Check Yourself for Ticks!

Teacher's Booklet

Texas Cooperative EXTENSION
The Texas A&M University System

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Preface

Ticks are medically important arthropods, since they have the ability to transmit Lyme disease, tularemia, Rocky Mountain spotted fever, and ehrlichiosis in Texas. In 1984, Lyme disease was found to be present in Texas and it is now found in 1-2% of ticks in Texas. Lyme disease is the most frequently diagnosed tick-borne disease in the United States, where 133 cases were reported in Texas in 2002 and 85 cases were reported in 2003. Tularemia is a bacterial disease affecting both animals and humans, with 3 cases reported in Texas in 2002 and 2 cases reported in 2003. Rocky Mountain spotted fever is the most frequently reported rickettsial illness in the United States, with 13 reported cases in Texas in 2002 and 14 reported cases in 2003. In Texas, ehrlichiosis is a rare disease with fewer than 10 cases reported each year, according to the Texas Department of State Health Services. However many people with ehrlichiosis show no symptoms and do not seek medical care or in other cases may have been misdiagnosed, according to the Centers for Disease Control and Prevention.

In this booklet are a variety of exercises designed to help educate your students about ticks and explain why they are so dangerous.

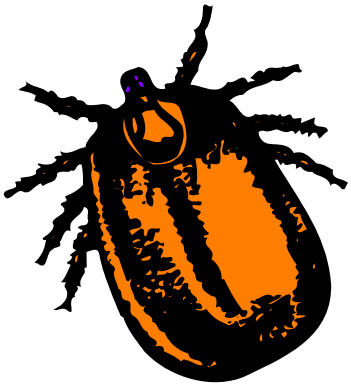


Table of Contents

Preface 1

Lesson 1 – What is a Tick? 3
- Lesson 1-1: What is a Tick? 4
- Lesson 1-2: Soft Ticks vs. Hard Ticks 6
- Activity 1-1: Tick Jeopardy Game 8
- Activity 1-2: Tick Games 10

Lesson 2: Tick Feeding 12
- Lesson 2-1: Locating a Host 13
- Activity 2-1: Tick Maze 14
- Lesson 2-2: Tick Feeding 15
- Activity 2-2: Tick Hosts 16

Lesson 3: Tick Lifecycles 18
- Activity 3-1: Tick Lifecycle 20

Lesson 4: Dangers of Ticks 22
- Lesson 4-1: Dangers of Ticks 23
- Lesson 4-1: Make Your Way to the Doctor Maze 24
- Lesson 4-2: Ways to Avoid Ticks 25
- Activity 4-2: The Dangers of Ticks Word Games 27
- Lesson 4-3: If a Tick Attaches, How Do You Remove It? 29
- Activity 4-3: Dangers of Ticks Word Search 31

Wrap Up Activity: Tick Crossword 32

Glossary 34

Lesson 1: What is a tick?

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will get an overview about tick biology and the differences between ticks and insects.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn habitats of ticks and learn to recognize ticks from insects. Students will also learn about the two basic types of ticks and be able to differentiate between them.

TEKS:
Science: 2.2a, 2.2b, 2.3a, 2.3b, 2.4b, 2.5a, 2.6d, 2.8a, 2.9a, 2.9b
Science: 3.2a, 3.3a, 3.3b, 3.5a, 3.5b, 3.8b, 3.8c, 3.9a, 3.9b
Science: 4.5a, 4.8a, 4.8b
Science: 5.5a, 5.5b, 5.9a, 5.9b, 5.9c

Materials:
Handouts of reading exercise
Overhead copy of reading exercise
Wrap-up questions for Lesson 1-1 and 1-2
Activity 1-1 and 1-2

Lesson 1-1: What is a tick?

Questions to ask before reading the passage:
What is a tick?
Are ticks and insects the same?
What characteristics make a tick a tick?

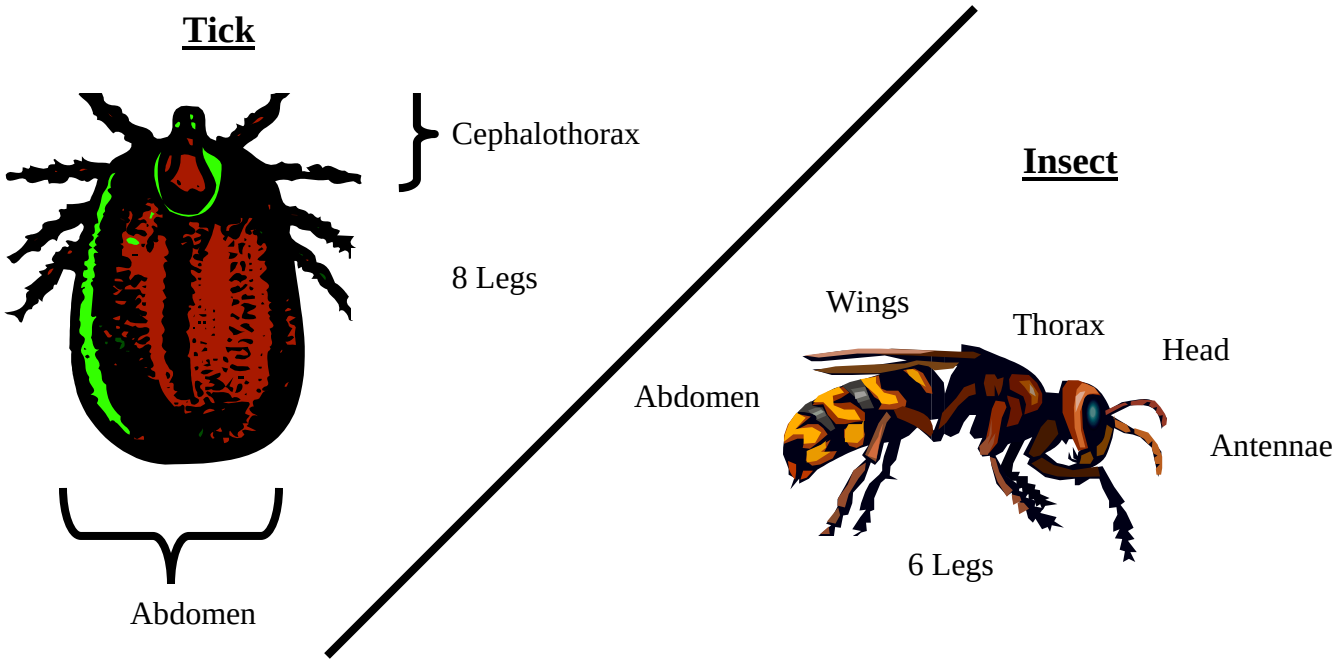
Reading Exercise:

There are around 300 species of ticks in the United States. Since there are so many different kinds of ticks, they can live in almost any habitat from forests to around houses. All ticks need a high level of humidity and moderate temperatures to develop. This means we will not find ticks in desert-like places because there are high temperatures and low humidity there.

