

Earth's Birthday Project

AMAZING BUGS®



Pre/Post Questions: Ant

Introduction

Pre/Post Questions are tools for guiding inquiry and assessing student learning. Students answer the questions before they do the activities in the Amazing Bugs kit (pre) and again after the activities are completed (post).

Students are not expected to score high points the first time they answer the questions. The Amazing Bugs activities will give them many chances to practice the skills needed to improve their answers in the second round.



Contents

Questions are presented on one-page, reproducible handouts. Each handout is followed by easy instructions, including quick prep and a rubric or answer key for grading. Use one or two questions, or all four—the more time you invest, the more students learn and the more opportunities you have for assessment.

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Scheduling, Time, Materials

Schedule the first round (pre) a few days in advance of the arrival of your live ants. Plan on 10–15 minutes for each question in the first round (pre), and 10–25 minutes in the second round (post). The only materials you'll need are two copies of each question, and a pencil, for each student.

Standards and Benchmarks

The teacher's instruction for each question includes New Mexico science and/or math benchmarks.

For more information: earthsbirthday.org/nm

OK to duplicate for use with students!

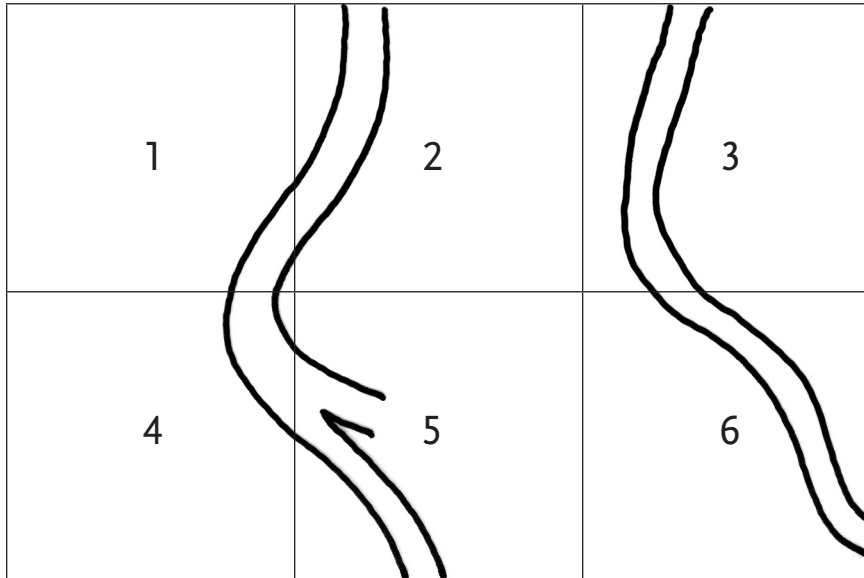
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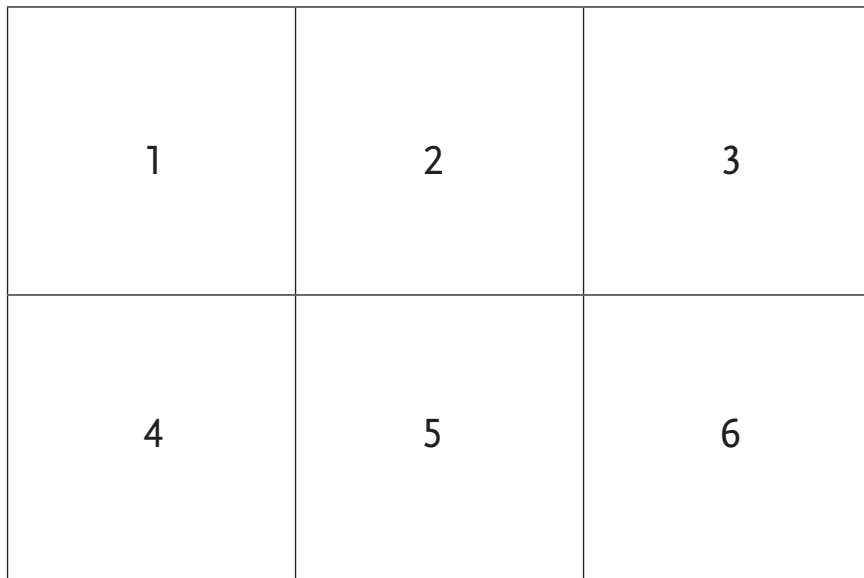
Name _____

Ant Tunnels 1

This is a map of tunnels made by ants.



Copy the tunnels on this grid.



Questions 1, 3, & 4: Teacher Instruction

Science Benchmark

- Scientific Thinking and Practice, Standard I, K–4 Benchmark III – Use mathematical skills and vocabulary to analyze data, understand patterns and relationships, and communicate findings.

