



«[Science Lesson Plans](#)

GPS Survival Skills

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Description

The student will review the concepts learned in the Survival Skills unit.

Grade Level

4th & 5th

Lesson Objective

The student will review the concepts learned in the Survival Skills Unit as well as become familiar with their GPS unit.

GLEs

Strand 3: Characteristics and Interactions of Living Organisms

Depth of Knowledge

Level 1

Instructional Strategies

Reinforcing effort and providing recognition

Practice

Cooperative Learning

Time Needed

50-75 minutes

Materials

One GPS unit per group (total of 6)

9 ziplock bags to hang at waypoints

yarn to tie ziplock bags

marker to label ziplock bags with waypoint number

Printout of waypoint clues

Academic Vocabulary

Bats: echolocation, adaptation, troglobites, troglaphiles, troglonexes

Lesson Plan

GPS Survival Skills

Goal: Students will gain experience using their GPS while reviewing the information learned about cave animal adaptations.

Grade Level: 4 & 5 Grade

Number of Students: Six student groups (equal as possible)

Materials: Each group will need one GPS unit that is preprogrammed with waypoints (listed on pg. 4); map of school grounds; clues placed in envelopes with group numbers marked on outside.

1. Additional GPS units are available for short-term loan through the BSSD instructional coach office or by contacting any ICE5 member.

2. Envelopes should be placed inside a Ziploc bag (in case of inclement weather, sprinklers, etc.) and secured to the waypoint location. Be sure to contact all colleagues, including grounds keeping staff to request their assistance in allowing bags to remain in place for the duration of the activity and to reduce risk of conflicting activities such as mowing, unscheduled recess, etc.

Directions

1. Each group will have a different set of instructions. Following other groups will result in erroneous outcomes.

2. The order of the stations is NOT the same for every group.

3. Your group will be given a clue to your first waypoint number here in the classroom. Once your group has decoded the number, advance to the front of the building; use the "Find" command on your GPS and proceed to your waypoint. At each of your waypoints you will find an envelope with your group's name; follow the directions in that envelope. If your group's name is NOT on the envelope you find you are at the wrong location. Backtrack to your last confirmed waypoint and redo the steps to find your next waypoint.

4. Continue this pattern until you have found all five waypoints.

5. Be sure to keep track of the latitude and longitude at each of your waypoints* as well as the order in which you found them. There will be a final challenge back in the classroom using this information.

*use recording sheet, pg. 3

NOTE: All waypoints are 3 digit numbers. If necessary, insert "0's" in front of your answer number to make it 3 digits. Example: 2 will become 002; 45 will become 045.

Key to decode your clues:

Example: The word ICE would have a numerical value of $9 + 3 + 5 = 17$

The number 17 would then become waypoint 017.

After finding all five of your waypoints, return to the classroom and pick up a map of the school grounds from your teacher. Locate your waypoints on the map and number them in the order you found them, 1-5. Now connect your points in order from first to fifth. Some groups have additional point connection instructions (see special instructions in table on page seven).

Match the picture you've drawn to the key and your task is complete!

Group Number: _____

Teachers: Use the following template to fill in questions for the groups. Copy and paste questions below, including clues, omitting the correct answer. There are two different questions that lead to each waypoint and at most one waypoint in common (in terms of

order) between groups, so each group should get a unique set of clues. The order of the waypoints for each group is listed on pg. 7.

KEY:

All questions review the knowledge gained during the survival skills unit.

