SCIENCE NOTEBOOK

FOSS

STRUCTURES OF LIFE

3RD GRADE

SCIENCE NOTEBOOK

FOSS

STRUCTURES OF LIFE

3RD GRADE

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Comparing Seeds

How are seeds alike and different?

Name of fruit	Drawing or sample of seeds
Number of seeds	
Characteristics of seeds	

Name of fruit	Drawing or sample of seeds
Number of seeds	
Characteristics of seeds	

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Name of fruit	Drawing or sample of seeds
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Characteristics of seeds	

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Structures of Life Module
Investigation 1: Origin of Seeds
No. 1—Notebook Master

Focus Question How are seeds alike and different?	Focus Question How are seeds alike and different?

The Sprouting Seed

My seed is called _____ .

Drawings	Observations of sprouting seeds
Date_____	
Date_____	
Date_____	
Date_____	
Date_____	

The Sprouting Seed

My seed is called _____ .

Drawings	Observations of sprouting seeds
Date_____	
Date_____	
Date_____	
Date_____	
Date_____	

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Structures of Life Module
Investigation 1: Origin of Seeds
No. 2—Notebook Master

Response Sheet—Investigation 1

A student is keeping a record of her sprouting seeds. She will use the recorded data to answer the focus question: What effect does water have on seeds?

Below are some of her observations.

Date	Observations of sprouting seeds
	Nothing yet.
	It is swollen.
	They are growing.

1. Suggest to this student specific ways she can improve her notebook entries.

2. Why is it important for scientists to record their observations?

3. Describe how the answer to this focus question deals with cause and effect.

Response Sheet—Investigation 1

A student is keeping a record of her sprouting seeds. She will use the recorded data to answer the focus question: What effect does water have on seeds?

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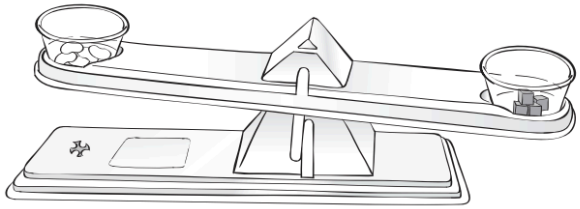
Structures of Life Module
Investigation 1: Origin of Seeds
No. 3—Notebook Master

Focus Question What effect does water have on seeds?	Focus Question What effect does water have on seeds?

The Soaked Seed

Put the five seeds here. Add mass pieces here.



Day 1

Mass of the five dry seeds _____

Trace one dry seed here.

Day 2

Mass of five soaked seeds _____

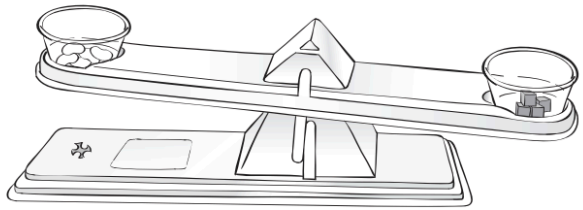
Trace one soaked seed here.

How much water did the seeds soak up?

How else have the seeds changed?

The Soaked Seed

Put the five seeds here. Add mass pieces here.



Day 1

Mass of the five dry seeds _____

Trace one dry seed here.

Day 2

Mass of five soaked seeds _____

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How much water did the seeds soak up?

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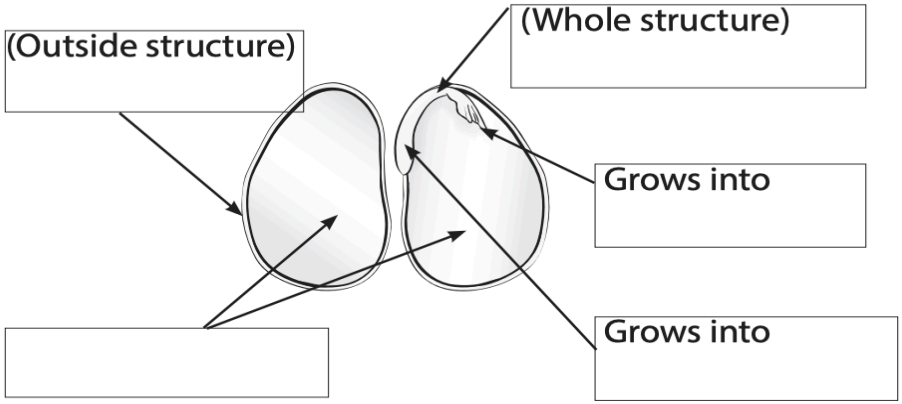
Structures of Life Module
Investigation 1: Origin of Seeds
No. 4—Notebook Master

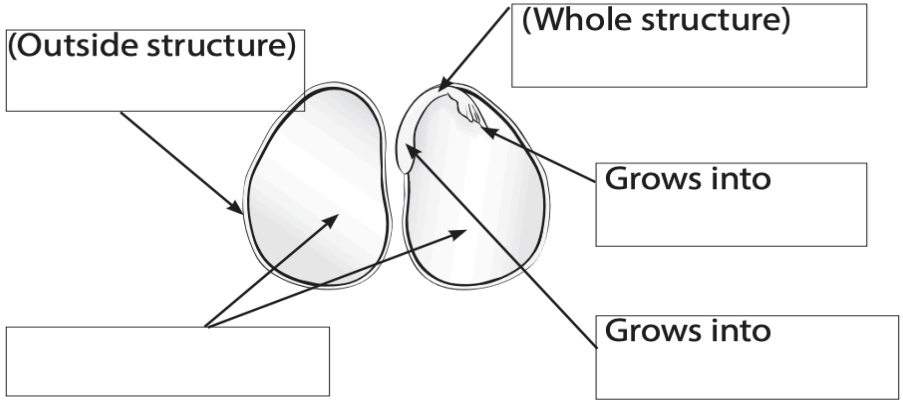
Seed Structures

What structures are inside a soaked seed? What are the functions of those structures?



Seed Structures

What structures are inside a soaked seed? What are the functions of those structures?



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Structures of Life Module
Investigation 1: Origin of Seeds
No. 5—Notebook Master

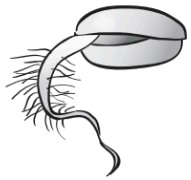
Focus Question How much water does a seed soak up?	Focus Question How much water does a seed soak up?

Focus Question How do seeds disperse away from the parent plant?	Focus Question How do seeds disperse away from the parent plant?

Response Sheet—Investigation 2

Look at the picture and entries from a student's notebook.

Notebook Entry 1



My seed has begun to grow. I think the thing coming out of the split seed is the stem. It will begin to grow up in a few more days. Later, the root will begin to grow.

1. Do you agree that it is the stem that is growing? Why or why not?

Notebook Entry 2

When the root grows, it is its job to take in food for the plant so it can get bigger.

2. This student's understanding of the root's function is not correct. Write a better description of what the roots do for a plant.

Notebook Entry 3

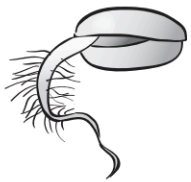
The seed is alive.

3. What evidence does the student have that the seed is living?

Response Sheet—Investigation 2

Look at the picture and entries from a student's notebook.

Notebook Entry 1



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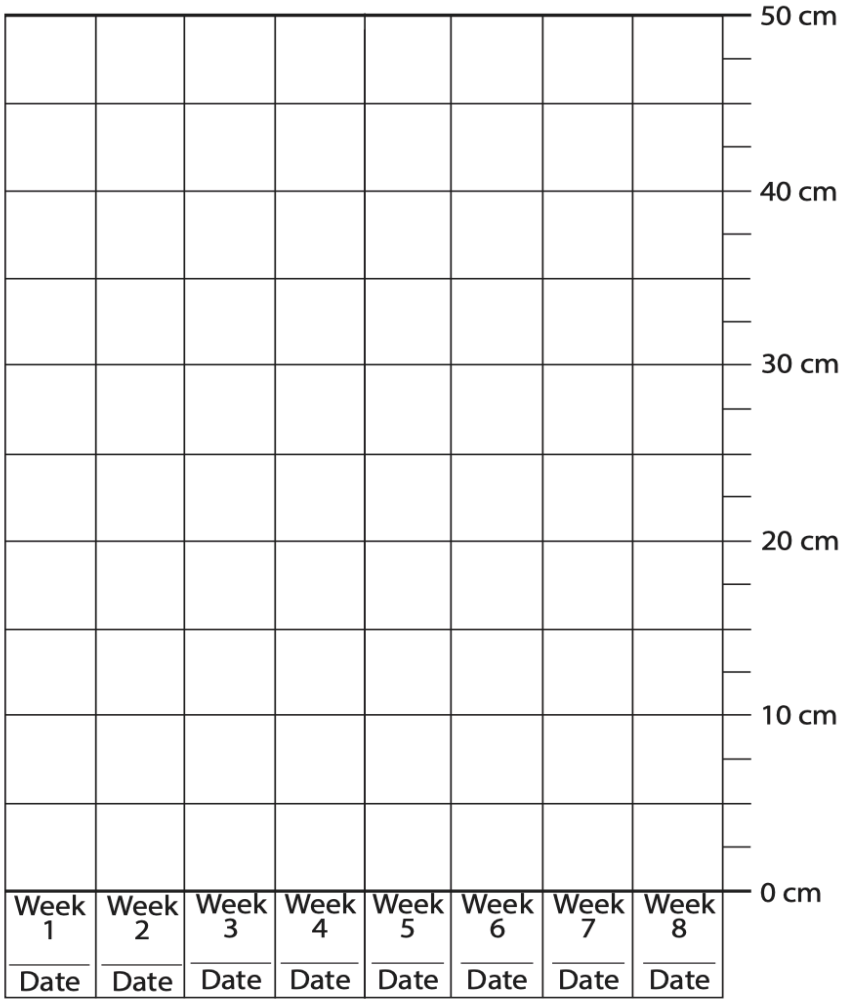
Stuctures of Life Module
Investigation 2: Growing Further
No. 6—Notebook Master

Focus Question What structures does a seedling have to help it grow and survive?	Focus Question What structures does a seedling have to help it grow and survive?