Math Benchmarks

- Geometry, 2 – Specify locations and describe spatial relationships using coordinate geometry and other representational systems.
- Geometry, 4 – Use visualization, spatial reasoning, and geometric modeling to solve problems.

Teacher Prep

- (1) Make two copies of Ant Handout Q 1 for each student—one for Pre, one for Post. (2) Draw a grid on your board to match the empty grid on handout Q 1, including the numbers.
- (3) You may also wish to make two copies for each student of handouts Q 3 and Q 4.

Pre (First Round)

With handout Q1, your students will start to build their mapping skills at a relatively simple level. Use handouts Ant Q 3 and Ant Q 4 to increase the challenge. This practice will help students learn to map the tunnels that ants will dig in the house that comes with your Amazing Bugs kit.

Instructions to students: *Here is a map of tunnels that some ants made in an ant house.*

We are going to get some ants and an ant house in a few days, and we are going to draw maps of the tunnels that our ants make. Today you are going to copy the tunnels on this map onto the empty grid at the bottom of the page. Your job is to look at each square on the map and copy what you see there onto a square on the empty grid. I am going to show you how.

Do the demonstration for students (see next section, below). When you have finished, have students draw the outlines of tunnels on the empty grid. They should try to match the outlines on the map as closely as possible.

On following days, do the activity again using handouts Q 3 and Q 4. Students will have lots of opportunities to practice when they map the tunnels in the Amazing Bugs ant habitat.

Allow about 15 minutes for Q 1, and 20–25 minutes each for Q 3 and Q 4.

Demonstration

Fill in a few squares on the grid that you drew on your board. Match the outlines of tunnels in square 1 on map at the top of the handout. Show students how you are doing this. Then show them the numbers in the squares on the map and how they match numbers on the empty grid. Fill in the outlines of tunnels in squares 2 and 3 of your grid.

Post (Second Round)

Have students do the mapping on handouts Q 1, Q 3, and Q 4 again, in two or three weeks, and after they have done the activities

in the Amazing Bugs kit. Allow students as much time as they need. Break into two sessions if students seem to be tired of the activity after completing Q 3.

Allow about 10 minutes for Q1, and 15 minutes each for Q 3 and Q 4.

Grading

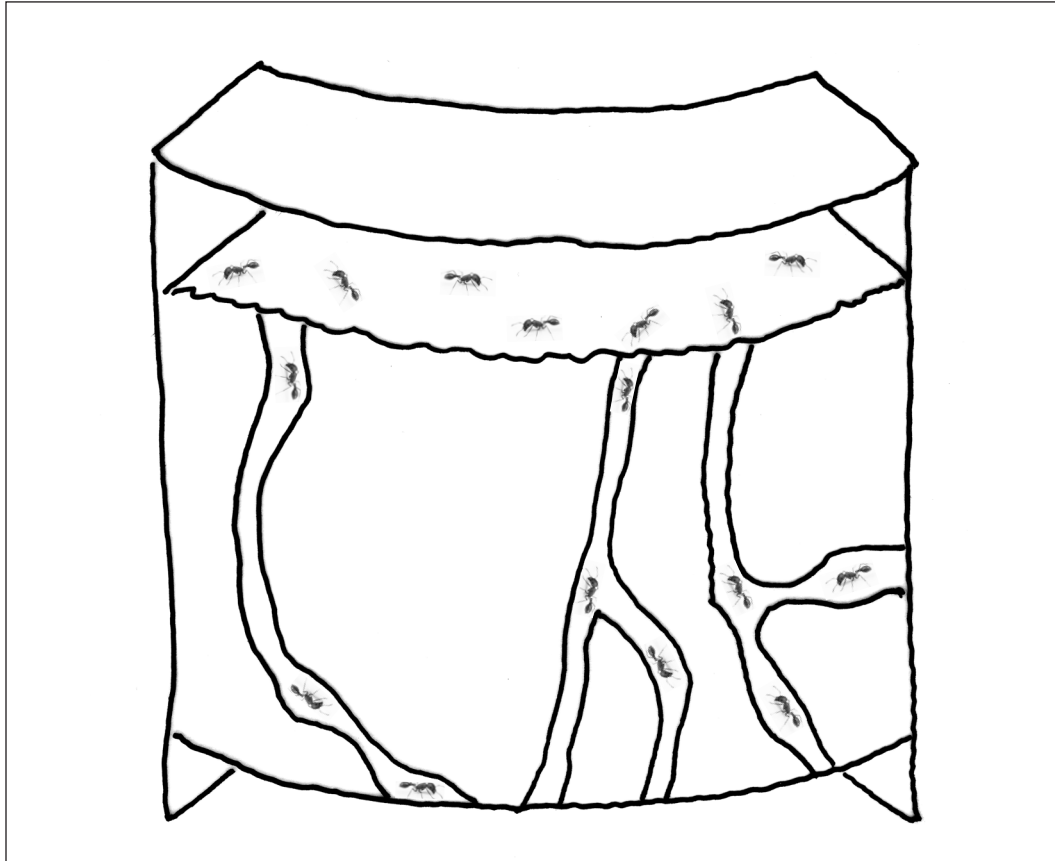
An easy way to check work is to lay the students' drawings over the models at the tops of the handouts as if you were tracing. Use the following rubric for scoring all three handouts (Q 1, Q 3, Q 4).