Ticks are not insects, they are **arachnids**. Ticks have two body parts: the **cephalothorax** and the **abdomen**. Insects have three body parts: the head, thorax and abdomen. Ticks have eight legs and insects have six legs. Ticks eyes and eight legs are located on the cephalothorax. Insects have their eyes on their head and their six legs are located on the thorax. Ticks do not have wings or antenna, like insects usually have.

Ticks have their skeleton on the outside of their body. This is called an **exoskeleton**. Some ticks also have a **scutum**. A scutum is a hard plate that covers the tick's back. It is just like a shield.

Ticks are very closely related to mites, spiders and scorpions, which means they are all arachnids.



Wrap-Up Questions for Lesson 1-1:

Is a tick an insect? No, they are arachnids.

What are the body parts of a tick? Cephalothorax and abdomen.

What are the main differences between ticks and insects? Ticks have two body parts, cephalothorax and abdomen; insects have three body parts, head thorax and abdomen. Spiders have eight legs, while insects have six legs. Spiders never have wings or antennae, but most insects have both.

Lesson 1-2: Soft Ticks vs. Hard Ticks

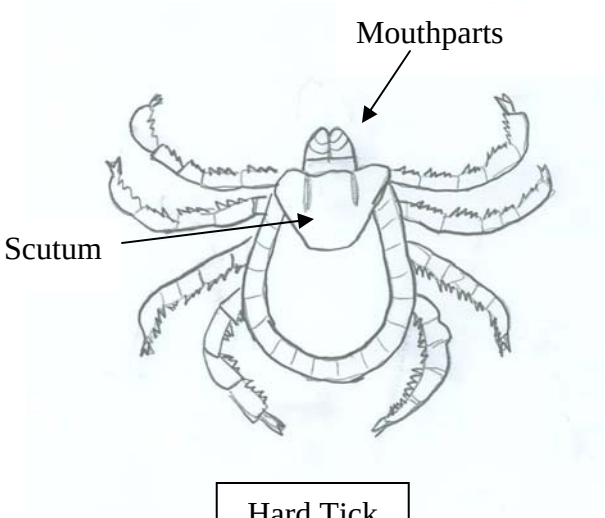
Questions to ask before reading the passage:
Has anyone ever been bitten by a tick?
What do ticks eat?
Do you think there are different types of ticks?

Reading Exercise A:

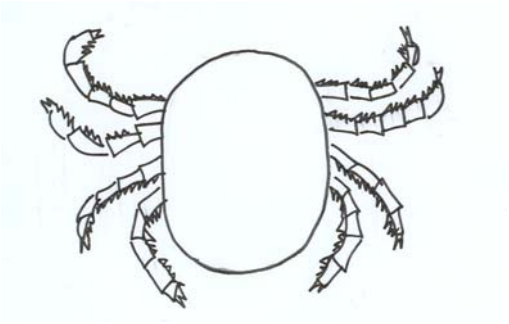
There are two basic types of ticks. There are soft ticks and hard ticks. Soft ticks look differently than the hard ticks. Soft ticks have a soft, leathery exoskeleton and do not have a **scutum**. You can not see a soft tick's mouthparts when you look at them because their mouthparts are underneath their body. Soft ticks can blow up like a balloon when they feed on blood because they do not have the hard scutum on their back. Soft ticks are very fast feeders and can fill up with blood in a few hours!

Hard ticks do have a scutum, so they are not able to take in as much blood. Hard ticks also have mouthparts that you can see because they stick out in front of the body. When the hard tick finds a host, it will slice open the skin using its mouthparts and then attach itself using saliva or spit. Hard tick's saliva is like cement and can help hold the tick in place on the host. The hard ticks are very slow feeders and it might take several days for them to get a blood meal!

As the tick feeds, it may suck in about 100 times its body weight! Animal blood is made up of several things, including blood cells and water. When the tick takes in a blood meal, it will only keep the blood cells and will return most of the water in the blood back to the host!



Hard Tick



Soft Tick

Wrap-up questions for Lesson 1-2:

What are the two types of ticks? Hard ticks and soft ticks.

What are the differences between the hard and soft tick? The hard tick has a scutum and its mouthparts stick out in front of the body. The soft tick does not have a scutum and its mouthparts are on the underside of its body.

How does the hard tick attach itself to a host? It attaches itself using its saliva.

Are the hard ticks slow or fast feeders? Slow feeders.

Activity 1-1: Tick Jeopardy Game

Your teacher will place you into teams. Your team will be asked a question about ticks. If you answer correctly, your team earns a point. If you answer incorrectly your team will not receive any points. Once all the questions have been asked, the team with the greatest number of points wins.

Other Suggestions for Teachers: If you have a large group of students, use more than two teams. In order to conserve questions, have each team write "false" on a sheet of paper and "true" on another sheet of paper. After you ask a quiz question, each team will have the opportunity to answer by silently holding up their answer sheet. The team with the most points is the winning team.

Suggested True/False Quiz Questions:

1. Ticks are arachnids TRUE
2. Ticks legs are found on its abdomen FALSE
3. Ticks have antennae FALSE
4. Ticks eyes are found on the cephalothorax TRUE
5. There are over 1000 species of ticks in the United States TRUE
6. Ticks can live in many different habitats TRUE
7. Ticks must live in places with high humidity TRUE
8. Ticks must live in places with very hot temperatures FALSE
9. You can find ticks in deserts FALSE
10. Ticks have four body parts FALSE
11. Ticks have a thorax FALSE
12. Ticks have six legs FALSE
13. Ticks never have wings TRUE
14. Ticks are related to mites TRUE
15. Ticks are insects FALSE
16. Soft ticks are a type of tick TRUE
17. When a tick feeds on blood it can suck as much as 100 times its body weight TRUE
18. Soft ticks have a scutum FALSE
19. A scutum is like a shield on the back of a tick TRUE
20. Hard ticks have a scutum TRUE
21. You can see a soft ticks mouthparts from above FALSE
22. Hard ticks are faster feeders than soft ticks FALSE
23. Hard ticks use their saliva as cement to keep them in place when they feed TRUE
24. It may take soft ticks up to several days to get a blood meal FALSE