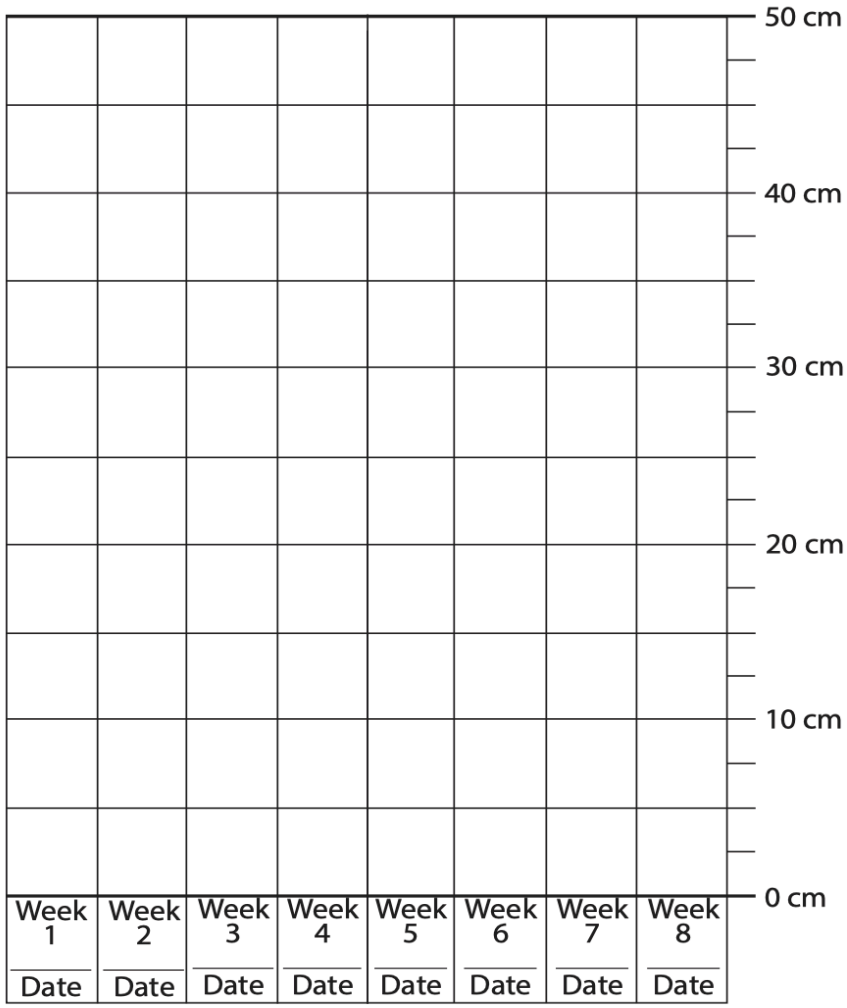
WARNING — This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.

Bean-Plant Growth



WARNING — This set contains chemicals that may be harmful if misused. Read cautions on individual containers carefully. Not to be used by children except under adult supervision.

Bean-Plant Growth



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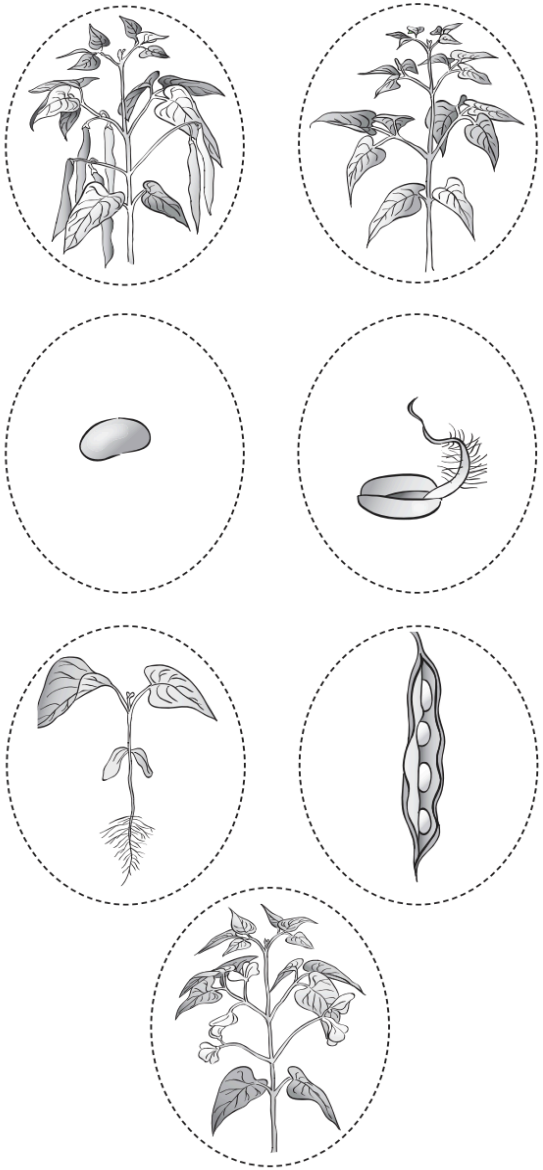
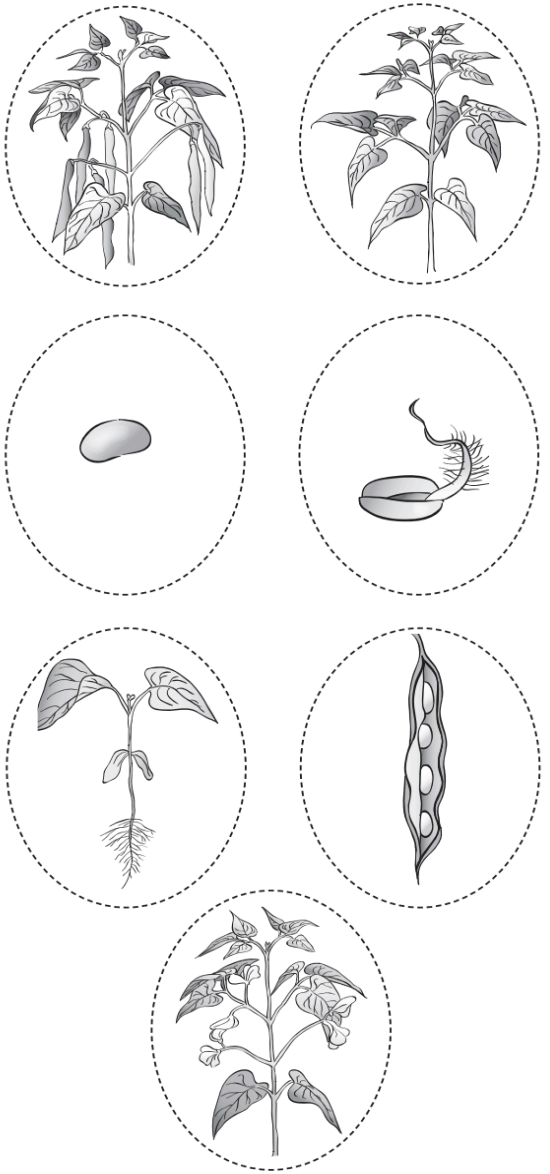
Stuctures of Life Module
Investigation 2: Growing Further
No. 7—Notebook Master