1. The cave cricket uses its extra-long antenna to [Clue: Divide 180 by the number that corresponds to the letter of your answer. (090)]

- a. Attract a mate
- b. Hunt food in the dark**
- c. Wrap its prey
- d. Strike its prey to death

2. Cave fish are: [Clue: Multiply the number that corresponds to the letter of your answer by 21. (084)]

- a. Camouflage themselves from prey
- b. Four times more effective in finding prey than land fish
- c. Have a large food reserve
- d. Both B & C**

3. A cave crab has adapted to cave life by: [Clue: Decode the two words in your answer, sum the values. Subtract 92 and divide by 4. (020)]

- a. No pigmentation**
- b. Growing gills
- c. Never eating
- d. Having fewer legs

4. Bats use _____ and _____ to find their pups. [Clue: Count the number of words in your answer and multiply that number by 100. (300)]

- a. Sight and Sound**
- b. Sound
- c. Touch
- d. X-ray vision

5. Cave crayfish consume [Clue: Decode the first word in your answer (**more OR less**) and subtract 22. (033)]

- a. More oxygen than land crayfish
- b. Less oxygen than land crayfish**

6. Bats are: [Clue: Decode word of your answer, multiply by 5 and add 55. (415)]

- a. Birds

b. Amphibians

c. Mammals

7. All animals in a cave are blind. [Clue: Multiply the number of letters in your answer by 47. (235)]

a. False

b. True

8. Animals in a cave are all invertebrates [Clue: Decode the letter of your answer, then multiply it by one to find your waypoint. (001)]

a. False

b. True

9. Ozark Blind Salamanders are: [Clue: Decode the letter of your answer and multiply by 46. (138)]

a. Born blind and become sighted adults

b. Born sighted and remain sighted adults

c. Born sighted and then become blind as adults

10. True cave dwellers that could only live in caves are called? [Clue: Decode the eighth letter of your answer, and then multiply that number by ten. (090)]

a. Troglobites

b. Species

c. Bats

d. Troglonexes

11. When bats use sight and sound to locate their pups, it is called? [Clue: Count the number of letters in your answer, and multiply that number by 12. (084)]

a. Pup hunting

b. Echolocation

c. Channeling

d. Acting out the problem

12. Troglonexes live in caves and, _____ return to the surface for food. [Clue: Count the number of letters in your answer, and add 8. (020)]

a. Always

b. Never again

c. Occasionally

13. Bats are VERY helpful to have around because they eat? [Clue: Decode the fifth letter in your answer and multiply it by 100. (300)]

a. Flowers

- b. Trash
- c. Leaves
- d. Insects**

14. Troglodytes can live and survive? [Clue: Decode the third word of your answer then subtract 60. (033)]

- a. In or outside of a cave**
- b. In a cave only
- c. Outside of a cave only
- d. In the dirt

15. Bats make high-pitch sounds in their larynx which are sent out through their nose and mouth. What is a larynx? [Clue: Multiply the value of the letter of your answer by 150, and then add 115. (415)]

- a. ear drums
- b. voice box**
- c. eyes sockets
- d. lungs

16. Caves are completely pitch black. [Clue: Decode the word in your answer, multiply by 3, and then add 106. (235)]

- a. True
- b. False**

17. Traits developed over time that help organisms meet their basic needs and survive are called? [Clue: The value of the sixth letter of your answer corresponds to your next waypoint. (001)]

- a. Camouflage
- b. Puberty
- c. Mutations
- d. Adaptations**

18. Sounds bounce off of objects and moving prey in front of the bat, and echoes are picked up by the bat's _____. [Clue: Decode the word in your answer; add 95. (138)]

- a. Ears**
- b. Eyes
- c. Wings
- d. Fur

Waypoint numbers: N 39.03. _____, W 094.22. _____

Layout of waypoints relative to one another on WYE school grounds

Concepts Reviewed:

Cave crickets adaptations

Cave fish adaptations

Cave crab adaptations

Bats: echolocation

Cave crayfish

Ozark blind salamander adaptations

Troglobites

Troglophiles

Trogloxenes

Adaptations

Name of Group	Waypoint Name	Instructor use only
Tumbling Creek Snails		415
Question	Clue:	
Bats are:	Decode word of your answer	
a. Birds		
b. Amphibians	Multiply by 5	
c. Mammals		
	Add 55.	