Activity 1-1: Tick Jeopardy Game Continued

Suggested Greater Difficulty Quiz Questions:

1. How many body parts do ticks have? TWO
2. What are the body parts of a tick? CEPHALOTHORAX AND ABDOMEN
3. How many legs do ticks have? EIGHT
4. What are the two basic types of ticks? HARD AND SOFT
5. Why can't you find ticks in deserts? TOO HOT AND DRY
6. What is a scutum? SHEILD ON THE BACK OF A (HARD) TICK

Tie Breaker Questions:

1. How are ticks and insects different from one another LEGS, BODY PARTS, WINGS, ANTENNAE
2. How are hard and soft ticks different from one another HOW THEY EAT, WHAT THEY LOOK LIKE, PRESENCE OF SCUTUM

Activity 1-2: Tick Games

A. Unscramble the words to answer *how many body parts and how many legs tick have*.

____ ____ ____ ____ ____	____ ____ ____ ____	____ ____ ____	____ ____ ____ ____
CKTIS	**VEAH**	**OTW**	**DOBY**

____ ____ ____ ____ ____	____ _____ _____	_____ _____ _____ _____ _____
RTAPS	**NAD**	**GEIHT**

_____ _____ _____ _____

GSEL

B. Unscramble each of the clue words using the word bank. You will not use all the words in the word bank. Copy the letters in the numbered boxes to bottom row of boxes with the same number to figure out the secret phrase.

AOTAEXHPCROHL (11 … 6)

TEGHI (15 1)

RADH (7 16)

FOST (17)

TOKEXNEESOL (4 … 14)

CUTMUS (3)

RATHOTMUSP (9 10)

DABMOEN (8)

DAIRACSNH (12 13 2)

TICSK (5)

1	2	3	4	5		6	7	8		9	10	11	12	13	14	15	16	17

Word Bank
(not all words will be used)

Abdomen
Arachnids
Balloon
Cephalothorax
Eight
Exoskeleton
Feed
Hard
Host
Mouthparts
Scutum
Soft
Ticks

Activity 1-2: Tick Games KEY

A – Ticks have two body parts and eight legs

B – Cephalothorax
Eight
Hard
Soft
Exoskeleton
Scutum
Mouthparts
Abdomen
Arachnids
Ticks

Secret Phrase: "Ticks are arachnids"

Lesson 2: Tick Feeding

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will learn about how the tick finds and host and how it feeds.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn about ways a tick finds a host and how it feeds.

TEKS:
Science: 2.2a, 2.2b, 2.3a, 2.3b, 2.8a, 2.9a, 2.9b
Science: 3.2a, 3.3b, 3.5a, 3.5b, 3.8b, 3.8d, 3.9a, 3.9b
Science: 4.5a, 4.8a
Science: 5.5a, 5.5b, 5.9a, 5.9b, 5.9c

Materials:
Handouts of reading exercise A and B
Overhead copy of reading exercise A and B
Wrap-up questions for Lesson 2-1 and 2-2
Activity 2-1 and 2-2

Lesson 2-1: Locating a Host

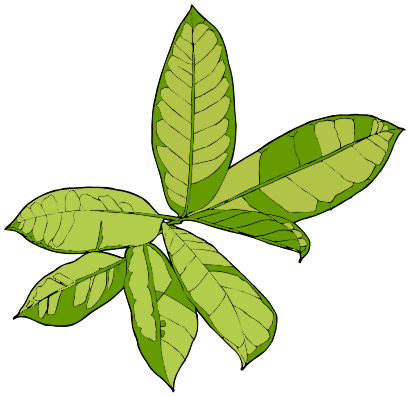
Questions to ask before reading the passage:
Have you ever seen a tick?
Where did you see the tick?
Can ticks bite your pets?

Reading Exercise A:

Ticks eat blood as their food. When a tick drinks blood it is called a **blood meal**. Before a tick can grow larger, it needs a blood meal. To get a blood meal, the tick must find a **host**. A host is the animal that the tick chooses for its blood meal. A host can be a human, dog, deer, cow, or other **vertebrates** living on land. Ticks can even feed on reptiles such as lizards!

How do ticks find their host? A developing tick will climb up a blade of grass or the leaf of a plant or tree branch and wait for a host come along. Ticks can tell if a host is near by feeling vibrations on the ground when the animal walks, sensing the CO_2 in the air that animals breathe out, and by feeling the warmer temperatures from the body. When a tick senses a host, it will stand upright and wave its front legs to attach to a host.

If the tick is unsuccessful, they will climb back to the ground before they become **dehydrated**. Once they are **hydrated** again, they will climb back up the plant and wait for a host again. They must have a host in order to complete their lifecycle or continue with a generation. If they do not find a host, they will die!