Bean Life-Cycle Pictures



Bean Life-Cycle Pictures



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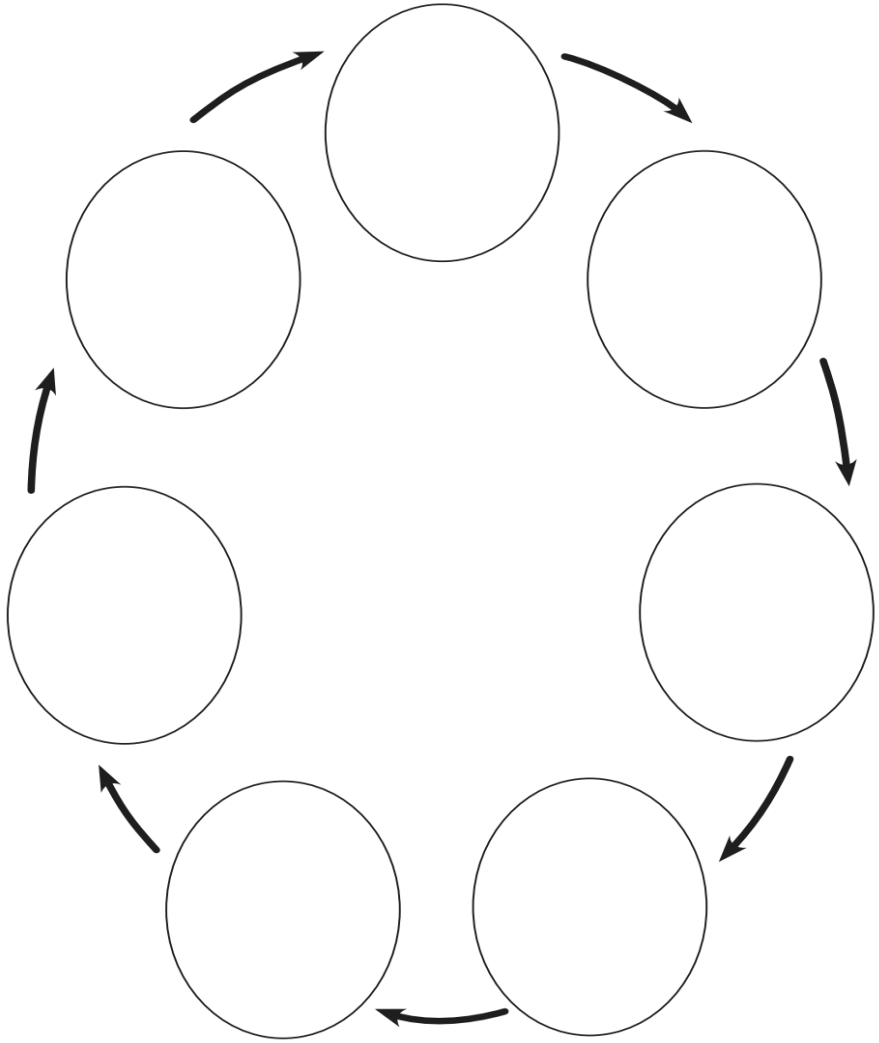
Stuctures of Life Module
Investigation 2: Growing Further
No. 8—Notebook Master

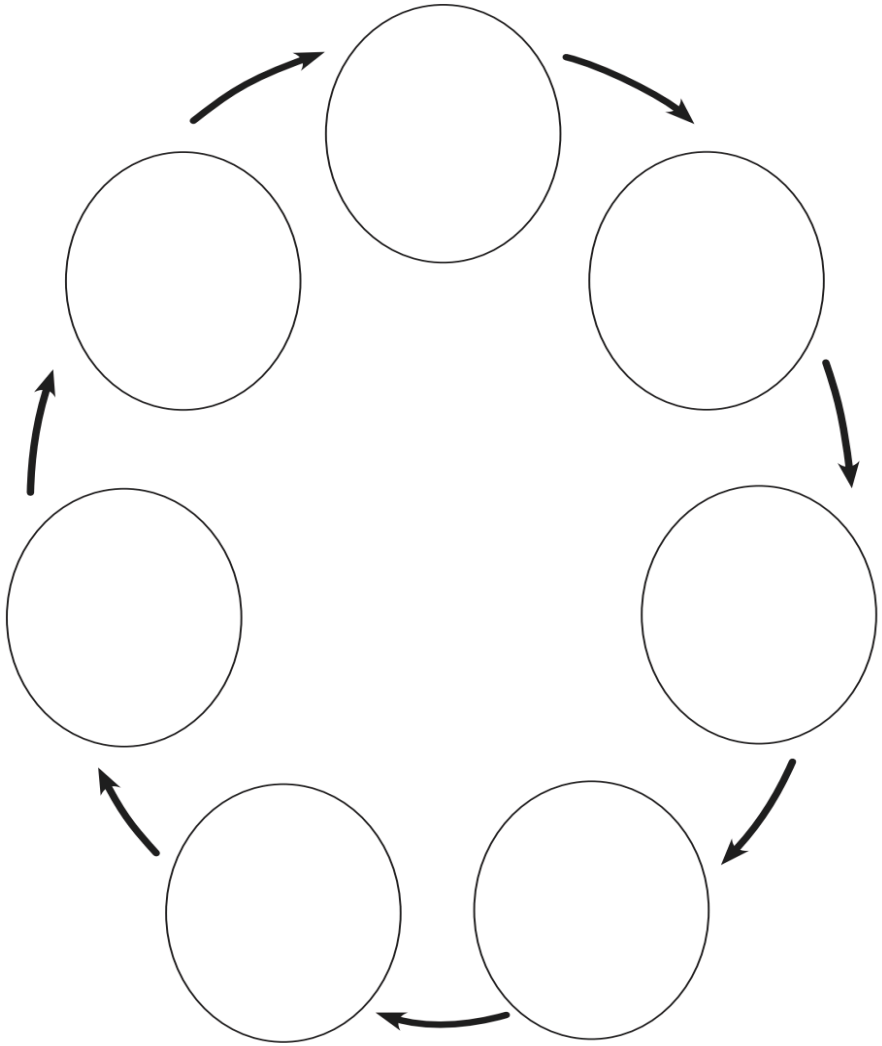
Bean Life Cycle

Write a short description by each picture.



Bean Life Cycle

Write a short description by each picture.



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Stuctures of Life Module
Investigation 2: Growing Further
No. 9—Notebook Master

Focus Question What is the sequence of the bean plant's life cycle?	Focus Question What is the sequence of the bean plant's life cycle?

Focus Question How do the roots of schoolyard plants compare to the roots of bean plants?	Focus Question How do the roots of schoolyard plants compare to the roots of bean plants?

Crayfish Structures

1. Do crayfish have eyes? How many?
2. Do crayfish have ears? How many?
3. Do crayfish have walking legs? How many?
4. Do crayfish have antennae? How many?
5. Do crayfish have tail flaps? How many?
6. Do crayfish have pincers? How many?
7. Do crayfish legs have joints? How many?
8. Do crayfish have mouthparts? How many?
9. Do crayfish have tail joints? How many?
10. Do crayfish have bristles? Where?
11. Does the crayfish have bumps and points? Where?
12. What other crayfish structures did you observe?
13. List three crayfish structures. Describe each one's function.

Crayfish Structures

1. Do crayfish have eyes? How many?
2. Do crayfish have ears? How many?
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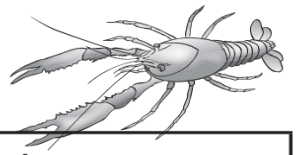
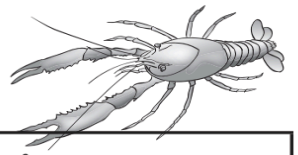
Structures of Life Module
Investigation 3: Meet the Crayfish
No. 10—Notebook Master

Crayfish-Structures Table



Structure	Function

Crayfish-Structures Table



Structure	Function

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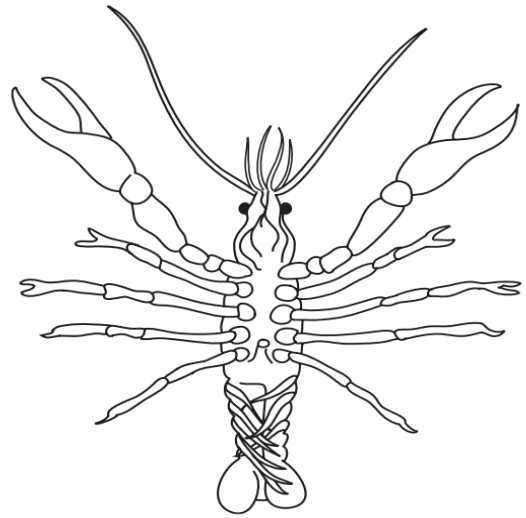
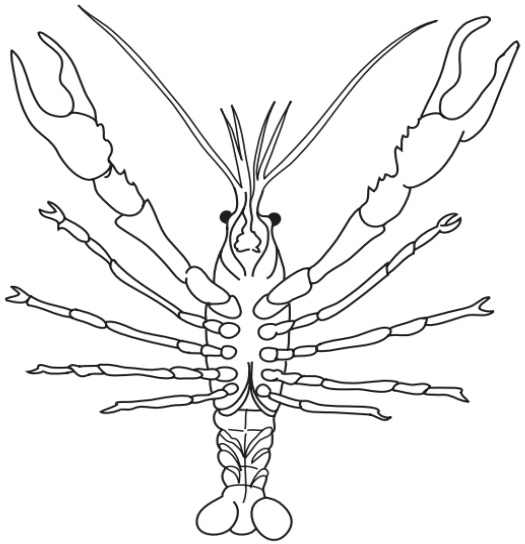
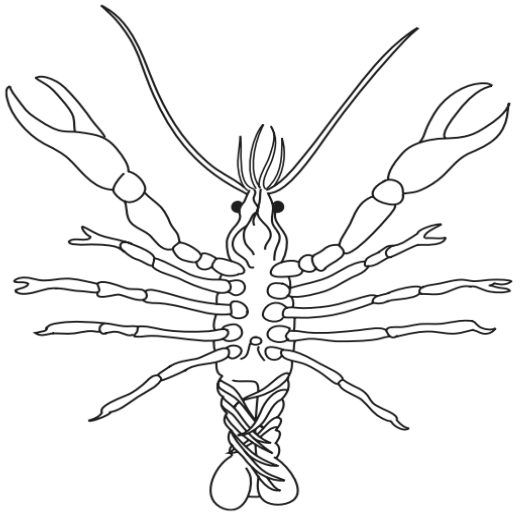
Structures of Life Module
Investigation 3: Meet the Crayfish
No. 11—Notebook Master

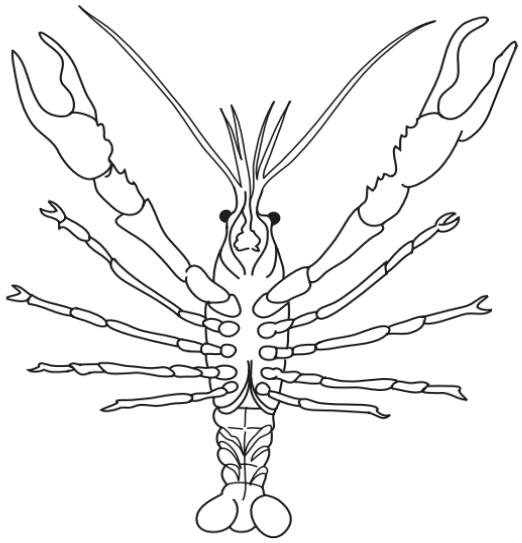
Crayfish Diagrams





Crayfish Diagrams





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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 12—Notebook Master

Crayfish Log

Key	When	What to do
Food (F)	Every day	Elodea or other greens
	1–3 times/week	Fish or other food
Water (W)	Once a week	Clean water, 3–4 cm deep, temperature between 5°C and 20°C

Date and group	Write what we did. How are the water and food supply?	Write what we observed. How is the habitat? What are the crayfish doing?