Name of Group	Waypoint Name	Instructor use only
Tumbling Creek Snails		033
Question	Clue:	
Cave crayfish consume		
a. More oxygen then land crayfish	Decode the first word in your answer (more OR less)	
b. Less oxygen then land crayfish		

Subtract 22.

Name of Group	Waypoint Name	Instructor use only
Tumbling Creek Snails		020
Question	Clue:	
	Decode the two words in your answer, sum the values.	
A cave crab has adapted to cave life by:		
a. No pigmentation	Subtract 92	
b. Growing gills		
c. Never eating	Divide by 4.	
d. Having fewer legs		

Name of Group	Waypoint Name	Instructor use only
Tumbling Creek Snails		090
Question	Clue:	
The cave cricket uses its extra-long antenna to:	Divide 180 by the number that corresponds to the letter of your answer.	
a. Troglobites		
b. Species		
c. Bats		
d. Troglonexes		

Name of Group	Waypoint Name	Instructor use only
Tumbling Creek Snail		084
Question	Clue:	
Cave fish:	Multiply the number that corresponds to the letter of your answer by 21.	
a. Camouflage themselves from prey		

b. Are four times more effective in finding prey than land fish

c. Have a large food reserve

d. Both B & C

Name of Group	Waypoint Name	Instructor use only
Stalactites		235
Question	Clue: Decode the word in your answer, Caves are completely pitch black.	
a. True	Multiply by 3	
b. False	Add 106.	

Name of Group	Waypoint Name	Instructor use only
Stalactites		415
Question	Clue: Bats are:	
a. Birds	Decode word of your answer	
b. Amphibians	Multiply by 5	
c. Mammals	Add 55.	

Name of Group	Waypoint Name	Instructor use only
Stalactites		300
Question	Clue: Bats are VERY helpful to have around because they eat?	
	Decode the fifth letter in your answer	

- a. Flowers Multiply it by 100.
- b. Trash
- c. Leaves
- d. Insects

Name of Group	Waypoint Name	Instructor use only
Stalactites		090
Question	Clue:	
The cave cricket uses its extra-long antenna to:	Divide 180 by the number that corresponds to the letter of your answer.	
a. Troglobites		
b. Species		
c. Bats		
d. Troglonexes		

Name of Group	Waypoint Name	Instructor use only
Stalactites		138
Question	Clue:	
Ozark Blind Salamanders are:		
a. Born blind and become sighted adults	Decode the letter of your answer	
b. Born sighted and remain sighted adults	Multiply by 46	
c. Born sighted and then become blind as adults		

Name of Group	Waypoint Name	Instructor use only
Stalagmites		415
Question	Clue:	
Bats are:	Decode word of your answer	
a. Birds		
b. Amphibians	Multiply by 5	
c. Mammals		
	Add 55.	

Name of Group	Waypoint Name	Instructor use only
Stalagmites		300
Question	Clue:	
Bats are VERY helpful to have around because they eat?	Decode the fifth letter in your answer	
a. Flowers		
b. Trash	Multiply it by 100.	
c. Leaves		
d. Insects		

Name of Group	Waypoint Name	Instructor use only
Stalagmites		090
Question	Clue:	
The cave cricket uses its extra-long antenna to:	Divide 180 by the number that corresponds to the letter of your answer.	
a. Troglobites		
b. Species		
c. Bats		
d. Troglonexes		

Name of Group	Waypoint Name	Instructor use only
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Stalagmites 001

Question

Clue:

Animals in a cave are all invertebrates

Decode the letter of your answer

a. False

b. True

Multiply it by one

Name of Group

Waypoint Name

Instructor use only

Stalagmites

020

Question

Clue:

A cave crab has adapted to cave life by:

Decode the two words in your answer, sum the values

a. No pigmentation

b. Growing gills

Subtract 92

c. Never eating

d. Having fewer legs

Divide by 4.

Name of Group

Waypoint Name

Instructor use only

Cave Coral

084

Question

Clue: Multiply the number that corresponds to the letter of your answer by 21.

