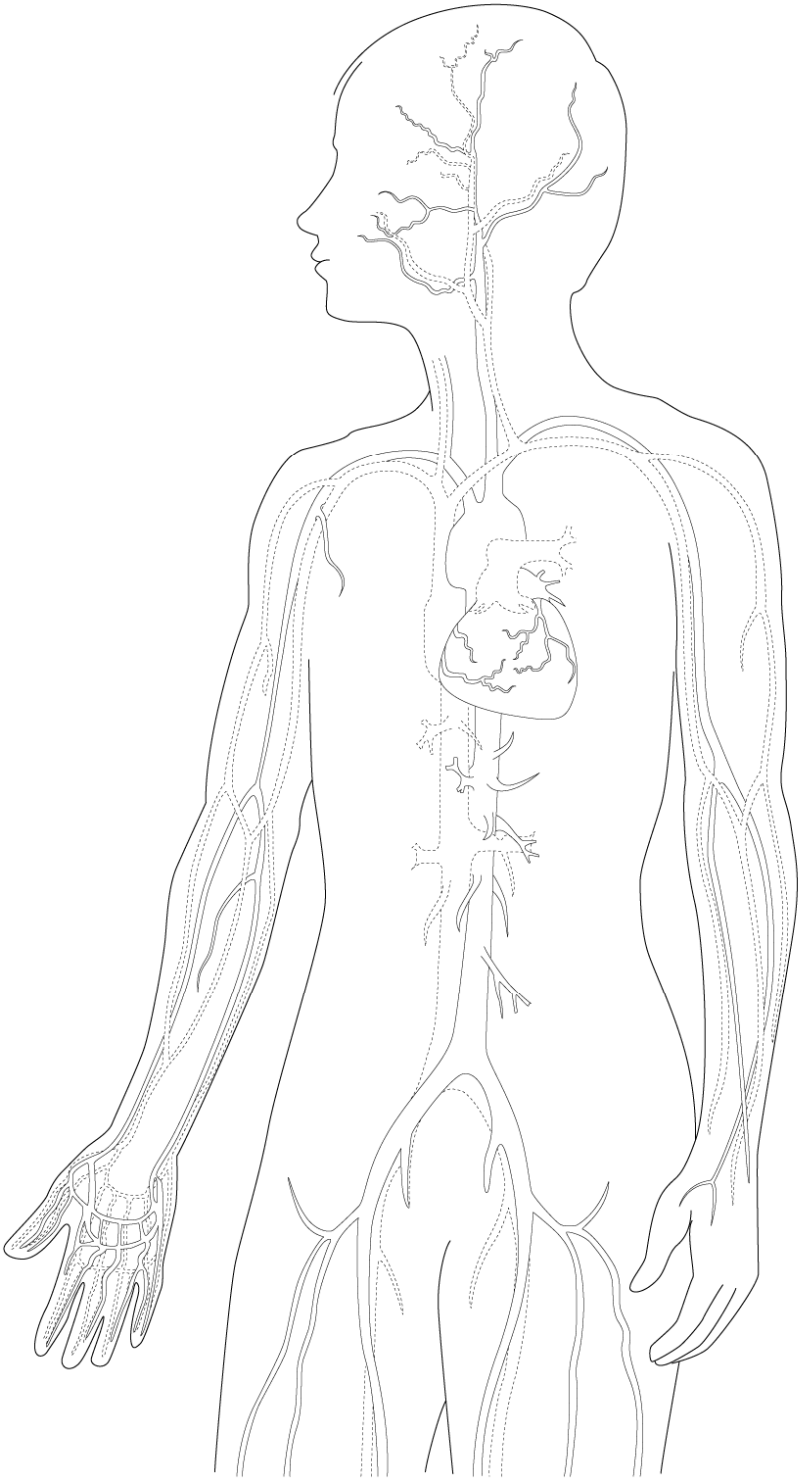
## *Dicot Seed*

Draw a picture and label the parts of your seed.