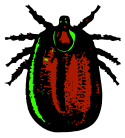


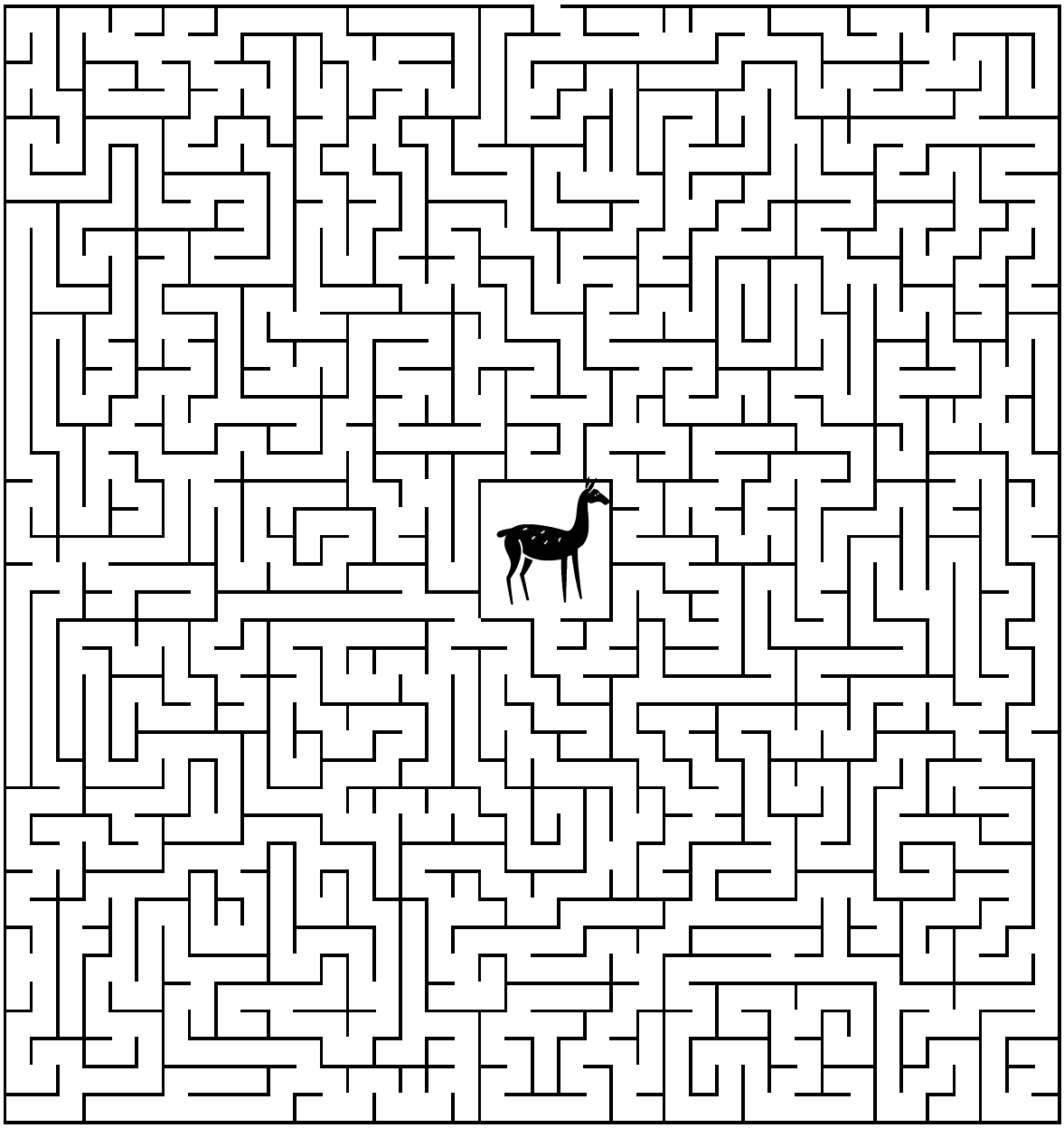
Wrap-up questions for 2-1:

What does a tick need in order to grow larger? A blood meal.
What cues does a tick use to detect a host? Vibration in grasses, CO_2 in the air and warm temperature from the body.
How does the tick attach to a host? It uses it front pair of legs to attach to the host.
What happens to a tick if it can not find a blood meal? It will die.

Activity 2-1: Tick Maze

Help Tinsley the tick find his host.





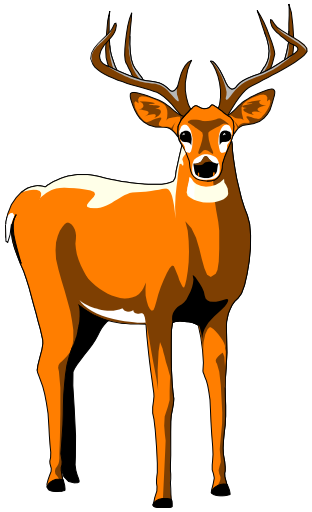
Lesson 2-2: Tick Feeding

Questions to ask before reading the passage:
On what animals do you think ticks feed?
If a tick feeds on blood, what types of mouthparts are needed?
How do you think a tick feeds on a host, if the host is running or jumping around?

Reading Exercise B:

Ticks feed by inserting their mouthparts under their host's skin and feeding on the blood. This means they stay and in one spot and do not move very much. Since ticks are able to carry diseases, it is important to check yourself and your pets to make sure that ticks are not imbedded in the skin. Ticks will only be found outdoors, so you do not have to worry about them living inside with you, like fleas. However, they carry more dangerous diseases than fleas and are sometimes harder to find on skin.

Adult ticks usually remain on deer and other mammals in the fall and winter. If you spend large amounts of time outdoors during fall and winter, be sure to check yourself, other family members and pets daily. If you or your family hunts, also be sure to check for ticks that may have fallen off during the handling of animals.



Wrap-up questions for 2-2:

How do ticks feed? They feed by inserting their mouthparts under the skin and then feed on blood.
Are ticks dangerous? Yes, they can carry many diseases.
Can ticks be found indoors? They will be found living outdoors.
Where do most ticks live in fall and winter? On deer or other mammals.

Activity 2-2: Tick Hosts

Name 10 different vertebrates that can be HOSTS of ticks:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Hints: Here's some help: Some of these animals can be hosts, and some cannot. Can you figure out the difference?









Activity 2-2: Tick Hosts KEY

Examples of some answers that are correct:

Frogs
Toads
Salamanders
Amphibians
Cows
Humans
Deer
Dogs
Cats
Coyotoes
Horses
Rats
Mice
Other Mammals
Lizards
Other Reptiles

Examples of answers that are not correct:

Seahorse
Fish
Animals that live underwater only
Insects and other arthropods

Lesson 3: Tick Lifecycles

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will learn about the differences between the soft tick and the hard tick and their lifecycle.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn about the differences between hard and soft ticks and their lifecycle.

TEKS:
Science: 2.2a, 2.2b, 2.3a, 2.3b, 2.5a, 2.6b, 2.8a, 2.9b
Science: 3.2a, 3.2b, 3.5a, 3.5b, 3.8b, 3.9a, 3.9b
Science: 4.5a, 4.8a
Science: 5.5a, 5.5b, 5.6c

Materials:
Handouts of reading exercise A and B
Overhead copy of reading exercise A and B
Wrap-up questions for Lesson 3
Activity 3

Lesson 3: Tick Lifecycle

Questions to ask before reading the passage:
How do you think ticks grow?
Have you ever seen different sized ticks?
What size are ticks?

Reading Exercise B:

Ticks go through four **lifestages** as they develop. These four lifestages are egg, larva, nymph and adult. The adult female tick will lay around 100 eggs at a time, but sometimes a female can lay up to 20,000 eggs at a time! The female tick will lay the eggs in the soil or leaf litter.

The egg hatches into a larva that only has six legs. The larva stage is the smallest lifestage and they are sometimes called "seed ticks" because they are so small. This newly hatched larva must get a blood meal in order to molt and grow larger. Once the larva finds a host and gets a blood meal, it will molt and gain another pair of legs.

Once the larva molts and has eight legs, it is called a **nymph**. The nymph will take in another blood meal and will molt into an adult tick. The adult tick is larger than a nymph.

