



# **Mosquito Activity Book**

**Produced by Maine Center for Disease  
Control and Prevention**

## 10 MOSQUITO FUN FACTS

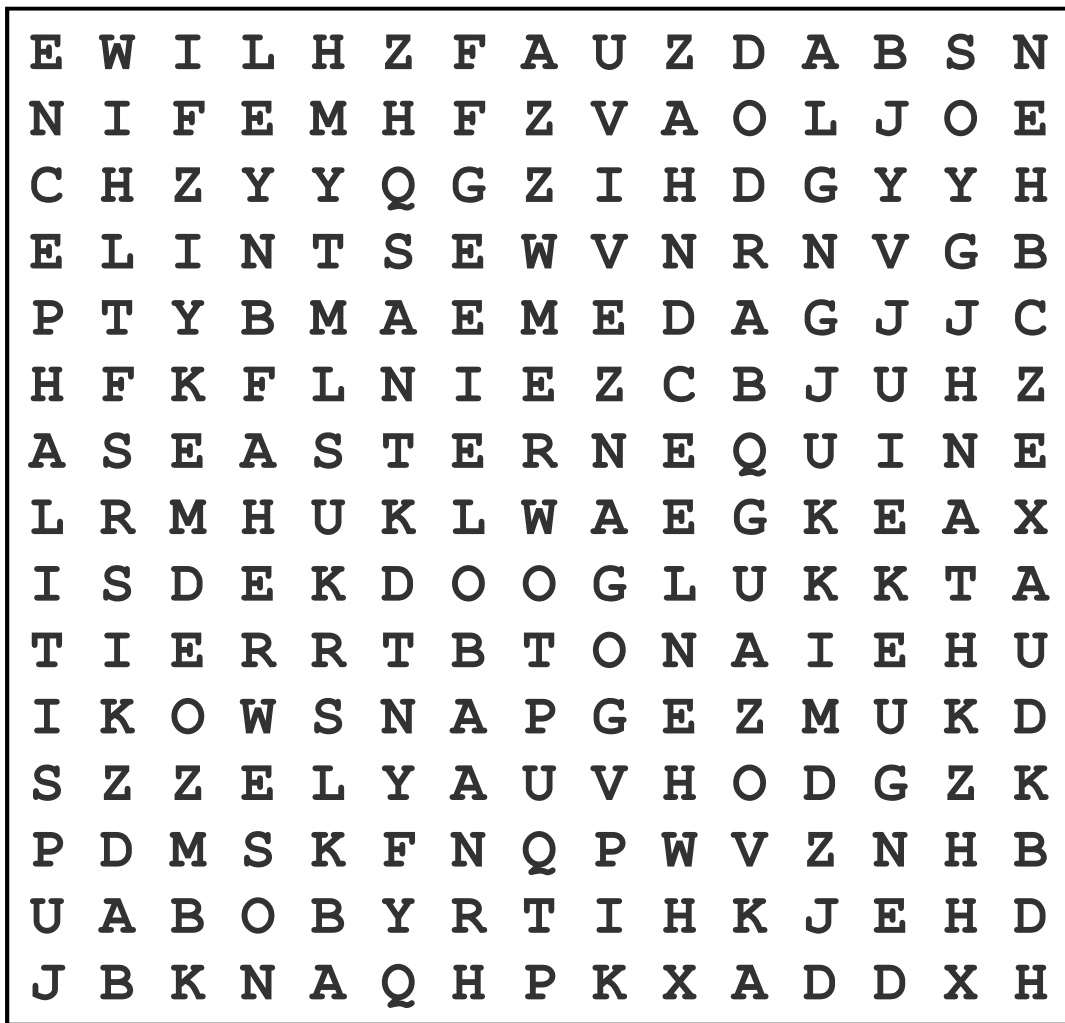
1. Eggs of floodwater mosquitoes may remain inactive for several years and hatch when they are covered with water. Depending on temperature, it may take several months for a larva to develop to the adult stage once it hatches.
2. An adult female mosquito weighs only about 1/15,000 ounce (about 2.0 milligrams).
3. An adult female mosquito consumes about 5-millionths of a liter in a single blood meal.
4. A mosquito wing beats from 300 to 600 times per second.
5. Male mosquitoes find female mosquitoes by listening to the sound of their wings beating. The males can actually identify the correct species by the pitch of the female's wings.
6. Mosquitoes can fly about 1 to 1.5 miles per hour.
7. Most mosquitoes do not fly very far from their larval habitat, but the salt marsh mosquito migrates 75 to 100 miles over the course of its life.
8. A mosquito can smell the carbon dioxide you exhale from about 60 to 75 feet away.
9. Some people are more attractive to mosquitoes than others. It is not clear why, but probably has something to do with the 300 odd chemicals produced by the skin.
10. In the interest of science, Arctic researchers uncovered their chests, arms, and legs and reported as many as 9,000 mosquito bites per person, per minute. At this rate, an unprotected human would lose one half of his blood supply in approximately 2 hours.



