KCS @ home

Fourth Grade
Math

Week of April 27, 2020
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KCS @ home

4th Grade Math Week 4

Read this problem about multiplying multi-digit numbers. Then look at Beau's solution to this problem.

Worm Farm

Beau likes to recycle. He wants to start a worm farm where he can recycle kitchen scraps from people in his neighborhood. He gathers this information.

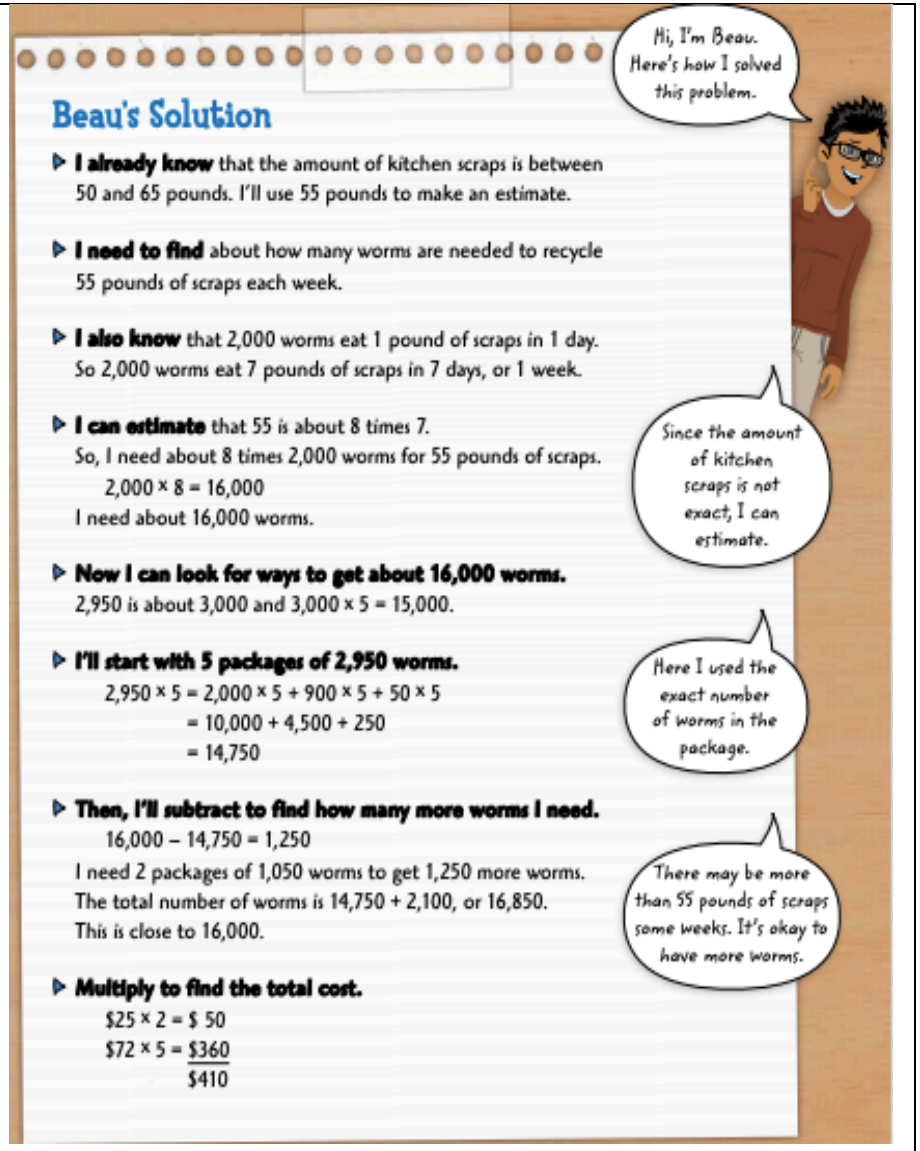
My Data

- 2,000 worms can eat about 1 pound of food in 1 day.
- I can collect 50 to 65 pounds of scraps each week.