The tick's entire lifecycle from egg to adult can take a year to several years to complete! The long lifecycle is due to the number of **hosts** needed for the tick to develop from the egg stage to the adult stage. Some ticks feed on only one host, while others need two, three or more hosts to complete their lifecycle.

Wrap-Up Question for Lesson 3-1:

How many lifestages are found within the tick's lifecycle? 4
What are the lifestages of a tick? Egg, larva, nymph and adult
How many legs are found on a tick larva? 6
What are larvae ticks called? "Seed ticks"
Why is a tick's lifecycle so long? Ticks need multiple hosts in order to develop from egg to adult, from one to more than three hosts.

Activity 3-1: Tick Lifecycle

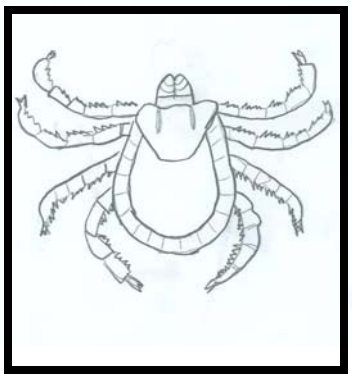
Cut out the four lifestages of the tick below and glue them in the correct box.

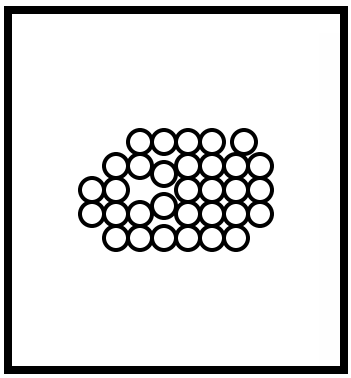
Larvae

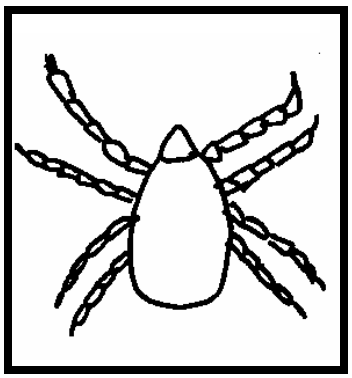
Nymph

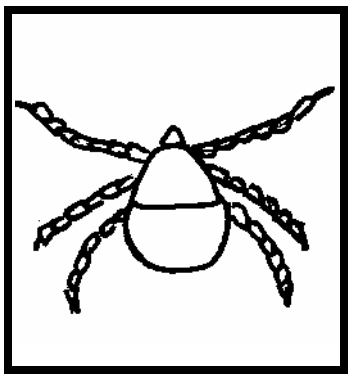
Adult

Eggs



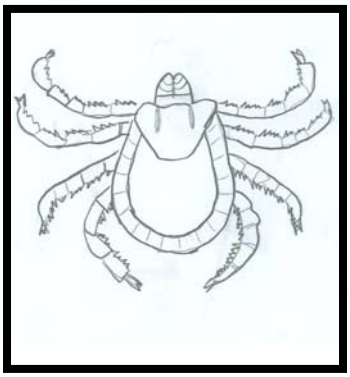
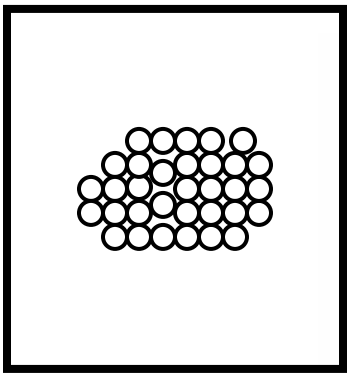
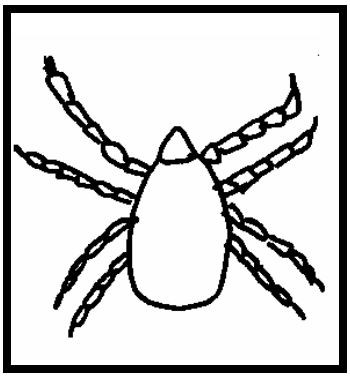
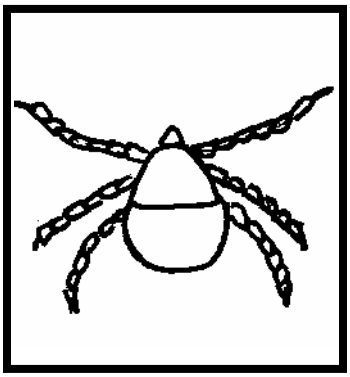






Activity 3-1: Tick Lifecycle KEY

Cut out the four lifestages of the tick below and glue them in the correct box.

Adult	Eggs	Nymph	Larvae
			

Lesson 4: Dangers of Ticks

Overview:
Students will read the following passage in the classroom and then answer relevant questions pertaining to the passage. The students will learn about the dangers of ticks and ways to prevent ticks.

Instructions:
Read the passage either in groups or as a class.

Objectives:
Students will be able to learn about the dangers of ticks, how to prevent ticks and how to remove ticks if found.

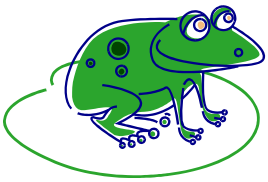
TEKS:
Science: 2.2a, 2.2b, 2.3a, 2.3b, 2.8a, 2.9a, 2.9b
Science: 3.2a, 3.3b, 3.5a, 3.5b, 3.8a, 3.8b, 3.9a, 3.9b
Science: 4.5a, 4.8a, 4.8b
Science: 5.5a, 5.9a, 5.9b, 5.9c

Materials:
Handouts of reading exercise A, B and C
Overhead copy of reading exercise A, B and C
Wrap-up questions for Lesson 4-1, 4-2 and 4-3
Activity 4-1, 4-2 and 4-3

Lesson 4-1: Dangers of Ticks

Questions to ask before reading the passage:
Do ticks only feed on humans?
Are ticks able to transmit disease?
Can you name one disease that ticks can transmit?

Reading Exercise A:



Ticks are not picky when they choose a blood meal. In fact, they are able to attach to all **terrestrial** vertebrate animals, even **amphibians**. This makes ticks very dangerous! They are a close second to the mosquito when it comes to transmitting diseases to humans.

Ticks are able to spread many diseases such as **babesiosis**, **ehrlichiosis**, **Rocky Mountain spotted fever** and **Lyme disease**. Lyme disease often causes such symptoms as tiredness, fever, headache, joint pain, swollen **lymph nodes**, and a red, circular rash. Rocky Mountain spotted fever usually causes fever, a rash, and vomiting. Ehrlichiosis causes a fever, vomiting but no rash occurs. Babesiosis causes red blood cells to burst, which can cause fever, sweats, muscle aches, nausea, and vomiting.