# Mosquito-borne Diseases

Mosquitoes can pass the viruses that can cause diseases to humans in Maine and in the rest of the world. Eastern Equine Encephalitis virus (EEE), Jamestown Canyon virus (JCV), and West Nile virus (WNV), are found in Maine and can make humans and animals sick.

Directions: Using the list below, find and circle all the names of mosquito-borne diseases hidden in the puzzle. The words can be forward, backward, up, down, or diagonal.

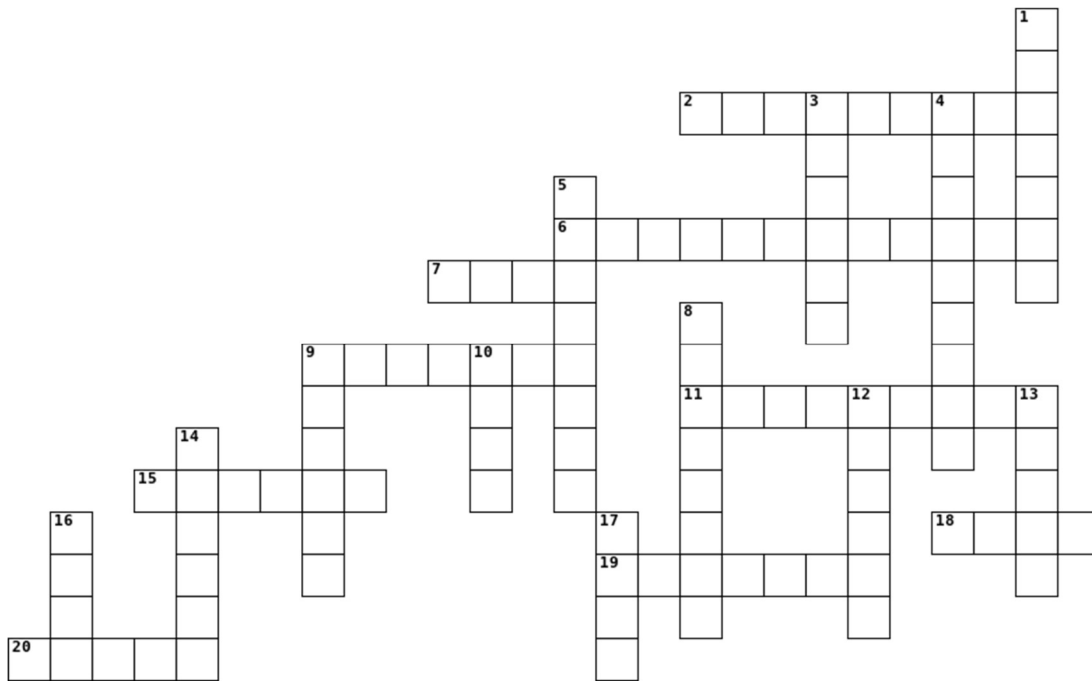


Chikungunya  
Dengue  
Eastern Equine  
Encephalitis

Jamestown Canyon  
Malaria  
West Nile  
Zika



# Crossword Puzzle



## Across

2. The \_\_\_\_ is the sharp mouthpart the mosquito uses to bite.
6. Eastern Equine \_\_\_\_\_ is a mosquito-borne disease found in Maine.
7. A female mosquito lays \_\_\_\_ in or near water.
9. The \_\_\_\_\_ is the part of the mosquito where blood and eggs are stored.
11. Using insect \_\_\_\_\_ is a good way to protect yourself from mosquitoes.
15. Only the \_\_\_\_ mosquito bites.
18. \_\_\_\_ is a type of repellent that can be used on skin.
19. The \_\_\_\_\_ is on the mosquito's head and used to hear and smell.
20. Larvae and pupae need \_\_\_\_\_ to survive and grow.