Crayfish Log

Key	When	What to do
Food (F)	Every day	Elodea or other greens
	1–3 times/week	Fish or other food
Water (W)	Once a week	Clean water, 3–4 cm deep, temperature between 5°C and 20°C

Date and group	Write what we did. How are the water and food supply?	Write what we observed. How is the habitat? What are the crayfish doing?

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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 13—Notebook Master

Focus Question What are the structures of a crayfish?	Focus Question What are the structures of a crayfish?

Crayfish Behavior

What did your crayfish do when you

1. left it alone in the basin?
2. reached toward it?
3. touched its back?
4. touched its tail?
5. touched its antennae?
6. put it on the table?
7. first put a house in the basin?
8. left it for 5 minutes with the house?
9. first put another crayfish with it?

Describe the different ways crayfish can move.

Crayfish Behavior

What did your crayfish do when you

1. left it alone in the basin?
2. reached toward it?
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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 14—Notebook Master

All about Animal Adaptations

1. What is an adaptation?
2. What adaptations do birds have for moving?
3. What adaptations do birds have for getting food?
4. What adaptations do animals have for surviving in the cold?
5. What adaptations do animals have for defending themselves?
6. What adaptations do animals have for raising young?

All about Animal Adaptations

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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 15—Notebook Master

Adaptations

Look at the animals in one set of Habitat Organism cards. What adaptations do the animals have for movement, getting food, protection, and raising young? Write the names of four different animals and their adaptations in each table. Label the type of environment.

Environment _____

Needs of animal	Animal	Adaptation (structure or behavior)
Movement		
Getting food		
Protection or defense		
Caring for young		

Environment _____

Needs of animal	Animal	Adaptation (structure or behavior)
Movement		
Getting food		
Protection or defense		
Caring for young		

Structures of Life Module
Investigation 3: Meet the Crayfish
No. 16—Notebook Master

Adaptations

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Environment _____

Needs of animal	Animal	Adaptation (structure or behavior)
Movement		
Getting food		
Protection or defense		
Caring for young		

Environment _____

Needs of animal	Animal	Adaptation (structure or behavior)
Movement		
Getting food		
Protection or defense		
Caring for young		

Structures of Life Module
Investigation 3: Meet the Crayfish
No. 16—Notebook Master

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Walking Stick Survival: Bamboo Environment

You are a predator. You prey on walking sticks.

a. Open the walking stick program on FOSSweb to eat insects.
b. Select "Eat Insects."
c. Eat as many insects as you can with 30 hits.
d. Record your results in the table below.

	Brown 	Green-brown 	Green 
Started	16	16	16
Survived			

Write responses on the blank page facing this one.

1. Which color walking stick had the most survivors?
2. Why do you think that was the case?

Walking Stick Survival: Bamboo Environment

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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 17—Notebook Master

Five Generations of Walking Sticks in the Bamboo Environment

Population 1

Five generations of walking sticks living in the bamboo environment.

	Brown		Green-brown		Green	
	Started	Survived	Started	Survived	Started	Survived
Generation 1	16		16		16	
Generation 2						
Generation 3						
Generation 4						
Generation 5						

Five Generations of Walking Sticks in the Bamboo Environment

Population 1

Five generations of walking sticks living in the bamboo environment.

	Brown		Green-brown		Green	
	Started	Survived	Started	Survived	Started	Survived
Generation 1	16		16		16	
Generation 2						
Generation 3						
Generation 4						
Generation 5						

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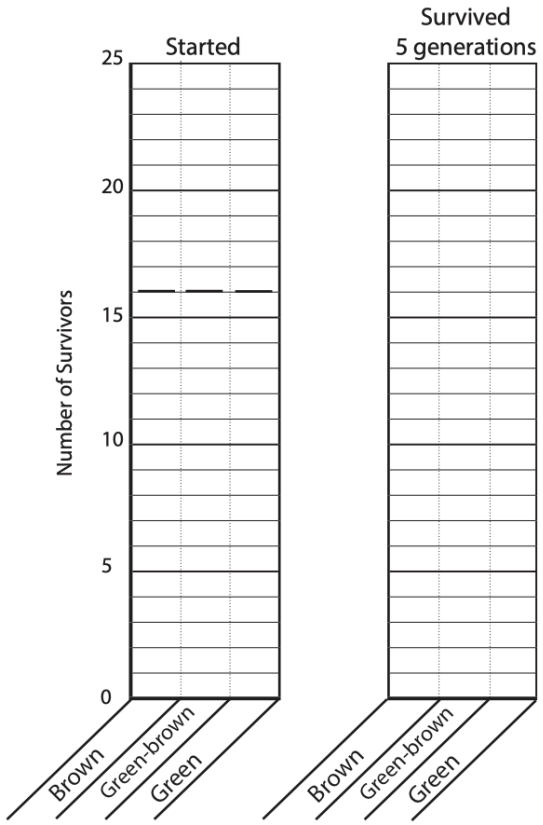
Investigation 3: Meet the Crayfish
No. 18—Notebook Master

Surviving Walking Sticks Graph

Make bar graphs to show the number of surviving walking sticks of each color at the start and end of five generations.

Use colored pencils or pens to represent each color of walking stick.

Walking sticks living in the _____ environment.



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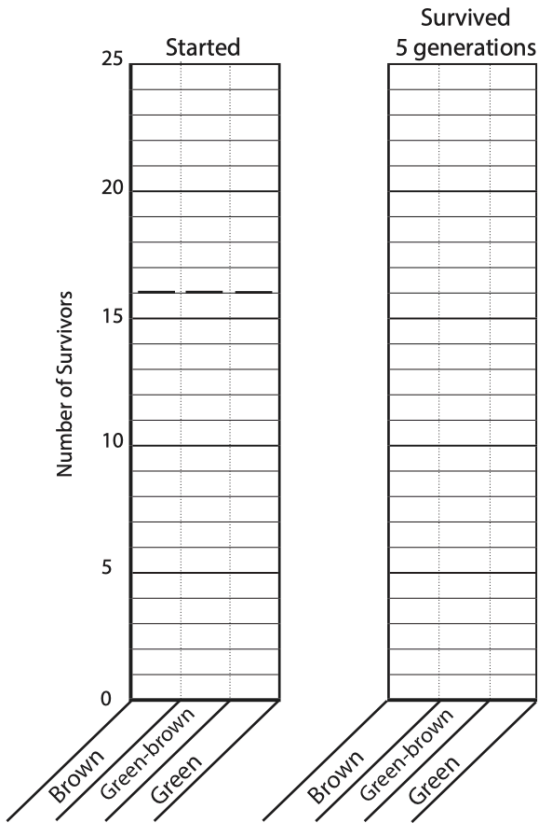

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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 19—Notebook Master

Five Generations of Walking Sticks in Another Environment

Population 2

Select a new environment (wood chips or bush).

Find out what happens to the population after five generations.

Five generations of walking sticks living in the _____ environment.

	Brown		Green-brown		Green	
	Started	Survived	Started	Survived	Started	Survived
Generation 1	16		16		16	
Generation 2						
Generation 3						
Generation 4						
Generation 5						

Five Generations of Walking Sticks in Another Environment

Population 2

Select a new environment (wood chips or bush).

Find out what happens to the population after five generations.

Five generations of walking sticks living in the _____ environment.

	Brown		Green-brown		Green	
	Started	Survived	Started	Survived	Started	Survived
Generation 1	16		16		16	
Generation 2						
Generation 3						
Generation 4						
Generation 5						

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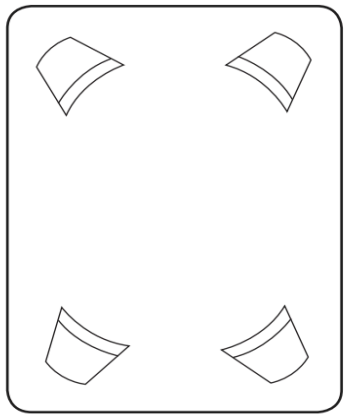
Structures of Life Module
Investigation 3: Meet the Crayfish
No. 20—Notebook Master

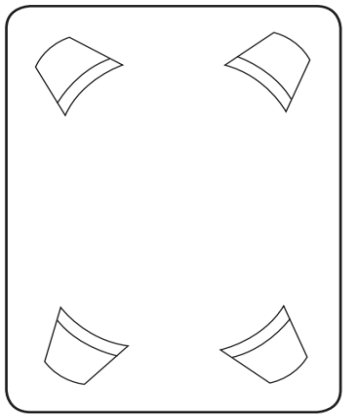
Focus Question How do crayfish structures and behaviors help crayfish survive? How do variation in traits among individuals of a species affect survival?	Focus Question How do crayfish structures and behaviors help crayfish survive? How do variation in traits among individuals of a species affect survival?