Show how to find the number of worms Beau needs for this amount of scraps.

- Tell how many and what size packages Beau can buy to get this many worms.
- Give the total cost of buying the worms.

Look at Beau's solution on the next page. There are many ways to solve the problem.
How might you solve it in a different way?
How could you make a design with no space between the buttons?



Read the problem. Write a solution on a separate sheet of paper. Remember, there are lots of ways to solve a problem!

Recycle It

Because of his composting work, Beau decided to start other recycling projects. He wants to promote recycling in his neighborhood. This is the slogan he will use to start a recycling campaign.

> Everyone can recycle at least 30 pounds of waste in 3 months!

Beau weighs different items that can be recycled. Here are some items he found that weigh about 1 pound:

3 medium-size cardboard boxes

105 sheets of printer paper

24 empty plastic water bottles

32 empty aluminum cans

Help Beau write a report to show ways people can recycle 30 pounds of waste in 3 months.

Plan It and Solve It Find a solution to Beau's Recycle It problem.

Use Beau's information.

- Use a combination of at least two of the items on the list.
- Explain how a person could recycle at least 30 pounds of waste in 3 months with these items.

You may want to use the problem-solving tips to get started.

Problem-Solving Tips

Questions

- What are some different ways you can combine two or three weights to have a sum of 30 pounds?
- How can you find the number of a type of item it takes to make each of these weights?

Sentence Starters

- If you recycle _____ plastic bottles, you _____
- If you add the weights of all the items, _____

Problem-Solving Checklist

Make sure that you . . .

- ☐ tell what you know.
- ☐ tell what you need to do.
- ☐ show all your work.
- ☐ show that the solution works.

Reflect

Use Mathematical Practices As you work through the problem, discuss these questions with a partner.

- **Use Tools** What methods can you use to find the numbers you need in your solution?
- **Be Precise** How can you make sure that your solution shows the meaning of all the numbers in it?

Read the problems. Write a solution on a separate sheet of paper. Remember, there are many different ways to solve a problem!

Rainwater Recycling

Beau's report about recycling was very popular. He decides to write a similar report about recycling rainwater. He will post both reports on the bulletin board at the Community Center. Here is some information Beau found about this topic.

Information About Recycling Rainwater

- A 1,000 square foot roof can collect 620 gallons of water when 1 inch of rain falls.
- The typical rainfall in our area is 3 inches per month.
- It takes about . . .
  - 50 gallons to water a 200 square foot garden.
  - 62 gallons to water a 100 square foot area of lawn.
  - 55 gallons of water to wash a car.

What should Beau include in his report to convince people in the area to collect rainwater?

Solve It

Help Beau write a report about recycling rainwater.

- Find the amount of water that a homeowner could collect in one month.
- Write a 1 paragraph report to convince people to save water.
- Tell at least two things that could be done with the rainwater.

Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Use a Model** How could you use equations to find the numbers you need for the report?
- **Be Precise** How did you make sure that readers will see the different measurements in your report?

Recycled Robots

Beau started his first recycling project a long time ago. He has been collecting broken robots. He recycles the broken parts and keeps the good parts. Beau needs to sort the parts and put them into storage bins.

Beau does not want to mix any of the parts in the same bin. He wants each bin to have no more than 100 items in it. Beau also wants to have close to the same number of items in each bin.

My Robot Parts

Fuses..... 216
Switches 178
Pieces of Wire..... 332
Screws 426

fuse

switch

wire

screw

How could Beau sort his parts into the bins?

Solve It

Suggest a way that Beau could arrange the robot parts in bins.

- Find how many bins are needed for each type of part.
- Tell how many parts to put in each bin.
- Show that your arrangement includes every kind of part and the total number of parts on the list.

Reflect

Use Mathematical Practices After you complete the task, choose one of these questions to discuss with a partner.