## Down

1. The best way to prevent a mosquito-borne \_\_\_\_\_ is to not get bitten.
3. Mosquitoes can smell carbon dioxide in your \_\_\_\_\_.
4. Larvae can grow in any \_\_\_\_\_ filled with water.
5. \_\_\_\_\_ virus is found throughout the US, including Maine.
8. Change the water in your \_\_\_\_\_, where birds can bathe, once a week to prevent larvae from growing there.
9. \_\_\_\_ (plural) are the fourth stage of the mosquito life cycle.
10. The \_\_\_\_ mosquito does not bite.
12. \_\_\_\_\_ (plural) are the second stage of the mosquito life cycle.
13. Old \_\_\_\_\_ are the most common breeding site for mosquitoes in the US.
14. Male mosquitoes feed mainly on plant \_\_\_\_\_.
16. The \_\_\_\_ (singular) is the third stage of the mosquito life cycle.
17. Mosquitoes are active at dusk and \_\_\_\_\_.



# Find the Hidden MOSQUITO Message!

5 13 16 20 25  
19 20 1 14 4 9 14 7  
23 1 20 5 18 !

6 9 7 8 20 20 8 5  
2 9 20 5 !

Here is the Code:

1 - A	5 - E	9 - I	13 - M	17 - Q	21 - U	24 - X
2 - B	6 - F	10 - J	14 - N	18 - R	22 - V	25 - Y
3 - C	7 - G	11 - K	15 - O	19 - S	23 - W	26 - Z
4 - D	8 - H	12 - L	16 - P	20 - T		



## MOSQUITO MATH PROBLEMS

### Problem 1:

A female mosquito lives for 150 days and lays a raft of 250 eggs every 15 days.

How many eggs will she lay in her lifetime?

### Problem 2:

A female mosquito lays 1200 eggs in her lifetime. She lays 300 eggs in her first egg batch.

What percent of her total eggs are laid in the first egg batch?

### Problem 3:

A mosquito lays 150 eggs in a raft. All of the eggs hatch, but 32% of the larvae are eaten by fish. The rest survive to become adults.

A. How many of the larvae are eaten by fish?

B. How many of the larvae will survive to become adults?

### Problem 4:

A mosquito lays 200 eggs in a raft. Ninety percent (90%) of the eggs hatch. Of the larvae that hatch, 50% are eaten by aquatic predators; the rest survive to become adults. Of the adults that emerge, 20% are eaten by dragonflies and spiders on the way to taking their first flower nectar meal. How many make it to the flower to take a meal?

### Problem 5:

Two mosquitoes fly off together in search of flower nectar. The first mosquito flies 3 miles and finds a flower in a garden. The second mosquito flies 2.5 times that far, and finally finds a clover field. How far did the second mosquito fly?

*Courtesy: NEATO MOSQUITO, An Elementary Curriculum Guide, 2nd Edition  
Produced by: Roger S. Nasci and James E. Herrington, Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention*



# Mosquito Inspector Check List

Directions: Listed below are some common man-made containers where you might find mosquito larvae in your yard. With the help of an adult, inspect around your home for each item on this list and check it for water. If you find any water, dump it out so mosquitoes cannot breed there. Put a check in the correct box for each item. And add any extra places where you found water!