Cave fish:

a. Camouflage themselves from prey

b. Are four times more effective in finding prey than land fish

c. Have a large food reserve

d. Both B & C

Name of Group	Waypoint Name	Instructor use only
Cave Coral		138
Question	Clue:	
Ozark Blind Salamanders are:		
a. Born blind and become sighted adults	Decode the letter of your answer	
b. Born sighted and remain sighted adults	Multiply by 46	
c. Born sighted and then become blind as adults		

Name of Group	Waypoint Name	Instructor use only
Cave Coral		020
A cave crab has adapted to cave life by:	Clue: Decode the two words in your answer, sum the values. Subtract 92 and divide by 4.	
a. No pigmentation		
b. Growing gills		
c. Never eating		
d. Having fewer legs		

Name of Group	Waypoint Name	Instructor use only
Cave Coral		235
Question	Clue: Decode the word in your answer,	
Caves are completely pitch black.		
a. True	Multiply by 3	
b. False		
	Add 106.	

Name of Group	Waypoint Name	Instructor use only
Cave Coral		033
Question	Clue:	

Cave crayfish consume

- a. More oxygen then land crayfish Decode the first word in your answer (**more OR less**)
- b. Less oxygen then land crayfish

Subtract 22.

Name of Group	Waypoint Name	Instructor use only
Sinkholes		300
Question	Clue:	
Bats are VERY helpful to have around because they eat?	Decode the fifth letter in your answer	
a. Flowers		
b. Trash	Multiply it by 100.	
c. Leaves		
d. Insects		

Name of Group	Waypoint Name	Instructor use only
Sinkholes		138
Question	Clue:	
Ozark Blind Salamanders are:		
a. Born blind and become sighted adults	Decode the letter of your answer	
b. Born sighted and remain sighted adults	Multiply by 46	
c. Born sighted and then become blind as adults		

Name of Group	Waypoint Name	Instructor use only
Sinkholes		033
Question	Clue:	
Cave crayfish consume		
a. More oxygen then land crayfish	Decode the first word in your answer (more OR less)	

b. Less oxygen then land crayfish

Subtract 22.

Name of Group	Waypoint Name	Instructor use only
Sinkholes		084
Question	Clue: Multiply the number that corresponds to the letter of your answer by 21.	
Cave fish:		

a. Camouflage themselves from prey

b. Are four times more effective in finding prey then land fish

c. Have a large food reserve

d. Both B & C

Name of Group	Waypoint Name	Instructor use only
Losing Streams		084
Question	Clue: Multiply the number that corresponds to the letter of your answer by 21.	
Cave fish:		

a. Camouflage themselves from prey

b. Are four times more effective in finding prey then land fish

c. Have a large food reserve

d. Both B & C

Name of Group	Waypoint Name	Instructor use only
Losing Streams		090
Question	Clue: Divide 180 by the number that corresponds to the letter of your answer.	
The cave cricket uses its extra-long antenna to:		
a. Troglobites		
b. Species		
c. Bats		
d. Troglonexes		

Name of Group	Waypoint Name	Instructor use only
Losing streams		415
Question	Clue:	
Bats are:		
a. Birds		
b. Amphibians		
c. Mammals		
Add 55.		

Name of Group	Waypoint Name	Instructor use only
Losing Streams		033
Question	Clue:	
Cave crayfish consume		
a. More oxygen than land crayfish		
b. Less oxygen than land crayfish		
Decode the first word in your answer (more OR less)		
Subtract 22.		

Name of Group	Waypoint Name	Instructor use only
Losing Streams		300
Question	Clue:	
Bats are VERY helpful to have around because they eat?		
Decode the fifth letter in your answer		
a. Flowers		

- b. Trash
- c. Leaves
- d. Insects

Multiply it by 100.

Resources

Survival Skills Unit under Lesson Plans

Literature links

E

Text book link(s)

Scott Foresman 5th Grade textbook

Key concepts: [Cave animal adaptations](#)

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