- **Use Structure** Beau wants to have close to the same number of items in each bin. How did you decide how many this should be?
- **Make Sense of Problems** How could you use estimation to check that your answer is reasonable?

Possible Solutions

Worm Farm

I know that 2,000 worms eat about 1 pound of scraps a day and I have about between 50 and 65 pounds of scraps each week. So, if I have 63 pounds a week, that's 9 pounds a day because 9 pounds a day $\times$ 7 days = 63 pounds in a week.

So I need enough worms to eat 9 pounds a day. That's $2{,}000 \times 9 = 18{,}000$ worms.

If I buy 10 of the \$25 bags, that's $1{,}050 \times 10 = 10{,}500$ worms. I still need $18{,}000 - 10{,}500 = 7{,}500$ worms. 3 of the \$72 bags give me $3 \times 2{,}950 = 8{,}850$ worms.

So I have $10{,}500 + 8{,}850 = 19{,}350$ worms.

The bags cost:

$3 \times \$72 = \$216$

$10 \times \$25 = \$250$

total = \$466

Recycle It

I need to write a report about recycling at least 30 pounds of waste in 3 months, using at least 2 items. $10 + 20 = 30$, so I will use 10 pounds of cans and 20 pounds of boxes.

1 pound is about 32 cans, so 10 pounds is about $10 \times 32 = 320$ cans. 1 pound is about 3 boxes, so 20 pounds is about $20 \times 3 = 60$ boxes.

Here is my report.

"It is easy to recycle! You can collect empty aluminum cans and medium-size cardboard boxes. 60 boxes equal 20 pounds of recycling. Then collect 320 cans to recycle 10 more pounds. That's a total of 30 pounds."

Rainwater Recycling

From the water that comes off the roof of a house, you can collect 620 gallons in a 1-inch rainfall. So you could collect $620 \times 3 = 1{,}860$ gallons in a typical month.

It takes about 62 gallons to water 100 square feet of lawn, so you could water a 1,000 square-foot area of lawn with 620 gallons and a 3,000 square-foot area with 1,860 gallons.

It takes 55 gallons to wash a car, so you could wash a car $1{,}860 \div 55 = 33$ times and have 45 gallons left over. You could wash 3 cars 4 times in a month (once a week) for $55 \times 12 = 660$ gallons. That would leave $1{,}860 - 440 = 1{,}420$ for the lawn.

Then I can water 1,000 square feet twice for $620 \times 2 = 1{,}240$ gallons. I still have 180 gallons left over. So I could wash 3 more cars. $55 \times 3 = 165$. I would still have $180 - 165 = 15$ gallons left.

Here's my report. "You can collect 1,860 gallons of rainwater in an average month. All you have to do is let water run off your roof into a barrel. You could wash 3 cars every week for a month and still wash 3 more cars once each. You would also be able to water about 1,000 square feet of lawn twice. And all this water didn't cost a thing!"

Recycled Robots

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Fourth Grade
Social Studies

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4th Grade Social Studies
Westward Expansion

John Gast, American Progress, 1872

***There will be a short video lesson of a Knox County teacher to accompany this task available on the KCS YouTube Channel and KCS TV.**

Analyze the painting, thinking about the following questions. Use a piece of notebook paper, the back of this paper, or a Google doc to answer the questions.

1) What newer inventions do you notice in the painting?

2) What modes of transportation are people using to go in that direction?

3) How do you think these inventions helped with Manifest Destiny and people moving west?

4) What do you notice about the direction that everything is going in? Why do you think that is?

5) What do you notice about the types of people that are in painting?

6) Do you think all the people will be doing the same thing when they go in that direction? Explain your thinking.

7) Why do you think that your eye is drawn to the lady in the middle of the picture? Who does she represent?

8) What is the lady holding in her hand? Why is she holding it?

Fourth Grade
ELA

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Grade 4.ELA.Week 4

There will be a short video lesson of a Knox County 4th Grade Teacher to accompany this text available on the KCS YouTube Channel and KCS TV.