Ticks can cause **anemia** due to blood loss of an animal from many ticks taking in a blood meal. Ticks can also cause **dermatosis**, due to the saliva that they put into the skin as the tick feeds. Dermatosis is a disease of the skin which can be a rash or itching. Ticks can also cause tick **paralysis**, due to the neurotoxins in their saliva. If you have tick paralysis your entire body can become paralyzed and you will not be able to move! Tick paralysis usually goes away after a while, but you need to go to a doctor immediately.

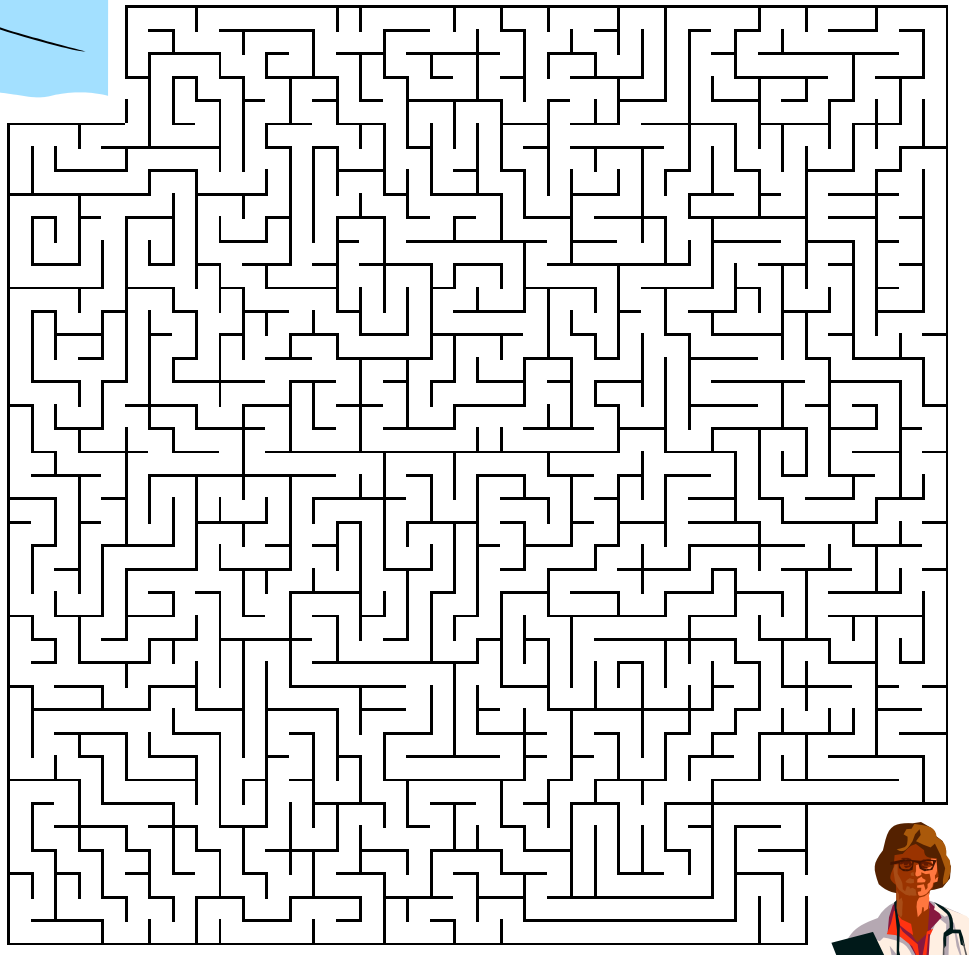
If you or your pet has any of these symptoms after a tick is found feeding in the skin, call your family doctor or veterinarian.

Wrap-up questions for 4-1:

<u>Do ticks only like to feed on one type of animal?</u> No, they are able to attach to all terrestrial vertebrate animals.
<u>Do ticks only transmit one disease?</u> No, they are able to transmit many diseases, around 7 diseases.
<u>Can a tick cause paralysis in humans?</u> Yes, one tick that attaches to a human can cause the entire body to become paralyzed.
<u>What should you do if you suspect that you have a tick transmitted disease?</u> Call a doctor.

Activity 4-1: Make Your Way to the Doctor Maze

Jenny was bitten by a tick and now feels sick. Help her find her way to the doctor to get treatment.



Lesson 4-2: Ways to Avoid Ticks

Questions to ask before reading the passage:
Where are ticks found?
Do you think long-sleeved shirts and long pants help to prevent ticks from attaching to your body?
Can chemicals be applied to dogs and cats that will prevent attachment of ticks?

Reading Exercise B:

If you are going into an area infested with ticks you should do some things to try to avoid them. One way to prevent ticks from attaching to the skin is to wear long-sleeved shirts that are tight at the wrists and long pants that are tight at the ankles. You should also tuck your pants into white socks, so you can see the ticks crawl up the outside of your pants. This will make it easier for you to see the crawling ticks. Make sure to wear shoes that cover your entire foot, so no flip-flops! Wear a hat so the ticks can not drop onto your scalp from the trees.

Repellents can be applied to the skin and clothes to keep ticks from crawling onto your body.

If there is a heavy infestation of ticks in your yard, chemicals can be sprayed to help control them. This may be a good idea if pets live outdoors. Since ticks use plants to find their hosts, weeds should be removed and grass should be mowed. This way ticks don't have many habitats to live in.

Keep your pets from roaming in wooded or tall grassy areas. That way ticks will not attach to your pets.

Remember, ticks do not just like to feed on humans and pets. Keep rodents and wild animals from entering your backyard because they often have ticks that can infest you or your pets!

If you do have a pet with a tick problem, you can use chemicals that you apply to their skin monthly. These products should be prescribed by your veterinarian. For dogs, tick collars can be worn to prevent ticks from attaching to their skin. These collars work best if they are kept dry. You should not use these collars on cats.

Wrap-up questions for 4-2:

What should you wear if entering a tick infested area? You should wear long-sleeved shirts, long pants and closed shoes.

Why should white socks be worn? White socks should be worn and pants should be tucked into the socks. This will allow ticks to be noticed as they crawl across the sock.

Why should rodents and wild animals be controlled around homes? Rodents and wild animals should not be allowed close to homes, since they can carry ticks and can bring them closer to you and your companion animal.

What can be applied to pets so ticks will be less likely to attach to them? Chemicals can be applied to your pets or flea/tick collars can be worn by dogs.

