Bat Math Challenge Answer Key

ASSOCIATION of
FISH & WILDLIFE
AGENCIES

Project WILD

1. If a bat catches 50 insects every 5 minutes:

a. How many insects will the bat catch in an hour?

How many 5 minute intervals are there in one hour (60 minutes)? *(Answer: 12)*

Multiply total intervals in an hour (12) by total insects per interval (50)

12 x 50 = 600 insects per hour

b. How many insects per second did the bat catch? *(Answer : 1/6 of an insect per second)*

Calculate seconds in an hour. *(60 seconds per minute x 60 minutes per hour = 3,600 seconds per hour)*

3,600 seconds/600 insects = 36 seconds/6 insects = 6 seconds/insect

You may check your answer against the 5 minute interval calculation from the previous question.

5 minutes x 60 seconds = 300 seconds.

If it takes 6 seconds per insect, and there are 300 seconds, how many insects would the bat catch in 5 minutes? *(Answer: 50 insects)*

2. If this colony experienced an 80 percent decrease due to white-nose syndrome, how many bats would remain?

500 bats x 0.8 = 400 bats

500 bats – 400 bats = 100 bats remaining

How many insects could the bats eat in a night before the disease impacted the colony?

500 bats x 1,500 insects a night/bat = 750,000 insects a night

How many insects could the bats eat after the disease impacted the colony?

100 bats x 1,500 insects a night/bat = 150,000 insects a night

3. To solve, divide the bat's weight in half, then divide half the bat's weight by the weight of 1,200 insects (0.1 oz.), then multiply the number of insects in an ounce by the multiple that corresponds to the bat's weight.

Bat Species	Average Weight in Ounces	Half Its Weight in Ounces	Weight of 1,200 Insects in Ounces	Quotient (Half Weight Divided by Insect Weight)	Convert Ounces to Insects
Little Brown Bat	0.2	0.1	0.1	0.1/0.1 = 1	1,200 x 1 = 1,200 Insects
Eastern Red Bat	0.35	0.175	0.1	0.175/0.1 = 1.75	1,200 x 1.75 = 2,100 Insects
Hoary Bat	0.9	0.45	0.1	0.45/0.1 = 4.5	1,200 x 4.5 = 5,400 Insects
Silver-haired Bat	0.30	0.15	0.1	0.15/0.1 = 1.5	1,200 x 1.5 = 1,800 Insects
Indiana Bat	0.24	0.12	0.1	0.12/0.1 = 1.2	1,200 x 1.2 = 1,440 Insects
Southeastern Bat	0.22	0.11	0.1	0.11/0.1 = 1.1	1,200 x 1.1 = 1,320 Insects

Bat Math Challenge

Over 40 bat species are found in the United States and Canada, and the majority of these species are insectivores. Worldwide, over 650 species (about 70 percent) of bats are insectivores. Insect-eating bats consume thousands of nighttime insects such as mosquitoes, beetles, and moths. Bats catch these insects with their feet, mouths, or wings. Some bat species can eat over 1,000 insects in an hour—the equivalent of eating half their body weight in insects each night. Relatively speaking, an adult human would have to eat 80 large pizzas a night to eat the same amount!

1. If a bat catches 50 insects every 5 minutes, then
   a. how many insects will the bat catch in an hour?
   b. how many insects will the bat catch per second?

2. A cave in Virginia is home to 500 little brown bats in the summer. If each of the little brown bats eats 1,500 insects in a night, how many insects could the bats eat in one night? If this colony experienced an 80 percent decrease due to white-nose syndrome, how many bats would remain? How many insects could the bats eat after the disease impacted the colony?

3. A little brown bat eats half, or 50 percent, of its body weight in a single evening. The average little brown bat weighs 0.2 ounces. The weight of 1,200 mosquito-sized insects is 0.1 ounces. That means a little brown bat can eat 1,200 mosquitoes in one night! How many ounces of mosquito-sized insects must the bat species listed below eat in a night to eat half its body weight? How many insects does that equal? Assume 1,200 insects = 0.1 ounces. Complete the table. The first two are done for you.

Bat Species	Average Weight in Ounces	Half Its Weight in Ounces	Weight of 1,200 Insects in Ounces	Quotient (Half Weight Divided by Insect Weight)	Convert Ounces to Insects
Little Brown Bat	0.2	0.1	0.1	1	1,200 x 1 = 1,200 Insects
Eastern Red Bat	0.35	0.175	0.1	1.75	1,200 x 1.75 = 2,100 Insects
Hoary Bat	0.9				
Silver-haired Bat	0.3				
Indiana Bat	0.24				
Southeastern Bat	0.22				