TOPIC: Mysteries and Puzzles - Sleuth Tips and Letter

ESSENTIAL QUESTION: Why do animals behave the way they do?

TEXT: "Becoming an Animal Expert"

Discuss what you might remember about the key vocabulary and ideas before reading. Revisit them after reading to see if you learned any new information: animal behavior scientists, how they become experts, famous animal experts

Extension Activities for "Becoming an Animal Expert"

Directions: Can you work through some of these to get 3 in a row like Tic Tac Toe?

GATHER EVIDENCE *Morphology:* Suffix hunt Find all the words in the text that have a suffix that means "someone who" and sort them by suffix. Challenge: Look for other words that contain those suffixes throughout the week. -ist, -er, -or, -ian	**ASK QUESTIONS** *Interview*: Think of a person who works with animals. Create at least 5 questions to interview them. Use what you learned from *Becoming an Animal Expert.* Challenge: Have someone in your home pretend to interview you, the animal expert, using your questions.	**GATHER EVIDENCE** *Parts of speech:* Noun Hunt (person, place, thing, or idea) Sort into common and proper nouns. Challenge: Find any pronouns (nouns that replace nouns) and identify who/what they are replacing.
MAKE YOUR CASE *Opinion*: Do you think you would make a good animal behavior scientist one day? Use evidence from the text to support your opinion. Reminder: Think OREO - Opinion, Reasons, Evidence, and Opinion.	**PROVE IT** *Research*: Reread paragraph 7. Choose one of the famous animal behavior specialists to research with an adult. Create a visual or poster of what you have learned.	**PROVE IT** *Summary*: Infer what type of person would become an animal expert. Use text evidence to support your inference.
GATHER EVIDENCE: *Research:* Several zoos offer animal video streams: ● Cincinnati Zoo ● Monterey Bay Aquarium ● Explore.org (live nature cams) ● Smithsonian National Zoo Watch some animals and make observations about their behaviors and habitats.	**MAKE YOUR CASE:** *Record yourself:* Using someone's phone, ipad, computer, etc.: Record yourself advertising animal experts and try to persuade others to become animal experts.	**PROVE IT:** *Science Connection:* Paragraph 7: "These scientists understood and continue to understand that all living creatures are linked together on our planet." Create a food web that contains an animal you have read about recently. Be sure to include **at least** 5 examples.

Fourth Grade
Science

knoxschools.org/kcsathome

4th grade Science: Week 4 April 27th
Creating a Dinosaur Food Web

Part 1: Review key vocabulary terms and content

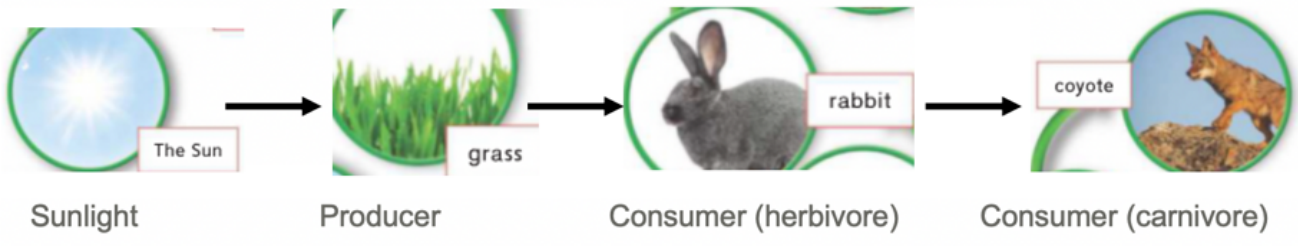
Roles of Organisms in an Ecosystem:
An ecosystem consists of living organisms (such as plants and animals) and nonliving organisms (such as water, air, rocks, and sunlight). All living organisms need energy in order to live. Depending on how an organism gets its energy, it will be classified as a producer, consumer, or decomposer.