Item	Found	Found with water	Did not find
Bird bath			
Buckets			
Cans, bottles, jars			
Flower pots			
Gutter			
Pet water dish			
Pond			
Rain barrel			
Tarps			
Tires			
Toys			
Trash can			
Tree holes			
Wading pool			
Wheel barrow			
Other _____			
Other _____			

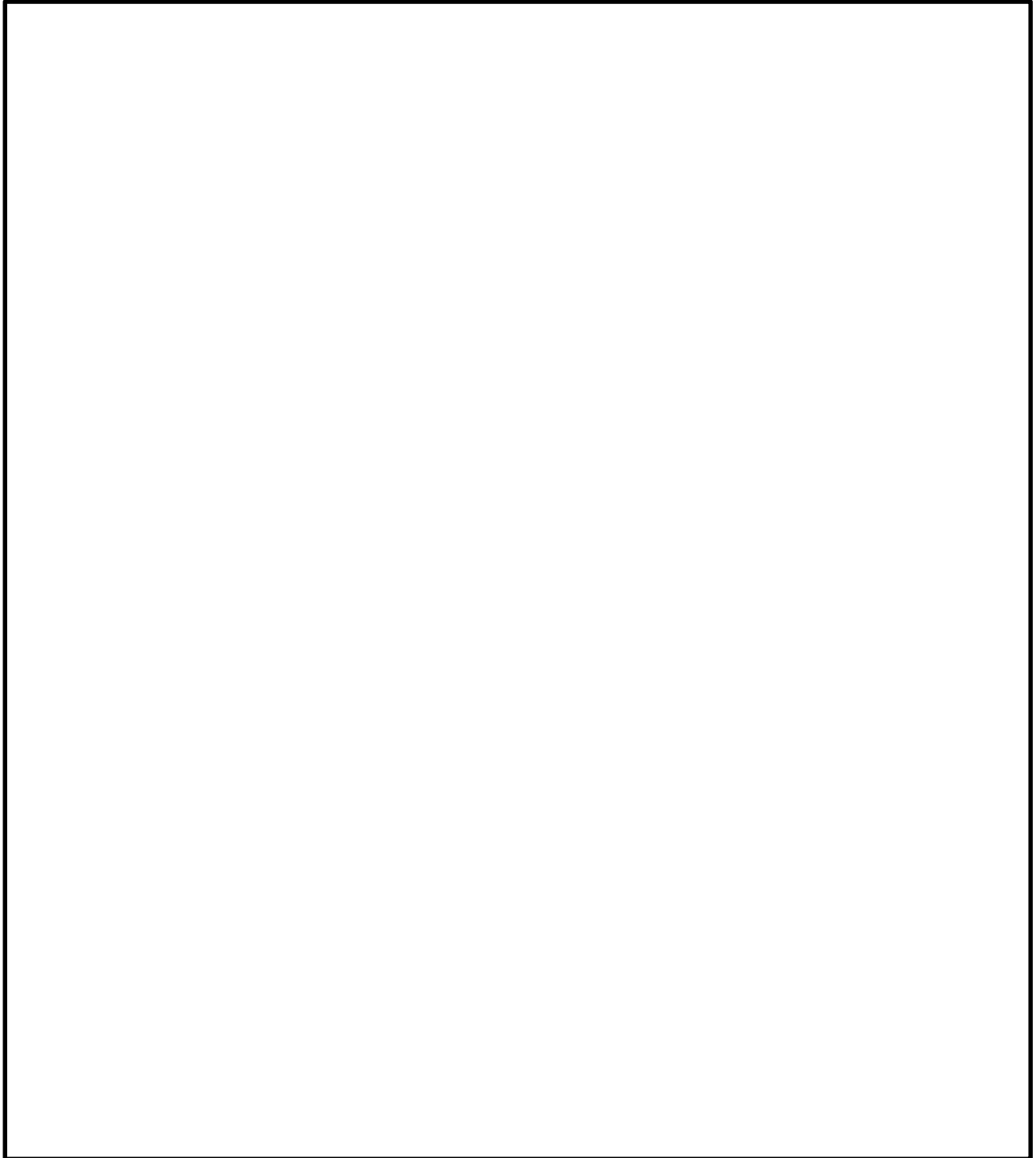
Remember, any place that can hold standing water around your home should be checked once a week and dumped!



# “I’m safe from mosquitoes!”

Draw a picture of what a person protected from mosquitoes would look like.

What would they wear? What would they bring to help protect themselves?