Crayfish Habitat

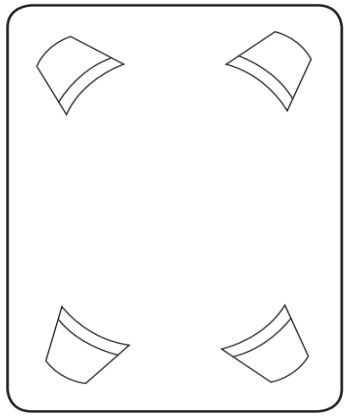
Draw each crayfish in the location where you observe it. Be sure to make it clear which crayfish is which. Write additional notes in your notebook.



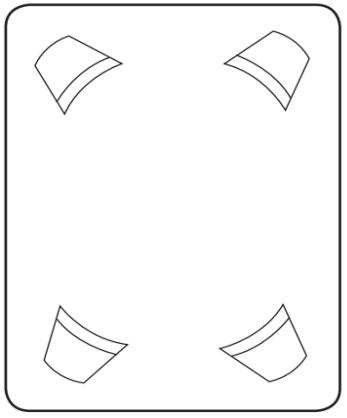
Date and time observed:



Date and time observed:



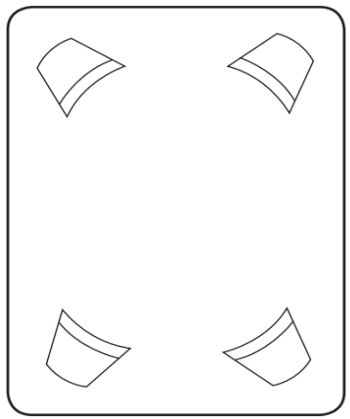
Date and time observed:



Date and time observed:

Crayfish Habitat

Draw each crayfish in the location where you observe it. Be sure to make it clear which crayfish is which. Write additional notes in your notebook.



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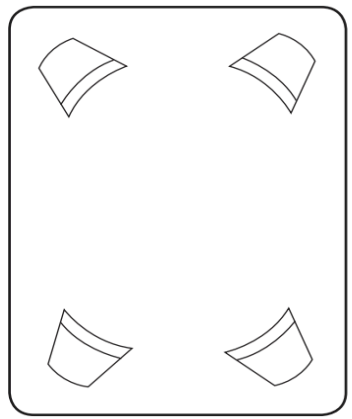

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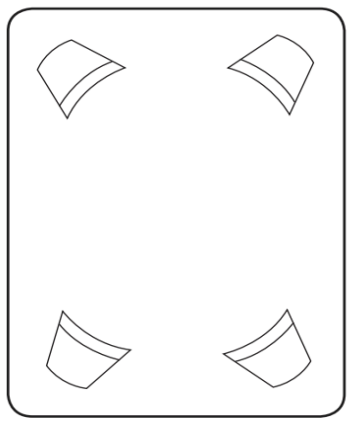

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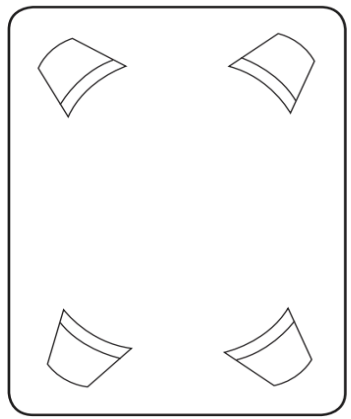

Date and time observed:

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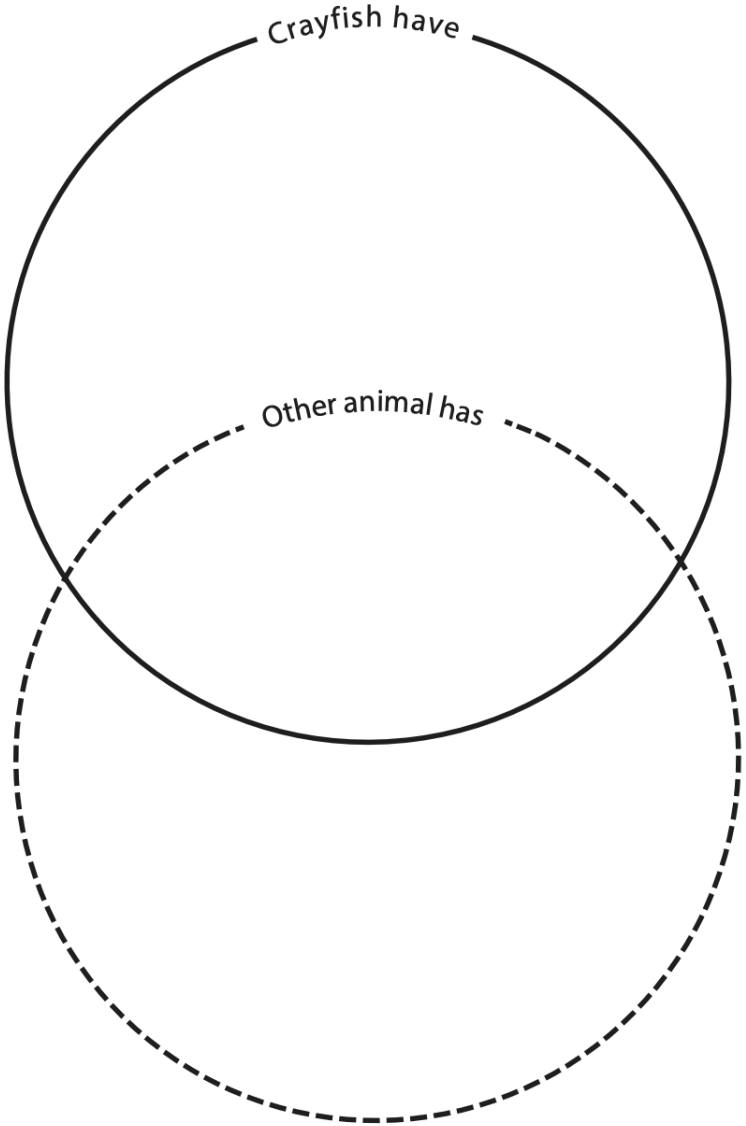
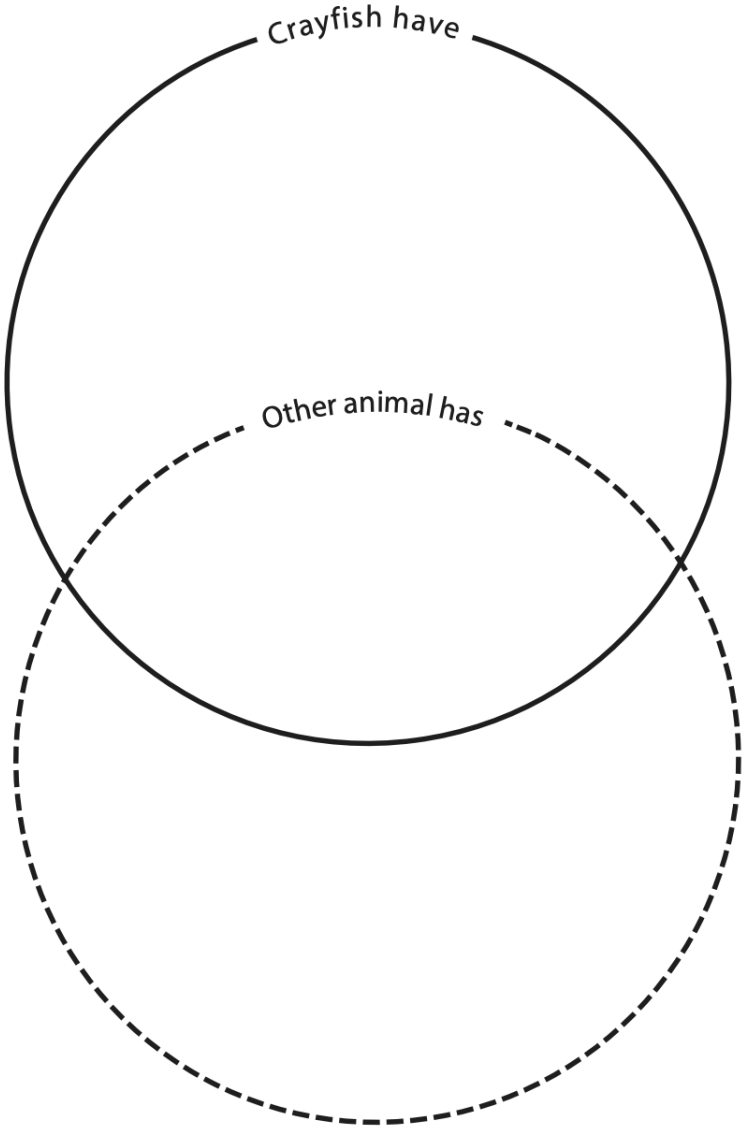
Structures of Life Module
Investigation 3: Meet the Crayfish
No. 21—Notebook Master

Focus Question What kind of behavior do crayfish display in their habitat?	Focus Question What kind of behavior do crayfish display in their habitat?