Producers: Plants are producers; they get their energy from the sun. Plants use light energy to make sugars out of water and carbon dioxide. This process is called photosynthesis.

Consumers: They survive on consuming the energy produced by other organisms. They eat plants and/or animals. There are 3 different types of consumers depending on what they eat:
- ***Herbivores** eat only plants. Some examples are cows and small birds.
- ***Carnivores** eat other animals. Some examples are coyotes, wolves, and sharks.
- ***Omnivores** consume both plants and animals. Some examples are black bears and raccoons.

Decomposers: These organisms get their energy by breaking down dead plants and animals into nutrients. These nutrients usually remain in the soil where they can be later used by other organisms. Bacteria, fungi (ex. Mushrooms), and earthworms are decomposers.

Food Chains:
A food chain is a model that shows us how energy and nutrients are passed from one organism to another in an ecosystem. Almost all food chains begin with the sun. The sun's energy is then passed to the producers (plants), that energy is then passed to a consumer, and then energy may be passed to another consumer. All food chains end with decomposers. Below is an example of a grasslands food chain. Food chain models always use arrows to show how the energy flows through the ecosystem. The arrow starts at where the energy comes from and points to who gets the energy. For example, the rabbit is eaten by the coyote, so the energy (arrow) starts at the rabbit and is pointed toward the coyote.

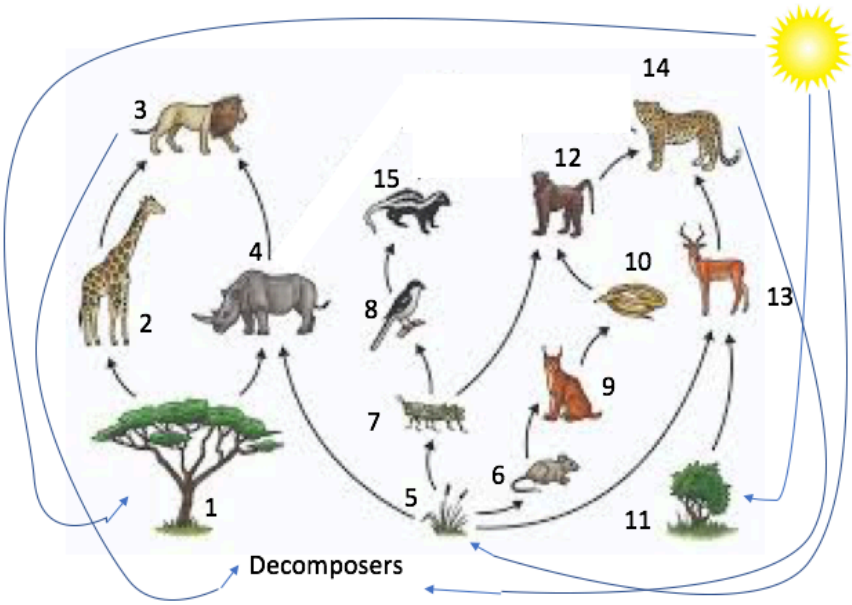


Picture source: McGraw Hill Education-Inspire Science

Food Webs:

Food webs show the overlap of food chains in an ecosystem. Food webs represent the flow of energy in many different food chains that are present at the same time in an ecosystem. Organisms may be part of multiple food chains. Picture source: https://www.flickr.com/photos/121935927@N06/13578885414

1. What are the producers in the food web? *#1, #5, and #11*
2. What eats the grasshopper (#7)? *The bird (#8) and monkey (#12) eat the grasshopper because the arrows start from the grasshopper and points to them.*
3. Name a food chain:
   #5 (producer), #7 (omnivore), #12 (omnivore), #14 (carnivore), decomposer
   *Remember, start at the producer and follow the arrows until they stop.