## Mosquito Vocabulary

<b>Vocabulary</b>	<b>Definition</b>
<b>Abdomen:</b>	Part of the mosquito's body that hangs from the thorax. It holds the mosquito's stomach and lungs, the bloodmeal, and stores the female's eggs.
<b>Adult:</b>	The fully developed mature form of the mosquito.
<b>Antenna (Antennae):</b>	Long, feathery stalks on the mosquito's head, used to hear and smell.
<b>Carbon dioxide:</b>	The gas that all animals breathe out that can attract mosquitoes from several hundred feet away.
<b>Dead-end host:</b>	The virus cycle ends with this host. The host cannot transmit the virus to other mosquitoes or animals.
<b>Eastern Equine Encephalitis (EEE) virus:</b>	A virus that can be passed to humans by the bite of an infected mosquito.
<b>Egg:</b>	The first stage of the mosquito life cycle. The egg stage lasts for 2-3 days before hatching.
<b>Environmental Protection Agency (EPA):</b>	Federal agency devoted to protecting human health and the environment.
<b>Flood water:</b>	Water sources that alternate between dry and wet, like when puddles form when it rains or when snow melts.
<b>Host:</b>	The animal that a mosquito feeds on.
<b>Insect Repellent:</b>	A spray applied to skin to prevent insect bites.
<b>Jamestown Canyon virus (JCV):</b>	A virus that can be passed to humans by the bite of an infected mosquito.
<b>Larva (larvae):</b>	The part of the mosquito life cycle that hatches from the egg. The larval stage lasts for about 1 week.
<b>Man-made container:</b>	Containers made by humans that fill with water. Buckets, cans, flowerpots, old tires, catch basins, pet bowls, and pools are good examples of man-made containers.



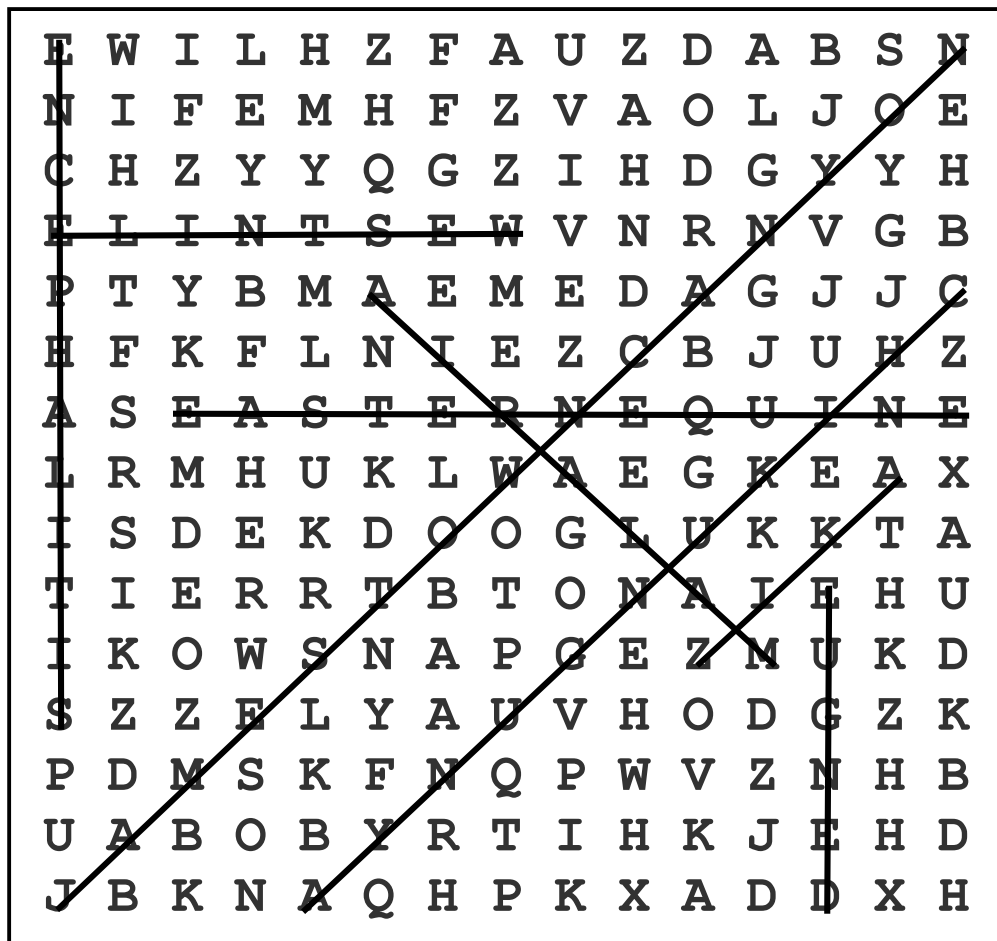
<b>Vocabulary</b>	<b>Definition</b>
<b>Natural container:</b>	Containers found in nature that can hold water. Holes in trees where branches have fallen or puddles where water collects are good examples.
<b>Pathogen:</b>	Any microorganism or virus that can cause disease.
<b>Permanent water:</b>	A water source with water levels that do not change much over time. Swamps, bogs, ponds, the calm edges of lakes and streams, and ditches that are always full of water are good examples.
<b>Predator:</b>	An animal that eats another animal.
<b>Proboscis:</b>	Long, jagged mouth part on the mosquito's head that is used to pierce the skin and suck out blood.
<b>Pupa (pupae):</b>	The non-feeding part of the mosquito life cycle during which the larva changes to the adult form. The pupa stage lasts for about 4 days.
<b>Species:</b>	A unique group of animals, different from other groups.
<b>Thorax:</b>	The part of the mosquito between the head and the abdomen where the wings and legs attach.
<b>West Nile virus (WNV):</b>	A virus that can be passed to humans by the bite of an infected mosquito.