Comparing Characteristics



Comparing Characteristics



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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 22—Notebook Master

Response Sheet—Investigation 3

My brother and I were having a scientific argument. My brother claimed, "Crayfish are all the same. If you find a few crayfish in a pond, you could move them to a stream in another location."

I said, "That's really not a good idea." Help me write an argument with evidence that I can use to convince by brother that moving crayfish from a pond to a stream could be harmful to the crayfish and the new environment.

Response Sheet—Investigation 3

My brother and I were having a scientific argument. My brother claimed, "Crayfish are all the same. If you find a few crayfish in a pond, you could move them to a stream in another location."

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Structures of Life Module
Investigation 3: Meet the Crayfish
No. 23—Notebook Master

Focus Question How are the characteristics of crayfish and other animals alike and different?	Focus Question How are the characteristics of crayfish and other animals alike and different?

Focus Question What is needed to sustain a food chain?	Focus Question What is needed to sustain a food chain?

Counting Bones

Arm bones		Leg bones	
Upper arm		Upper leg	
Lower arm		Lower leg	
Wrist		Ankle	
Hand		Foot	
Subtotal		Subtotal	
x 2		× 2	
Total		Total	

Skull bones		Torso bones	
Face bones		Shoulder bones	
Cranium bones		Breastbones	
Jaw bones		Rib bones	
Other bones inside head		Back bones	
		Pelvic bones	
Total		Total	

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Arm bones		Leg bones	
Upper arm		Upper leg	
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Subtotal		Subtotal	
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Cranium bones		Breastbones	
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		Pelvic bones	
Total		Total	

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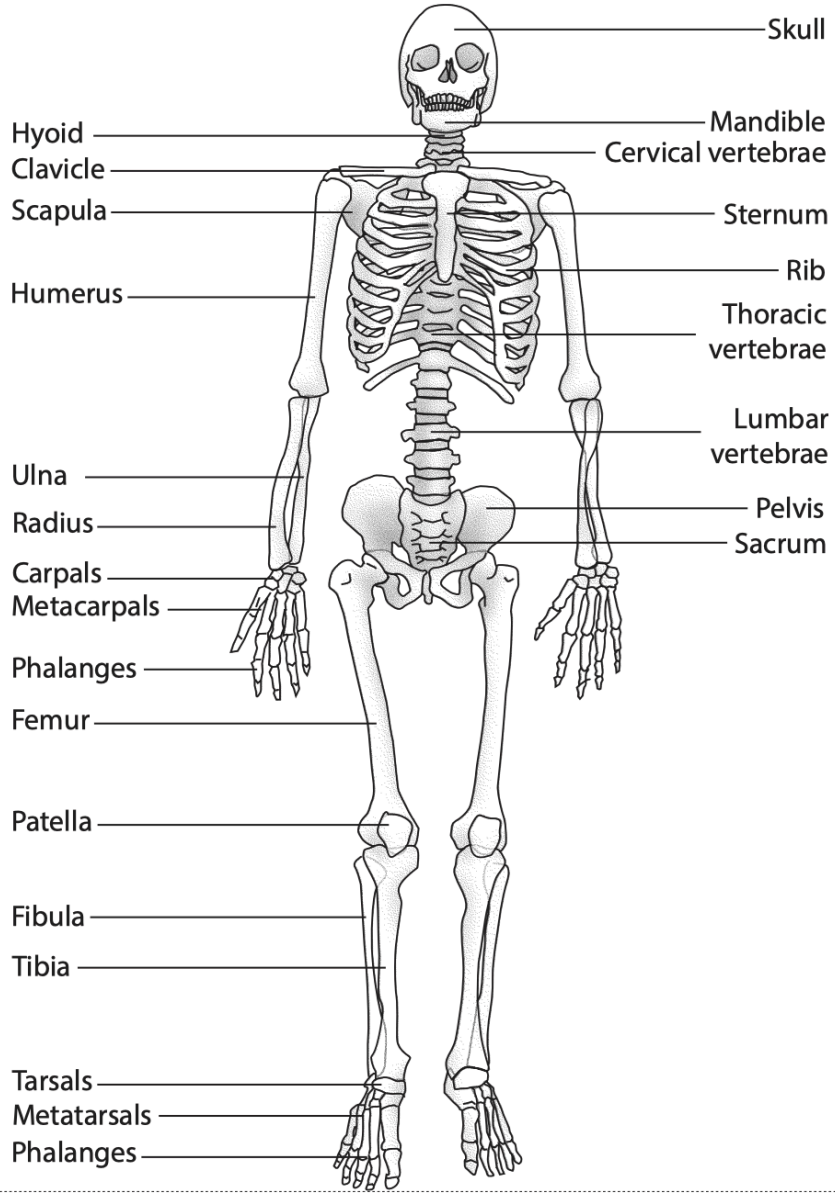
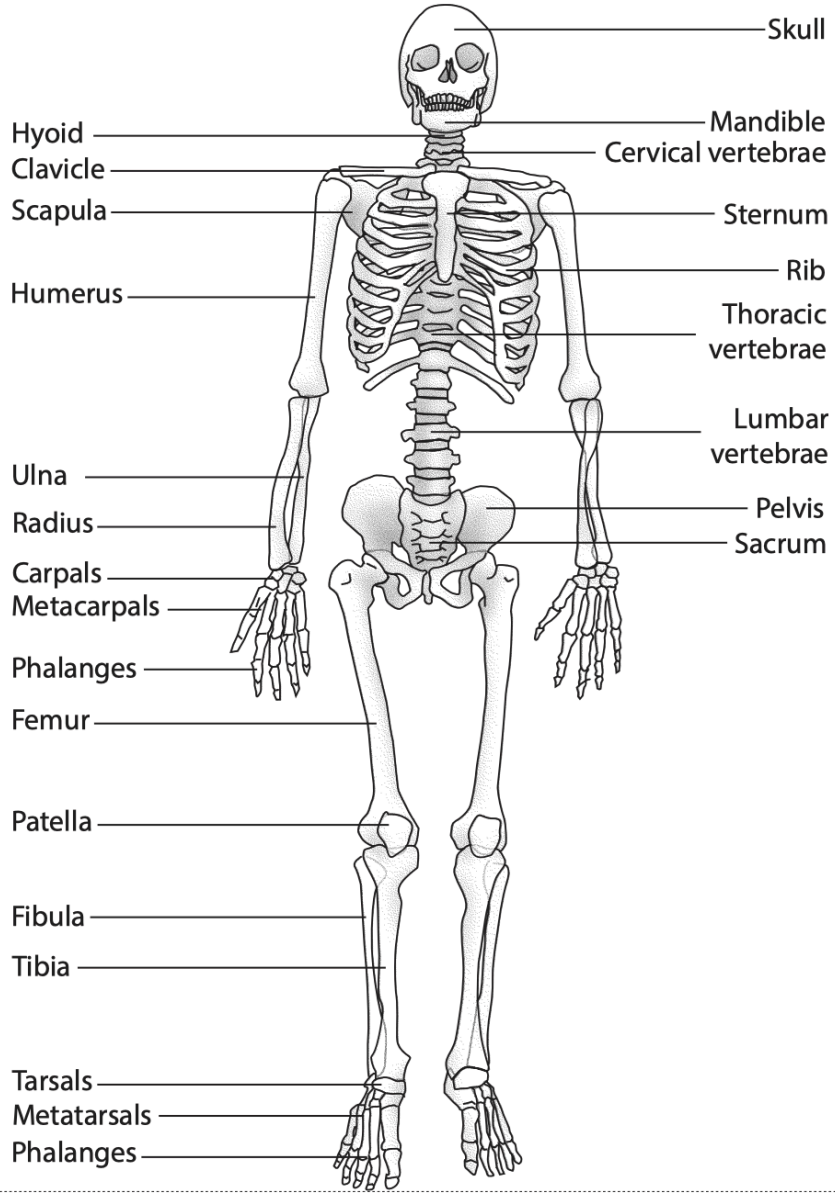
Structures of Life Module
Investigation 4: Human Body
No. 24—Notebook Master

Bone Names



Bone Names



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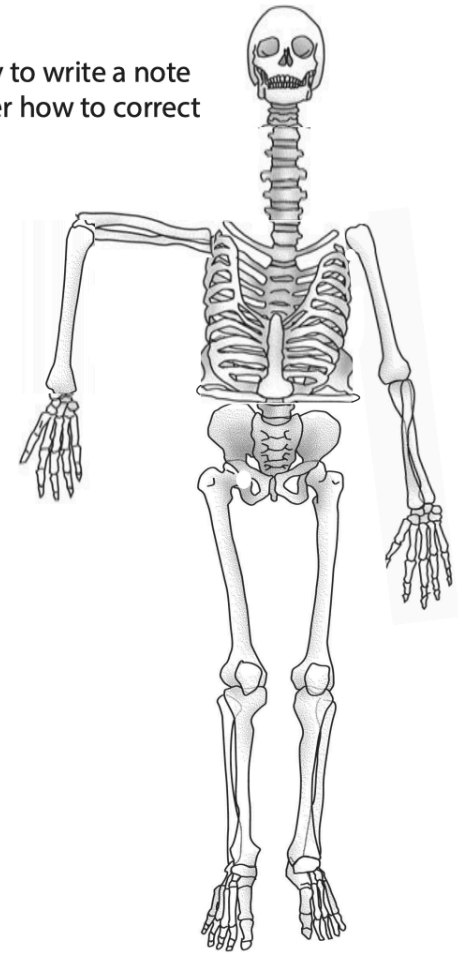
Structures of Life Module
Investigation 4: Human Body
No. 25—Notebook Master

Response Sheet—Investigation 4

A student put together a model of a human skeleton. She wants you to check her work to see if she made any mistakes.