*Unit 4, Activity 10, Circulatory and Respiratory Vocabulary Self-Awareness Chart*

| Word | + (under-stand well) | √ (limited under-standing or unsure) | -- (don't know) | Example | Definition |
|---|---|---|---|---|---|
| **oxygen** | | | | | |
| **epiglottis** | | | | | |
| **bronchi** | | | | | |
| **diaphragm** | | | | | |
| **trachea** | | | | | |
| **system** | | | | | |
| **veins** | | | | | |
| **arteries** | | | | | |
| **capillaries** | | | | | |
| **pulmonary artery** | | | | | |
| **pulmonary vein** | | | | | |
| **carbon dioxide** | | | | | |


1
2
3
4
5
6
8



*Unit 5, Activity 1, Ecosystem Vocabulary Self-Awareness Chart*

| Word | + (under-stand well) | √ (limited under-standing or unsure) | -- (don't know) | Example | Definition |
|---|---|---|---|---|---|
| **ecosystem** | | | | | |
| **habitat** | | | | | |
| **interdependence** | | | | | |
| **predator** | | | | | |
| **prey** | | | | | |
| **biotic** | | | | | |
| **abiotic** | | | | | |
| **herbivore** | | | | | |
| **carnivore** | | | | | |
| **decomposer** | | | | | |
| **food chain** | | | | | |
| **camouflage** | | | | | |

*Unit 5, Activity 3, Classroom Aquarium Observation Sheet*

**Group Members _____**

**Date _____**

1. **Temperature of the Water _____**
2. **pH of water _____**
3. **How many animals did you see? _____**
4. **Describe the appearance of the plants. _____**

_____

5. **Describe the appearance of the animals. _____**

_____

**Date _____**

1. **Temperature of the Water _____**
2. **pH of water _____**
3. **How many animals did you see? _____**
4. **Describe the appearance of the plants. _____**

_____

5. **Describe the appearance of the animals. _____**

_____

**Date _____**

1. **Temperature of the Water _____**
2. **pH of water _____**
3. **How many animals did you see? _____**
4. **Describe the appearance of the plants. _____**

_____

5. **Describe the appearance of the animals. _____**

_____

*Unit 5, Activity 3, Classroom Terrarium Observation Sheet*

**Date** _____

1. **Temperature** _____
2. **Amount of condensation present** _____
3. **How many animals did you see?** _____
4. **Describe the appearance of the plants.** _____

_____

5. **Describe the appearance of the animals.** _____

_____

**Date** _____

1. **Temperature** _____
2. **Amount of condensation present** _____
3. **How many animals did you see?** _____
4. **Describe the appearance of the plants.** _____

_____

5. **Describe the appearance of the animals.** _____

_____

**Date** _____

1. **Temperature** _____
2. **Amount of condensation present** _____
3. **How many animals did you see?** _____
4. **Describe the appearance of the plants.** _____

_____

5. **Describe the appearance of the animals.** _____

_____

Name _____
Team Members _____

Name of Louisiana Ecosystem _____

1. What types of plants live in your ecosystem?

2. Describe the soil found in your ecosystem.

3. How much water is present in your ecosystem?

4. Is the water in your ecosystem freshwater, saltwater, or brackish? What is the salinity of the water?

5. What are the major animal types that live in your ecosystem?

6. What things threaten to harm your ecosystem?

Name _____ Date _____

Louisiana Animal Report Form

Name of Louisiana Animal _____

Classification (mammal, reptile, insect, invertebrate, etc.) _____

Where does your animal live? _____

_____

What adaptations does your animal have to help it get its food? _____

_____

_____

What adaptations does your animal have to help it hide from its enemies?

_____

_____

What adaptations does your animal have to help it live in its climate?

_____

_____

How does your animal change its habitat to meet its needs? _____

_____

_____

What does your animal eat? _____

_____

What animals eat your animal? _____

_____

Describe the life cycle of your animal. _____

_____

_____

Draw a picture of the life cycle below and label the steps in the cycle:

What does your animal look like? _____

_____

_____

Draw a picture of your animal below and label the basic parts:

Explain how each of your animal's basic body parts helps it to function and survive in its habitat.

# Moh's Scale of Hardness

| Hardness | Mineral | Description |
|---|---|---|
| 1 | Talc | Can be scratched with a fingernail and by a stone rated 2+ |
| 2 | Gypsum | Can be scratched with a fingernail and by a stone rated 3+ |
| 3 | Calcite | Can be scratched with a steel nail and by a stone rated 4+ |
| 4 | Fluorite | Can be scratched with a steel nail and by a stone rated 5+. Will scratch any stone rated 3-. |
| 5 | Apatite | Can be scratched with a steel nail and by a stone rated 6+. Will scratch any stone rated 4-. |
| 6 | Feldspar | Can be scratched with a steel nail and by a stone rated 7+. Will scratch any stone rated 5-. |
| 7 | Quartz | Will scratch glass and any stone rated 6-. Can be scratched by stones 8+. |
| 8 | Topaz | Will scratch glass and any stone rated 7-. Can be scratched by stones 9-10. |
| 9 | Corundum | Will scratch glass and any stone rated 8-. Can be scratched by diamond. |
| 10 | Diamond | Will scratch glass and all stones 1-9. |

| Sample Label | Hardness Order | Texture of Faces | Color | Luster | Effervescence |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Type of Soil | Color | Smear | Texture | Odor | Presence of Organic Matter | Stickiness Test |
|---|---|---|---|---|---|---|
| **Clay** | | | | | | |
| **Sand** | | | | | | |
| **Silt** | | | | | | |
| **Potting Soil** | | | | | | |