Part 2: Create a Dinosaur Food Web

Materials Needed:	*Optional:*
*food web cards (included after these directions) *scissors *string, strips of paper, etc. (to connect the organisms)	*poster board, glue, and markers *chalk

Activity Explanation:

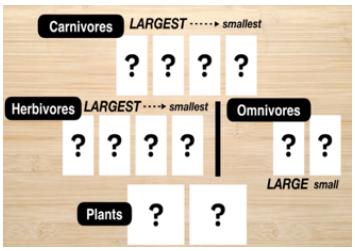
You are going to make a food web from the time of the dinosaurs. You will use the set of cards included in this activity packet. The cards contain animals from the Cretaceous Period. Since you are making a food web, you will connect animals to everything they eat. Organisms may be part of several different food chains.

You can place the cards on a table and connect them using string, strips of paper, etc. You can make a poster and glue the cards and draw the arrows. You can draw the food web outside using chalk! It's your choice!

Directions:

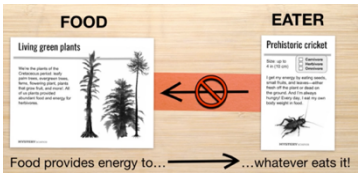
1. Cut the cards along the dotted line.
2. Read each animal card and mark them as carnivore, herbivore, omnivore, or decomposer.
3. Sort them into those groups and set any remaining cards to the side for now.

4.Organize your cards from largest to smallest in each category. The picture to the right is an example.



Picture source; https://mysteryscience.com/ecosystems/mystery-6/food-webs-flow-of-energy/212?code=NDEwMDY3MDQ&t=student

5. Begin by placing the T-rex at the top of your food web.
6. Place the' Living green plants' card and 'Dead plants & dead animals' card at the bottom of the web.
7. Decide what T. rex ate by reading its card. Use your paper strips, markers, or string to connect the T. rex to everything that you decided it would eat. **Hint:** T-rex ate 4 of these organisms.
8. Use your material to connect the rest of the animals with everything they eat.
9. Add arrows to show how each organism gets its energy. The arrows will point from food to the animal that eats it.
10. Connect the sunlight card to the living plants. Draw an arrow to show the flow of energy. Make sure each card is connected to the food web in some way. There are several possible answers! Congratulations, you did it!



Picture source;
https://mysteryscience.com/ecosystems/mystery-6/food-

Part 3: What happened to the dinosaurs?

You have probably heard many theories about what caused the dinosaurs to become extinct. Using evidence scientists have collected throughout many years, they believe that an asteroid was the cause. At first, dinosaurs that did not live in the area of where the asteroid hit survived. However, the sky would have been filled with burning ash. As this asteroid dust moved through the atmosphere, it would have blocked out a lot of sunlight. This caused the ground to be cold and dark. With so little sunlight, plants cannot get as much energy from the sun, and many of them will wilt and die. So, let's use this knowledge and our food web to see how dinosaurs became extinct!

Directions:

1. *Cover the sunlight card*. Dust from the asteroid blocked out the sunlight.
2. *Cover the plants*. Green plants need the sun to make their own food. Many plants died.
3. *Cover any organisms that eat the LIVING green plants ONLY*. If they eat living plants and dead plants, do not cover them.
4. *Continue to cover each organism that is part of a green plant's food chain.* **Hint:** There will be 6 cards not covered.

Questions:

1. Which animals are uncovered? Do you recognize any of the names?
2. Why was the Tyrannosaurus rex unable to survive?
3. Why were some organisms able to survive and others were not?

MYSTERY science

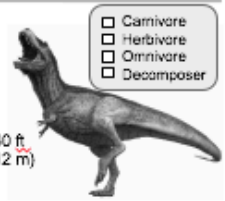
Web of Life | Mystery 6

DINO DIE-OFF

a food web model

Tyrannosaurus rex

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer



Size: 40 ft long (12 m)

I get my energy by eating other dinosaurs. I like to munch on *Triceratops* or duckbill dinosaurs —but I'll eat smaller ones, too. I'm big, so I need a lot of food to keep going.