Activity 4-2: The Dangers of Ticks Word Games

Cryptogram A: Try to decipher the code to reveal the hidden message!

Hint: T = 17 ; S = 3 ; D = 9; E = 7; Y = 22; and the fourth word is "ticks"

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

__ __   __ __ __ __ __ __ __   __ __ __ __   __ __ __ __ __ '   __ __ __ __

10 7   20 12 21 7 25 14 6   23 13 26 17   26 13 20 8 3 '   26 17 7 22

__ __ __ __ __   __ __ __ __ __ __ __ __ !

20 12 21 21 22   9 13 3 7 12 3 7 3 !

Cryptogram B: Double Puzzle. Try to decipher the code to reveal the hidden message!

RMEEMEBR   HET   AYSW   OT   VIODA   TIKCS

RMEEMEBR	HET	AYSW	OT	VIODA	TIKCS
☐☐☐☐☐☐☐☐ (box 1 = 5, box 2 = 6, box 6 = 1)	☐☐☐ (box 3 = 2)	☐☐☐☐ (box 2 = 4)	☐☐	☐☐☐☐☐	☐☐☐☐☐ (box 3 = 3)

Decipher this code using the letters and numbers above:

☐☐   ☐☐☐☐ F U L

1 2   3 4 5 6

Activity 4-2: The Dangers of Ticks Word Games KEY

Cryptogram A: "Be careful with ticks, they carry diseases.

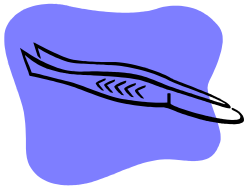
Cryptogram B: "Remember the ways to avoid ticks"
Secret Code: " Be Careful"

Lesson 4-3: If A Tick Attaches, How Do You Remove It?

Questions to ask before reading the passage:
Do you think that a tick can be removed?
How would you remove a tick?
Do you think fire is a safe way to remove a tick?

Reading Exercise C:

If you find a tick, it is best to use **tweezers** to slowly and gently remove it. You should pick up the body with the tweezers and pull straight out. This will cause the mouthparts of the tick to be released from the skin. After the tick has been removed, you might see a small hole. If you see black lines after you pull out the tick body, then the head of the tick is still in the skin. You can try to pull out the mouthparts or go to the doctor so they can remove the head for you. It is important to remove the headparts, since they can cause infection. Always remember to wash your hands after handling a tick.



For pets, use a wide tooth flea comb to look through hair for ticks. If you look for ticks immediately after a walk or hike in infested areas, the ticks will be crawling around. The flea combs make them noticeable.

Here are some tips of what *NOT* to do in case you find a tick. First, do not use any matches, gasoline or cigarettes to **irritate** the tick into coming out of the skin. These are dangerous items and should not be anywhere close to your skin. Secondly, do not pour oil over the tick to kill it. Some people think oil will suffocate the tick, but ticks only need a small amount of oil to survive. Finally, do not rotate the tick as you try to remove it from the skin. The tick's mouthparts are barbed and they are more likely to stick into the skin if you twist the tick when removing it. The best way is to gently pull the tick straight out using tweezers.

It is always easier to remove ticks before they attach, and easier to remove newly attached ticks than ones that have been feeding for a while.

Once you have removed the tick, it is important to properly kill them. The best way is to drop the tick into alcohol within a jar to kill it and then throw it away. However, you can also keep the tick in the container and take it to a doctor or entomologist for identification. If you just flush the tick down the drain it WILL NOT KILL THEM. Also, do not squish the tick with your fingernails. Ticks can carry diseases and it is not a good idea to put the disease on the skin.

Wrap-up questions for 4-3:

What should be used to gently remove a tick? A pair of tweezers.
How should the tick be pulled from the skin? The body of the tick should be picked up and then pulled straight out.
Should gasoline, matches or oil be used to remove ticks? No, they are not effective at removing ticks and more importantly they are dangerous. Ticks should be removed using a pair of tweezers to gently pull the tick directly out of the skin.
Is it easier to remove a newly attached tick or a tick that has been feeding for a while? It is easier to remove a newly attached tick.
How should the tick be killed after it is removed from the skin? The tick should be placed in a container of alcohol and then the container should be thrown away.

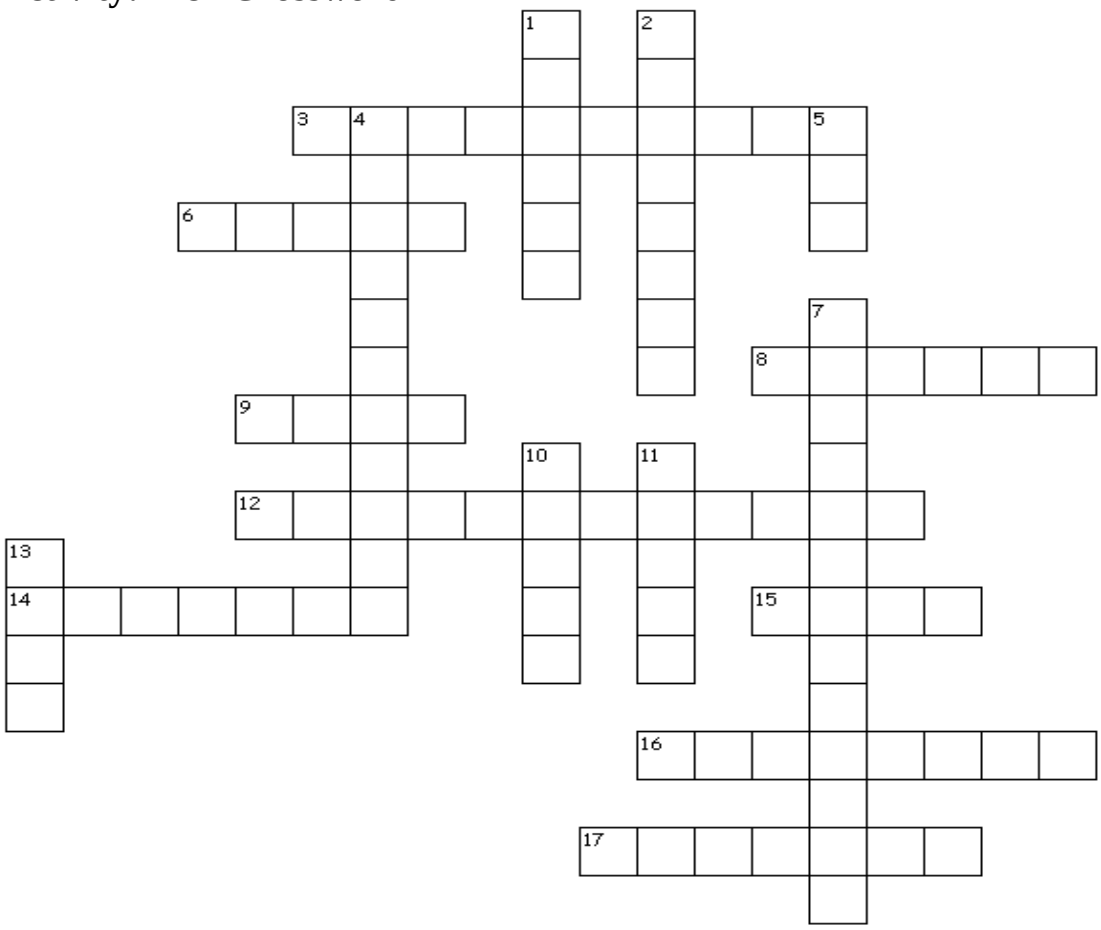
Activity 4-3: Dangers of Ticks Word Search