Prediction: What do you think will happen when water is added to each of the types of soil?

| Type of Soil | Amount of Water Added | Start Time | Finish Time | Total Amount of Time Water Dripped | pH of Soil | List of plants suitable for growing in soil |
|---|---|---|---|---|---|---|
| **Clay** | | | | | | |
| **Sand** | | | | | | |
| **Silt** | | | | | | |
| **Potting Soil** | | | | | | |

Conclusions: Based on the collected data for soil permeability

1. Which soil is the best suited for growing plants?

2. Why is this soil best suited for growing plants?

| Date | Temperature | Wind Direction | Wind Speed | Wind Pressure | Rainfall Amount | Barometric Pressure |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

*Unit 6, Activity 7, How Angle Spreads Sunlight Data Table*

| Time | Temperature of Perpendicular Paper | Temperature of Angled Paper |
|---|---|---|
| | °C | °C |
| | °C | °C |
| | °C | °C |
| | °C | °C |
| | °C | °C |
| | °C | °C |
| | °C | °C |
| | °C | °C |
| | °C | °C |

Conclusions:

1. Which paper was heated more quickly?

2. What do results of this experiment tell you about how the angle of the sun affects the changes in temperatures on Earth?

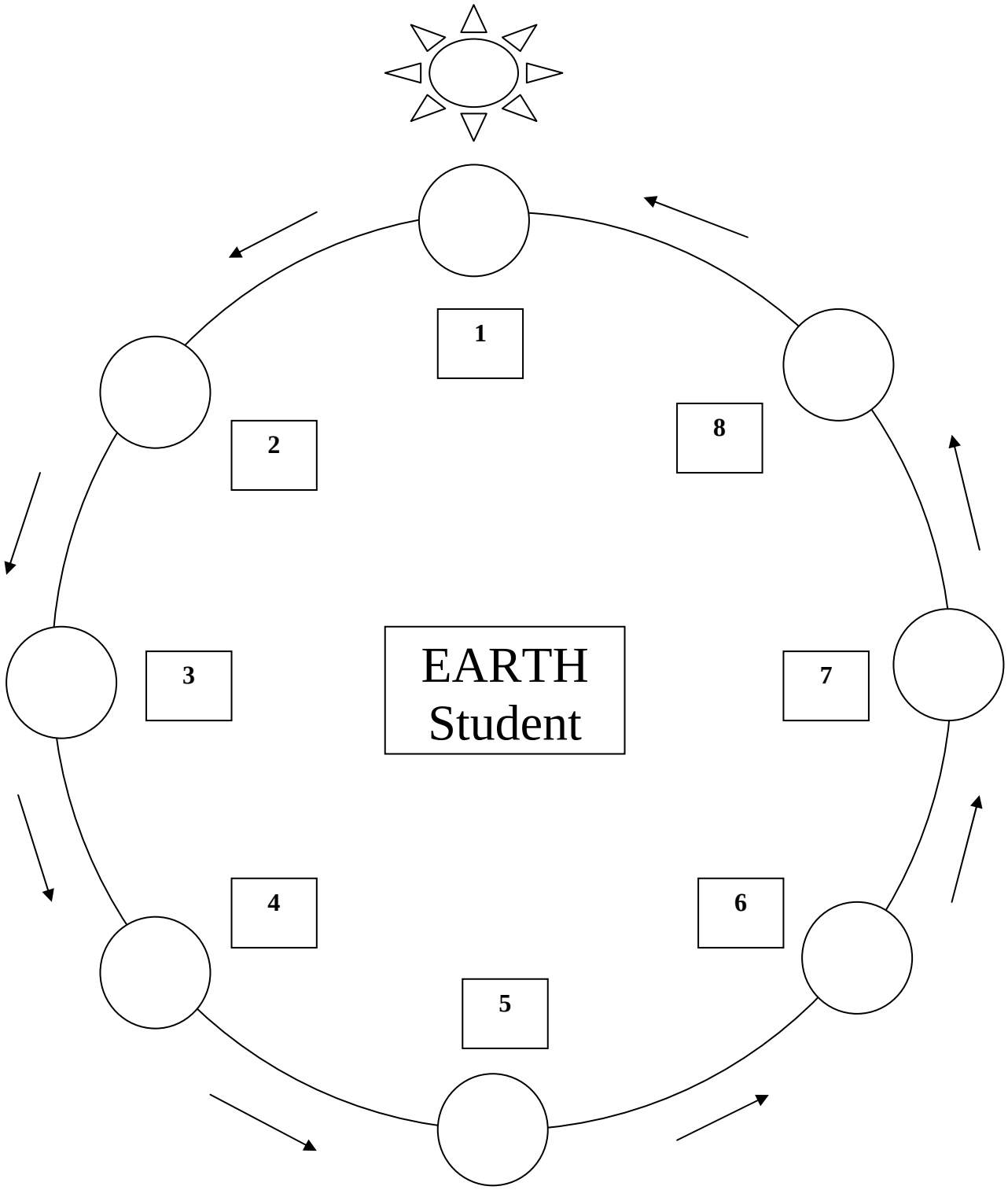
3. What was the angle of the Sun when the temperature dropped?