If you find any bones in the wrong place, tell the student how they should be changed to make the model correct.

- Circle the bones or sections where you think she made mistakes.
- Number each section.
- Use the numbers as a key to write a note to the student and tell her how to correct her mistakes.



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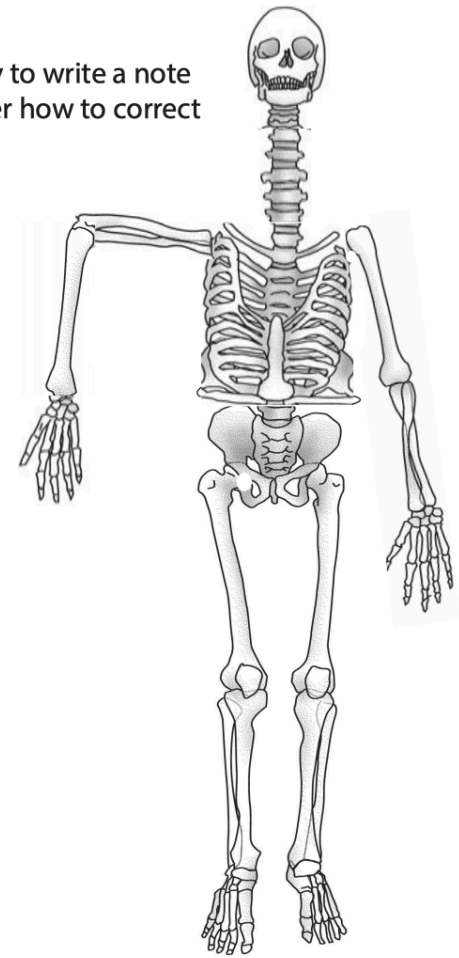

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Structures of Life Module
Investigation 4: Human Body
No. 26—Notebook Master

Focus Question What are the functions of the skeletal system?	Focus Question What are the functions of the skeletal system?

Owl-Pellet Observations

Part 1: The Owl Pellet

- Describe the characteristics of the owl pellet (size, shape, color, and texture).
- Draw a picture of the owl pellet.

Part 2: Inside the Owl Pellet

- Describe what you found inside the owl pellet.

Part 3: The Bones in the Owl Pellet

Look carefully at the bones from the owl pellet. Compare them with human bones.

- Find a bone that is similar to a human bone. Draw it and explain how it is similar.
- Find a bone that is different from a human bone. Draw it and explain how it is different.

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Structures of Life Module
Investigation 4: Human Body
No. 27—Notebook Master

Rodent Bone Identification

Rodent Bone Identification

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Focus Question In what ways are skeletons of a rodent and human similar?	Focus Question In what ways are skeletons of a rodent and human similar?

Thumb Joints

Try doing these tasks without a thumb. What is the difference?

	Easier than with thumb	About the same	Harder than with thumb
Tape your fingers.			
Tape your partner's fingers.			
Hold a pencil.			
Shade the picture.			
Trace a maze.			
Work a zipper.			
Fasten a button.			
Tie a shoe.			
Turn pages in a book.			
Buckle a belt.			
Additional tasks			

Thumb Joints

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Fasten a button.			
Tie a shoe.			
Turn pages in a book.			
Buckle a belt.			
Additional tasks			

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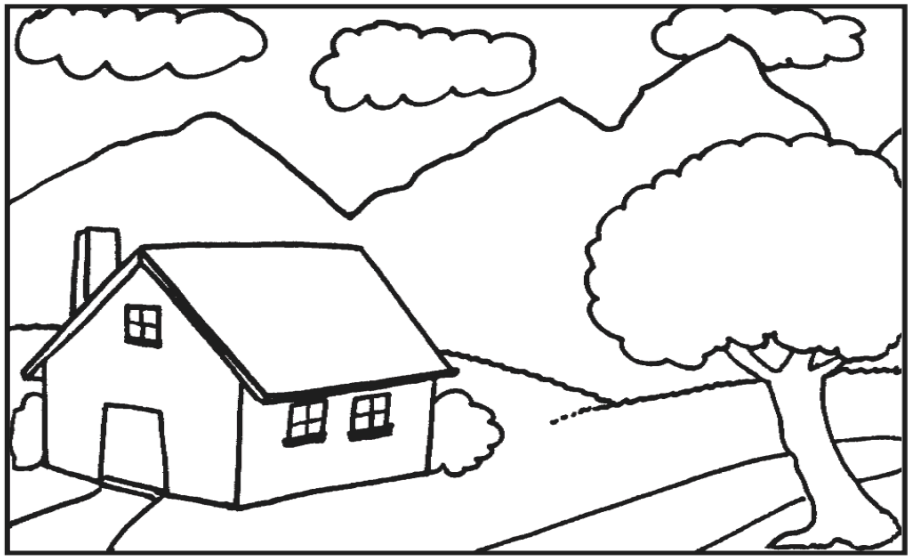
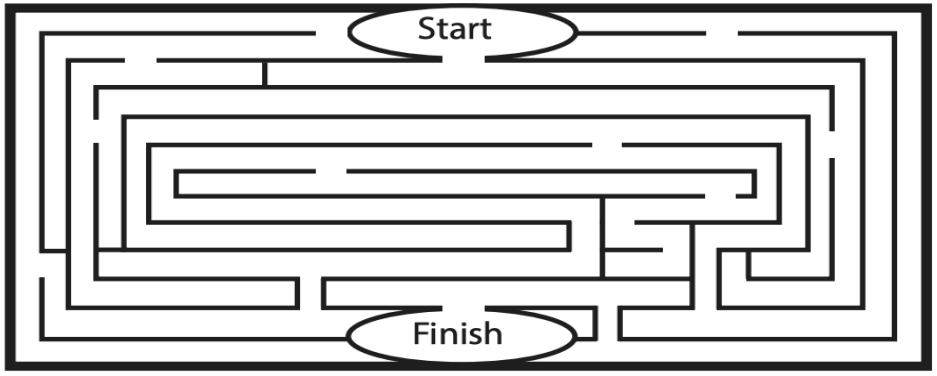
Structures of Life Module
Investigation 4: Human Body
No. 29—Notebook Master

Picture and Maze

Color or shade the picture carefully.



Trace the maze from start to finish.



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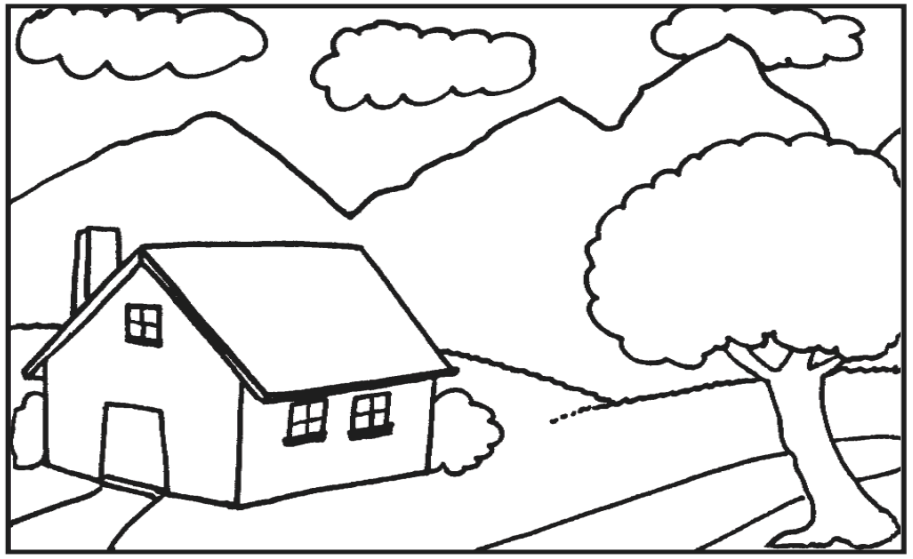

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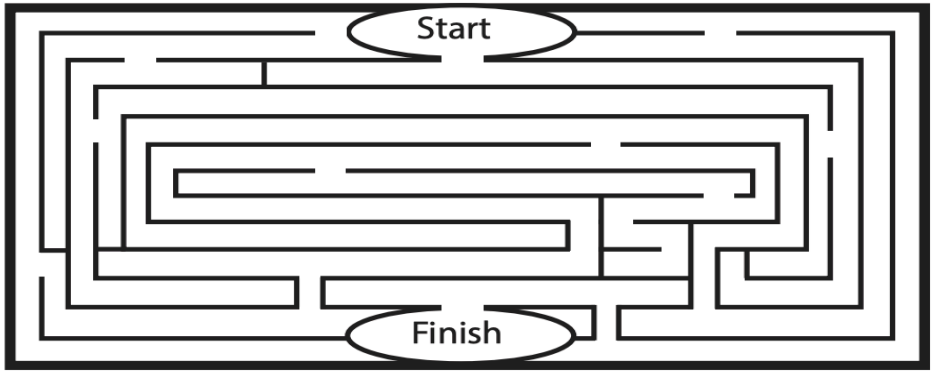