S W B T O N S I V F O H O G S G R P L S
A D M R O S D U Z E W S D A L E P Y O P
X T O W H H U O S L K O O T P A L X N N
F L W O G S H U M M A F I E Z N J R G X
L M C E W S O G Q U H E L Y N E Q M S K
J S R R E R D Y R U U L M F N M X Y H L
S R R K E Z U Y N E E X P D W I J T I O
J Y Q G S G E H O N A L O I O A Y F R H
I J N W U Z G R T Y I O T X T O E Z T M
N A J Z A Q I N S I H W O N Y H L L S Q
D K Q I J M F T S I S Y L A R A P B C O
D N L X K S Y O R D D E M W R P H K N B
H R C E F T A V A D I S E A S E S X O O
Y Z Z Q C N Y K X V H R F T H T Z O N K
F N Z G K A B H W E T L J F T B Y N X O
U B D O Y P K Z K I C X V I O J M Q A Y
Q K E O D G G U C C N N X E C L O H X V
S S A R G N D K S H V Y F K B W P B A N
R C J O M O S E H B F P M J Z M G Z O V
L A X Q V L P Z Y B N T I L H Z E J G A

Word Bank

ANEMIA
BLOODMEAL
DANGEROUS
DISEASES
GRASS
LONGPANTS
LONGSHIRTS
PARALYSIS
REPELLENT
TICKS
TWEEZERS
WOODS

Wrap Up Activity: Tick Crossword



Across

3. Prevent ticks from crawling on body
6. What a tick needs to molt
8. Place where ticks are usually not found
9. Shedding the exoskeleton
12. Doctor that can help your pets
14. Second body region of a tick
15. This kind of tick feeds quickly
16. Liquid that you should never pour on your skin
17. Ticks transmit this to vertebrates

Down

1. Holds tick in place while feeding
2. Tool used to remove ticks
4. Outside skeleton of a tick
5. Number of legs found on a tick larva
7. First body region of a tick
10. Number of legs found on an adult tick
11. This lifestage is sometimes called seed ticks
13. This kind of tick feeds slowly

Word Bank

Blood
Soft
Molt
Gasoline
Larva
Veterinarian
Desert
Saliva
Tweezers
Six
Repellents
Disease
Abdomen
Cephalothorax
Exoskeleton
Eight
Hard

Wrap Up Activity: Tick Crossword KEY

Across
3. repellents
6. blood
8. desert
9. molt
12. veterinarian
14. abdomen
15. soft
16. gasoline
17. disease

Down
1. saliva
2. tweezers
4. exoskeleton
5. six
7. cephalothorax
10. eight
11. larva
13. hard

Glossary Terms

Abdomen (Lesson 1) - the end segment of the body in an arthropod (third body region of a insect, and second body region of a tick).

Amphibians (Lesson 4) **-** a class of cold-blooded vertebrate, such as frogs, toads, or salamanders, that have gilled larvae living in water and adults breathing air.

Anemia (Lesson 4) **-** a condition in which the amount of blood within a body is lower than average.

Arachnid (Lesson 1) **-** a class of arthropods that have a two-segmented body, four pairs of legs and no antennae, such as spiders, scorpions, mites, and ticks.

Babesiosis (Lesson 4) **-** infection caused by bacteria that infects mammals red blood cells.

Blood Meal (Lesson 2) – a feeding of blood that ticks need to grow to the next life stage and lay eggs.

Cephalothorax (Lesson 1) **-** the fused head and thorax of an arachnid or crustacean. The first body region of a tick.

Dehydrated (Lesson 3) **-** to remove water.

Dermatosis (Lesson 4) **-** a disease of the skin.

Ehrlichiosis (Lesson 4) **-** a bacteria that is transmitted by tick that can cause fever, chills, headache, nausea and muscle aches.

Exoskeleton (Lesson 1) - an external supportive covering of an arthropod. (Bones on the outside.)

Host (Lesson 2) **-** a living animal or plant where a parasite can live on or within. The term used for the animal that gives a tick its blood meal.

Hydrated (Lesson 3) **-** to add or supply with water.

Irritate (Lesson 4) **-** to make angry or not pleasurable.

Larvae (Lesson 3) – the second lifestage of a tick after the egg stage that only has six legs.

Lifestages (Lesson 2) **-** stages in which an organism develops in order to become an adult.

Lyme Disease (Lesson 4) **-** a bacteria that is transmitted by ticks that causes tiredness, fever, chills. If left untreated, it can cause joint pain and heart/nerve problems.

Lymph nodes (Lesson 4) **-** any of the round bundles of lymphoid tissue which filter the flow of lymph passing through the node.

Nymph (Lesson 2) **-** a stage of development before becoming an adult. The third lifestage of a tick.

Paralysis (Lesson 4) **-** loss of the ability to move.

Repellents (Lesson 4) **-**something that forces away or causes distance between two objects.

Rocky Mountain Spotted Fever (Lesson 4) **-** a bacteria that is transmitted by a tick that causes chills, fever, pains in muscles and joints, and a rash to occur.

Scutum (Lesson 2) **-**a hard plate made of chitinous protein located on a hard tick's back side.

Terrestrial (Lesson 4) – living on land.

Tweezers (Lesson 4) **-** a hand held tool made of metal that can be used to remove small items that are lodged into the skin.

Vertebrate (Lesson 2) – animals that have a spinal collumn

**** Some definitions adapted from Merriam-Webster's Online Dictionary: http://www.m-w.com/dictionary.

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