# Mosquito-borne Diseases: Answer Key

Mosquitoes can pass the viruses that can cause diseases to humans in Maine and in the rest of the world. Eastern Equine Encephalitis virus (EEE), Jamestown Canyon virus (JCV), and West Nile virus (WNV) are found in Maine and can make humans and animals sick.

Directions: Using the list below, find and circle all the names of mosquito-borne diseases hidden in the puzzle. The words can be forward, backward, up, down, or diagonal.



Chikungunya

Dengue

Eastern Equine

Encephalitis

Jamestown Canyon

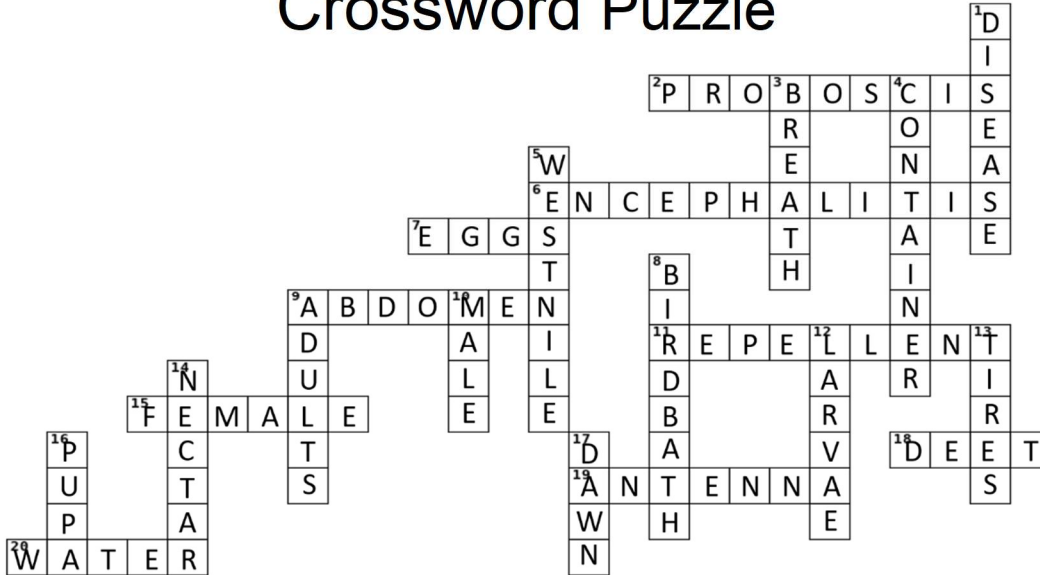
Malaria

West Nile

Zika



# Crossword Puzzle



## Across

2. The \_\_\_\_\_ is the sharp mouthpart the mosquito uses to bite.
6. Eastern Equine \_\_\_\_\_ is a mosquito-borne disease found in Maine.
7. A female mosquito lays \_\_\_\_\_ in or near water.
9. The \_\_\_\_\_ is the part of the mosquito where blood and eggs are stored.
11. Using insect \_\_\_\_\_ is a good way to protect yourself from mosquitoes.
15. Only the \_\_\_\_\_ mosquito bites.
18. \_\_\_\_\_ is a type of repellent that can be used on skin.
19. The \_\_\_\_\_ is on the mosquito's head and used to hear and smell.
20. Larvae and pupae need \_\_\_\_\_ to survive and grow.

## Down

1. The best way to prevent mosquito-borne \_\_\_\_\_ is to not get bitten.
3. Mosquitoes can smell carbon dioxide in your \_\_\_\_\_.
4. Larvae can grow in any \_\_\_\_\_ filled with water.
5. \_\_\_\_\_ virus is found throughout the US, including Maine.
8. Change the water in your \_\_\_\_\_, where birds can bathe, once a week to prevent larvae from growing there.
9. \_\_\_\_\_ (plural) are the fourth stage of the mosquito life cycle.
10. The \_\_\_\_\_ mosquito does not bite.
12. \_\_\_\_\_ (plural) are the second stage of the mosquito life cycle.
13. Old \_\_\_\_\_ are the most common breeding site for mosquitoes in the US.
14. Male mosquitoes feed mainly on plant \_\_\_\_\_.
16. The \_\_\_\_\_ (singular) is the third stage of the mosquito life cycle.
17. Mosquitoes are active at dusk and \_\_\_\_\_.



Answer: Find the Hidden MOSQUITO Message!