4. What was the angle of the Sun when the temperature was the highest?

# Moon Calendar

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

# Moon Phases



Name _____

## Amazing Plant Parts

Using the provided resources, answer the following questions about plant parts and their functions:

1. How does a plant get water?

2. How does the water get to the leaves?

3. How does the plant get nutrients?

4. How is light absorbed by a plant?

5. How does the plant get carbon dioxide?

6. How does oxygen get out of the plant?

7. How does a plant get the energy it needs?

**PLANT ADAPTATION BROCHURE**
**A RAFT Writing Project**

**R**ole – Plant
**A**udience – your peers
**F**ormat - brochure
**T**opic – benefits of geotropism and phototropism

**You have been contracted by an advertising company to design and publish a brochure for your peers explaining the benefits of geotropism and phototropism as plant adaptations. You will write your brochure from the perspective of the plant. In the brochure you must include the following information:**

1. Draw and label the basic parts of a plant.

2. Explain the function of each part of the plant.

3. Describe the adaptive processes of geotropism and phototropism.

4. Explain how these adaptations help a plant to survive.

5. Explain to your peers how to shape a plant by periodically turning it.

**Be creative and be neat. Check your spelling, grammar, and punctuation.**

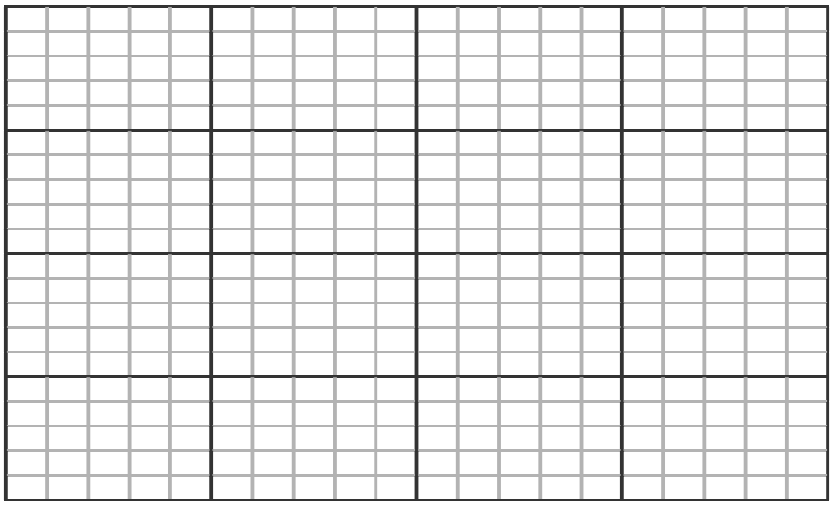
**Your completed project will be due on _____.**