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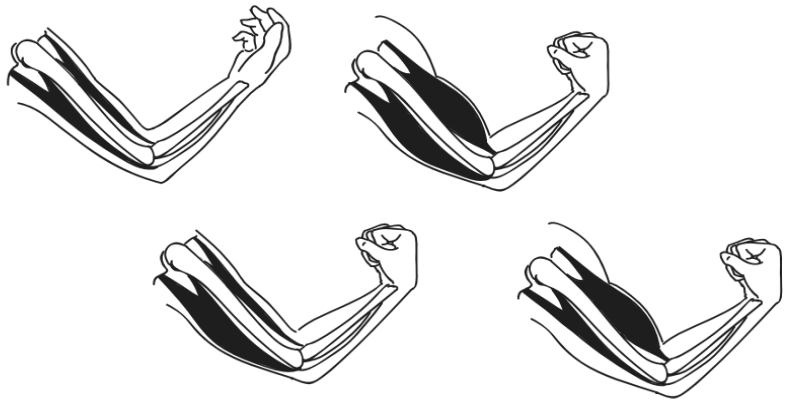
Structures of Life Module
Investigation 4: Human Body
No. 30—Notebook Master

Muscle Action

How does the biceps muscle move the arm?

1. Make an arm model with a biceps muscle. Record your model in your notebook. Describe what each part of the model represents (stick, paper clip, rubber tube, and rubber band). Describe how the muscle in the model works.
2. Put your left hand on the biceps muscle (top) of your right arm. Make a fist with your right hand and move your fist toward your shoulder.
   - Is your biceps contracting or relaxing?
   - Is your triceps (bottom of the arm) contracting or relaxing?
3. One of these pictures correctly shows the muscles when a person is bending his or her arm. Draw a circle around the correct picture. (A muscle gets thicker when it contracts.)



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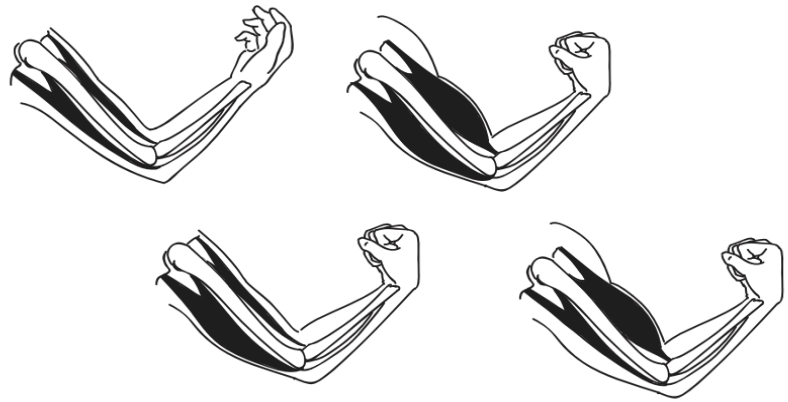

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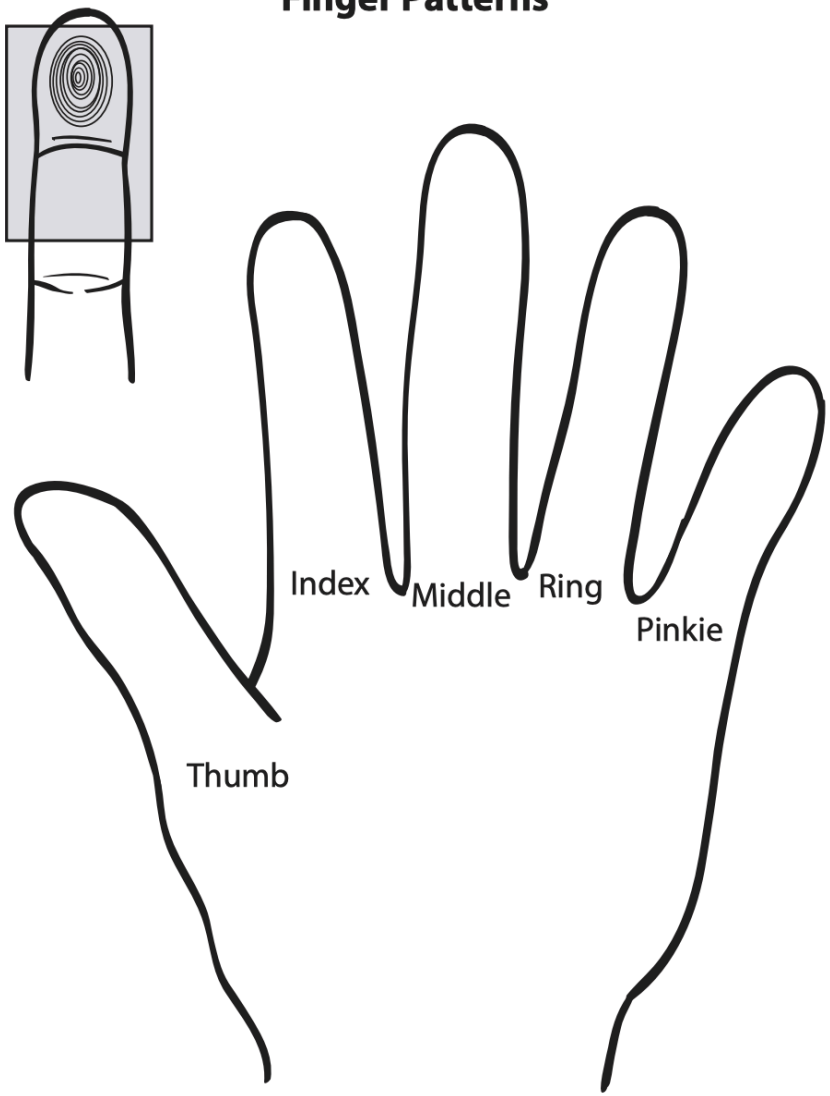
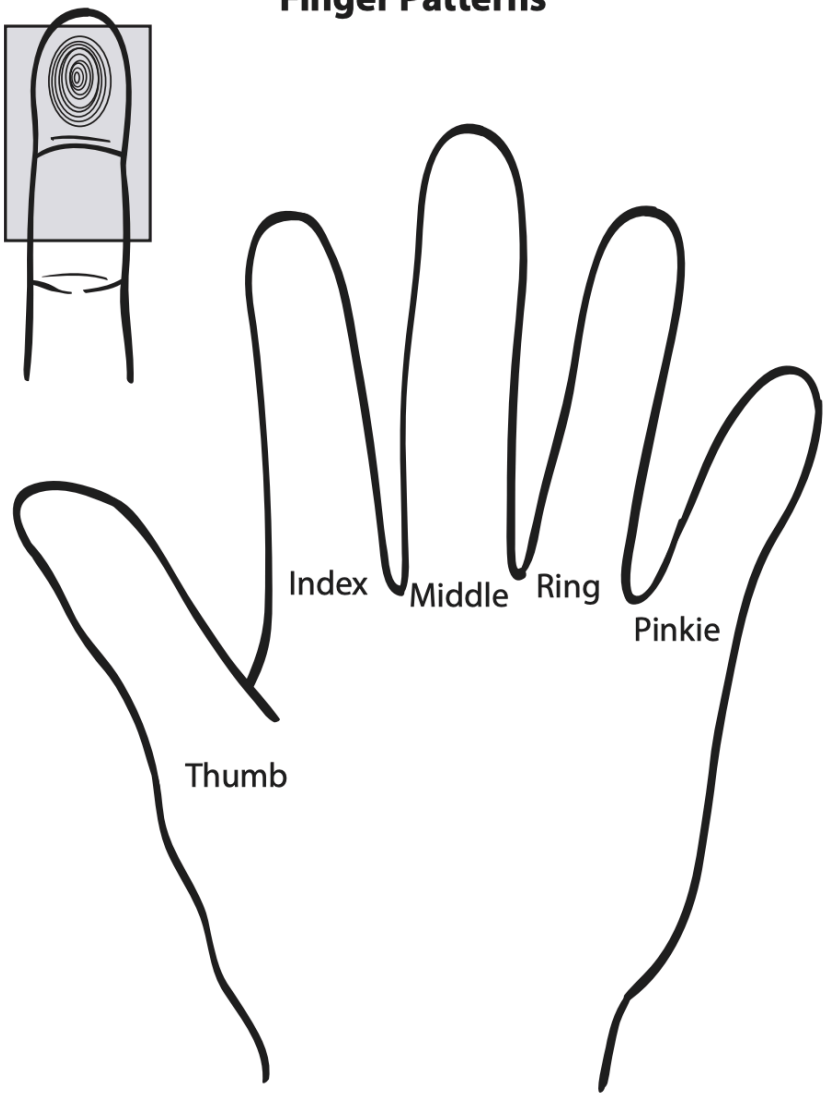
Structures of Life Module
Investigation 4: Human Body
No. 31—Notebook Master

Focus Question What makes the skeletal system flexible?	Focus Question What makes the skeletal system flexible?

Finger Patterns



Finger Patterns



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Structures of Life Module
Investigation 4: Human Body
No. 32—Notebook Master

Focus Question How are fingerprints alike and different?	Focus Question How are fingerprints alike and different?