E    M    P    T    Y  
 5    13    16    20    25  
S    T    A    N    D    I    N    G  
 19    20    1    14    4    9    14    7  
W    A    T    E    R!  
 23    1    20    5    18

F    I    G    H    T    T    H    E  
 6    9    7    8    20    20    8    5  
B    I    T    E!  
 2    9    20    5

Here is the Code:

1 - A	5 - E	9 - I	13 - M	17 - Q	21 - U	24 - X
2 - B	6 - F	10 - J	14 - N	18 - R	22 - V	25 - Y
3 - C	7 - G	11 - K	15 - O	19 - S	23 - W	26 - Z
4 - D	8 - H	12 - L	16 - P	20 - T		



## Answers: MOSQUITO MATH PROBLEMS

### Problem 1:

A female mosquito lives for 150 days and lays a raft of 250 eggs every 15 days.

How many eggs will she lay in her lifetime?

**2500, 10 egg rafts**

### Problem 2:

A female mosquito lays 1200 eggs in her lifetime. She lays 300 eggs in her first egg batch.

What percent of her total eggs are laid in the first egg batch.

**25%**

### Problem 3:

A mosquito lays 150 eggs in a raft. All of the eggs hatch, but 32% of the larvae are eaten by fish.

The rest survive to become adults.

A. How many of the larvae are eaten by fish?

**48**

B. How many of the larvae will survive to become adults?

**102**

### Problem 4:

A mosquito lays 200 eggs in a raft. Ninety percent (90%) of the eggs hatch. Of the larvae that hatch, 50% are eaten by aquatic predators; the rest survive to become adults. Of the adults that emerge, 20% are eaten by dragonflies and spiders on the way to taking their first flower nectar meal. How many make it to the flower to take a meal?

**200 eggs x 0.9 = 180 hatch x 0.5 = 90 survive to become adults x 0.8 = 72 make it to the flower**

### Problem 5:

Two mosquitoes fly off together in search of flower nectar. The first mosquito flies 3 miles and finds a flower in a garden. The second mosquito flies 2.5 times that far, and finally finds a clover field. How far did the second mosquito fly?

**3 miles x 2.5 = 7.5 miles**

*Courtesy: NEATO MOSQUITO, An Elementary Curriculum Guide, 2nd Edition*

*Produced by: Roger S. Nasci and James E. Herrington, Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention*