Name _____

Team Members' Names _____

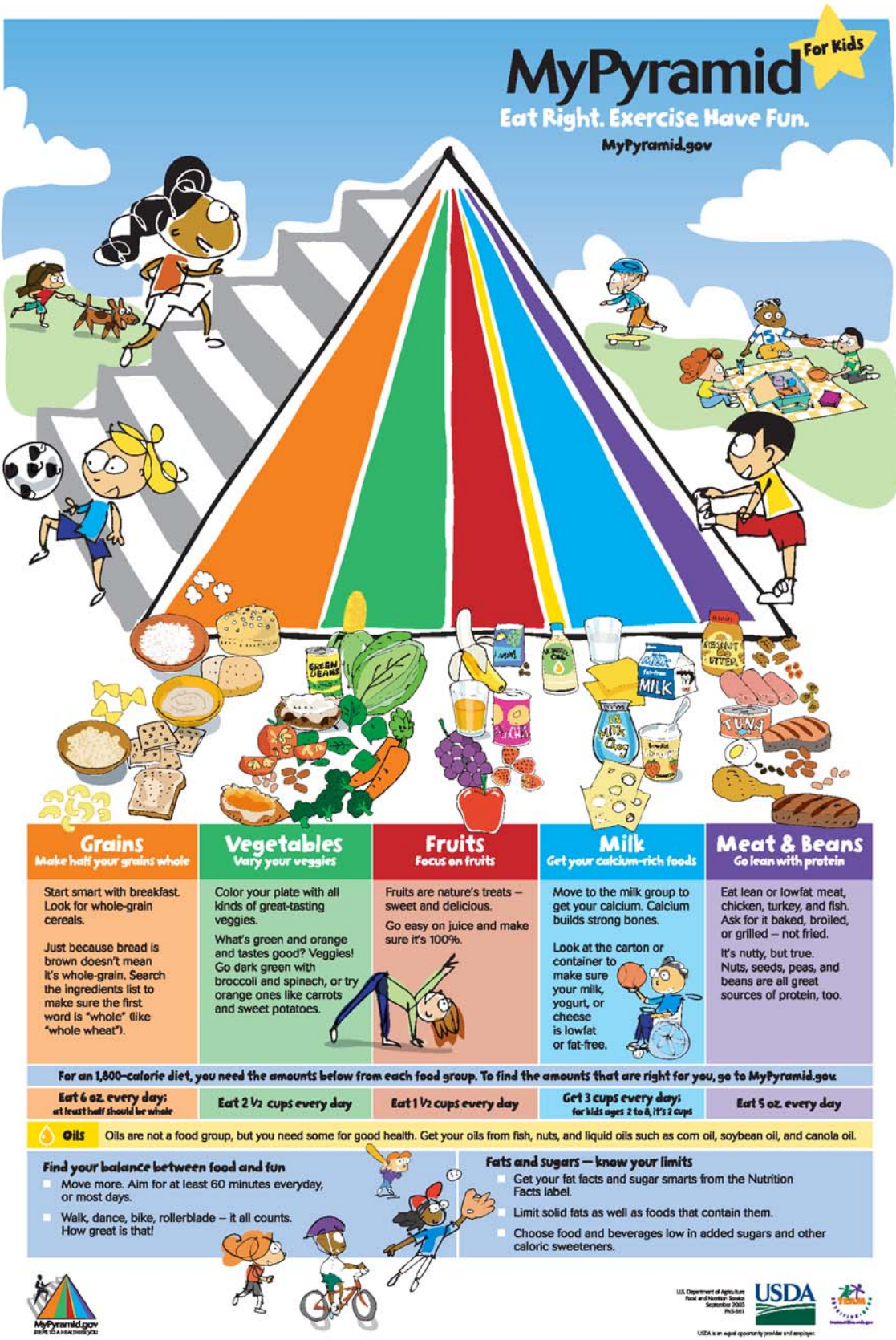
| Team Members' Names | Heart Rate Before Exercise | Heart Rate After 10 Jumping Jacks | Heart Rate After 20 Jumping Jacks | Heart Rate After 30 Jumping Jacks | Heart Rate After 40 Jumping Jacks |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Create a graph of each team member's data below. Use a different colored line for each team member.



Explain how heart rate is related to the number of jumping jacks completed by a person. _____