MYSTERY science

Didelphodon

Size: 14 in long (35 cm)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

I'm a mammal! I get my energy by eating crickets, beetles, and worms. I have jaws that will crunch through turtle shell. I also eat berries, if they're available.

MYSTERY science

Duckbill dinosaur

(Corythosaurus)

Size: 32 ft long (10 m)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

I get my energy by eating twigs, leaves, and seeds from living plants. I always keep an eye out for *Tyrannosaurus*, who thinks I make a good snack.

MYSTERY science

Earthworm

Size: up to 8 in (20 cm)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

I get my energy from rotting wood, dead leaves, and rotting animals. I burrow underground.

MYSTERY science

Dracorex hogwartsia

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

Size: 13 ft long (4 m)

I get my energy from leaves, seeds, and fruits of living plants. My name means "dragon king of Hogwarts." I got my name when the scientists who found my skull in 2016 donated me to a museum.

MYSTERY science

Prehistoric turtle

(Compsemys)

Size: 12 in (30 cm)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

I get my energy by eating worms and crickets. Like modern turtles, I can hibernate underwater when the weather is cold.

MYSTERY science

Dryptosaurus

Size: 21 ft long (6.4 m)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

I get my energy from eating other dinosaurs. I hunt plant eaters that are my size or a little bit bigger.

MYSTERY science

Triceratops

Size: 30 ft long (9 m)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

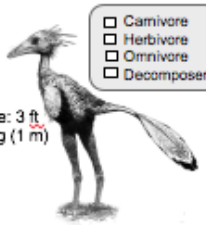
I get my energy by munching on living plants. And I'm big, so I need a lot of food to keep going. That means a lot of plants. Good thing that palm trees grow so well around here.

MYSTERY science

Sinornithoides

Size: 3 ft long (1 m)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer



I've got feathers. If you saw me, you'd probably say I was a bird. I get my energy by eating worms and crickets and other small animals.

MYSTERY science

Prehistoric cricket

Size: up to 4 in (10 cm)

☐ Carnivore
☐ Herbivore
☐ Omnivore
☐ Decomposer

I get my energy by eating seeds, berries, and leaves—either fresh off the living plant or dead on the ground. And I'm always hungry! Every day, I eat my own body weight in food.

MYSTERY science

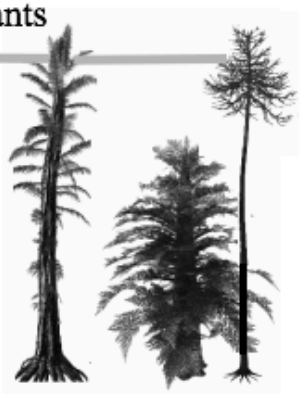
Sunlight

I'm the sun. My light and heat are both forms of energy. Every living thing—from palm trees to *Tyrannosaurus*—needs energy to move, to grow, to stay warm, and to heal when they are injured.

MYSTERY science

Living green plants

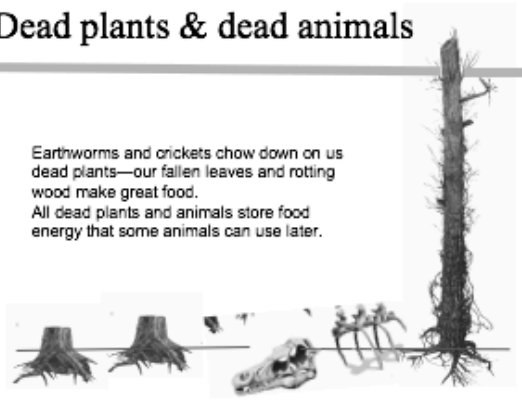
We're the plants of the Cretaceous period: leafy palm trees, evergreen trees, ferns, flowering plants, plants that grow berries, and more! All of us plants provide abundant food and energy for herbivores.



MYSTERY science

Dead plants & dead animals

Earthworms and crickets chow down on us dead plants—our fallen leaves and rotting wood make great food.
All dead plants and animals store food energy that some animals can use later.



MYSTERY science