_____


MyPyramid
For Kids
Eat Right. Exercise. Have Fun.
MyPyramid.gov
Grains
Make half your grains whole
Start smart with breakfast. Look for whole-grain cereals.
Just because bread is brown doesn't mean it's whole-grain. Search the ingredients list to make sure the first word is "whole" (like "whole wheat").
Vegetables
Vary your veggies
Color your plate with all kinds of great-tasting veggies.
What's green and orange and tastes good? Veggies! Go dark green with broccoli and spinach, or try orange ones like carrots and sweet potatoes.
Fruits
Focus on fruits
Fruits are nature's treats – sweet and delicious.
Go easy on juice and make sure it's 100%.
Milk
Get your calcium-rich foods
Move to the milk group to get your calcium. Calcium builds strong bones.
Look at the carton or container to make sure your milk, yogurt, or cheese is lowfat or fat-free.
Meat & Beans
Go lean with protein
Eat lean or lowfat meat, chicken, turkey, and fish. Ask for it baked, broiled, or grilled – not fried.
It's nutty, but true. Nuts, seeds, peas, and beans are all great sources of protein, too.
For an 1,800-calorie diet, you need the amounts below from each food group. To find the amounts that are right for you, go to MyPyramid.gov
Eat 6 oz. every day; at least half should be whole
Eat 2 ½ cups every day
Eat 1 ½ cups every day
Get 3 cups every day; for kids ages 2 to 8, it's 2 cups
Eat 5 oz. every day
Oils
Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.
Find your balance between food and fun
Move more. Aim for at least 60 minutes everyday, or most days.
Walk, dance, bike, rollerblade – it all counts. How great is that!
Fats and sugars – know your limits
Get your fat facts and sugar smarts from the Nutrition Facts label.
Limit solid fats as well as foods that contain them.
Choose food and beverages low in added sugars and other caloric sweeteners.
MyPyramid.gov
USDA

# MyPyramid Worksheet

Name: _____

MyPyramid FOR KIDS

**Check how you did yesterday and set a goal to aim for tomorrow**

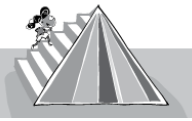
| Write In Your Choices From Yesterday | Food and Activity | Tip | Goal (Based On a 1800 Calorie Pattern) | List Each Food Choice In Its Food Group* | Estimate Your Total |
|---|---|---|---|---|---|
| Breakfast: | Grains  | Make at least half your grains whole grains. | **6 ounce equivalents** (1 ounce equivalent is about 1 slice bread, 1 cup dry cereal, or ½ cup cooked rice, pasta, or cereal) | | ____ ounce equivalents |
| Lunch: | Vegetables  | Color your plate with all kinds of great tasting veggies. | **2½ cups** (Choose from dark green, orange, starchy, dry beans and peas, or other veggies). | | ____ cups |
| Snack: | Fruits  | Make most choices fruit, not juice. | **1½ cups** | | ____ cups |
| Dinner: | Milk  | Choose fat-free or lowfat most often. | **3 cups** (1 cup yogurt or 1½ ounces cheese = 1 cup milk) | | ____ cups |
| Physical activity: | Meat and Beans  | Choose lean meat and chicken or turkey. Vary your choices—more fish, beans, peas, nuts, and seeds. | **5 ounce equivalents** (1 ounce equivalent is 1 ounce meat, chicken or turkey, or fish, 1 egg, 1 T. peanut butter, ½ ounce nuts, or ¼ cup dry beans) | | ____ ounce equivalents |
| | Physical Activity  | Build more physical activity into your daily routine at home and school. | At least **60 minutes** of moderate to vigorous activity a day or most days. | | ____ minutes |

How did you do yesterday? ☐ Great ☐ So-So ☐ Not So Great

My food goal for tomorrow is: _____

My activity goal for tomorrow is: _____

* Some foods don't fit into any group. These "extras" may be mainly fat or sugar—limit your intake of these.



**Macaroni & Cheese**

# Nutrition Facts

Serving Size 1 cup (228g)
Serving Per Container 2

**Amount Per Serving**

| | |
|---|---|
| **Calories** 250 | Calories from Fat 110 |
| | **% Daily Value*** |
| **Total Fat** 12g | **18%** |
| Saturated Fat 3g | **15%** |
| Trans Fat 3g | |
| **Cholesterol** 30g | **10%** |
| **Sodium** 470mg | **20%** |
| **Total Carbohydrate** 31g | **10%** |
| Dietary Fiber 0g | **0%** |
| Sugars 5g | |
| **Protein** 5g | |
| Vitamin A | **4%** |
| Vitamin C | **2%** |
| Calcium | **20%** |
| Iron | **4%** |

*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

| | **Calories:** | **2,000** | **2,500** |
|---|---|---|---|
| Total Fat | Less than | 65g | 80g |
| Sat Fat | Less than | 20g | 25g |
| Cholesterol | Less Than | 300mg | 300mg |
| Sodium | | 2,400mg | 2,400mg |
| Total Carbohydrate | | 300g | 375g |
| Dietary Fiber | | 25g | 30g |