Score	Description
3	The student has drawn all of the tunnels shown on the map. The outlines of tunnels in at least half of the squares match the outlines in corresponding squares on the map pretty closely.
2	The student has drawn at least half of the tunnels shown on the map. The outlines of tunnels in fewer than half the squares are roughly the same shape as the outlines in corresponding squares on the map.
1	The student has drawn at least 1 tunnel and has shown some understanding that the squares in her/his drawing should match corresponding squares in the map.
0	The student's drawing shows no understanding about matching the map.

Name _____

Ant House

This is an ant house. It is full of gel.
Some of the ants are on top of the gel.
Some are in the tunnels.



1. How many ants are on top?

2. How many ants are in the tunnels?

3. How many ants are in the house?

Question 2: Teacher Instruction

Science Benchmark

- Scientific Thinking and Practice, Standard I, K–4 Benchmark III – Use mathematical skills and vocabulary to analyze data, understand patterns and relationships, and communicate findings.

Math Benchmarks

- Number and Operations, 1 – Understand numbers, ways of representing numbers, relationships among numbers, and number systems.
- Number and Operations, 2 – Understand the meaning of operations and how they relate to one another.

Teacher Prep

Make two copies of Ant Handout Q 2 for each student—one for Pre, one for Post.

Pre (First Round)

Instructions to students: *Here is a picture of an ant house that looks like the one we're going to be getting in a few days. The house is full of gel, like a gelatin dessert. The little ants are going to dig tunnels in the gel and eat it. Your job is to count the number of ants in the picture. One: Count all the ants on top of the gel. Two: Count just the ants that are in the tunnels. Three: Count all the ants in the house. Write your answers in the squares next to the questions.*

Allow about 10 minutes.

Post (Second Round)

Have students complete the handout again, about three weeks later, after they have observed ants and done the activities in the Amazing Bugs kit. It shouldn't take long—no more than 10 minutes for even the slowest, most careful counters.

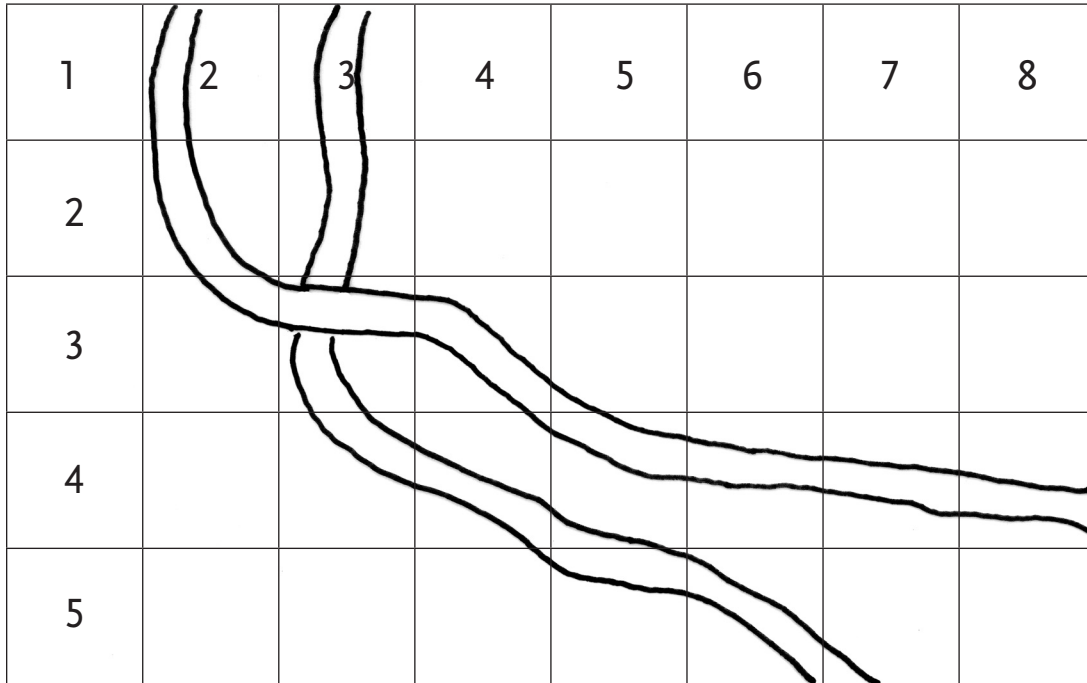
Grading

The maximum score is 3 points, one for each question. **Key:** 1. 7, 2. 9, 3. 16.

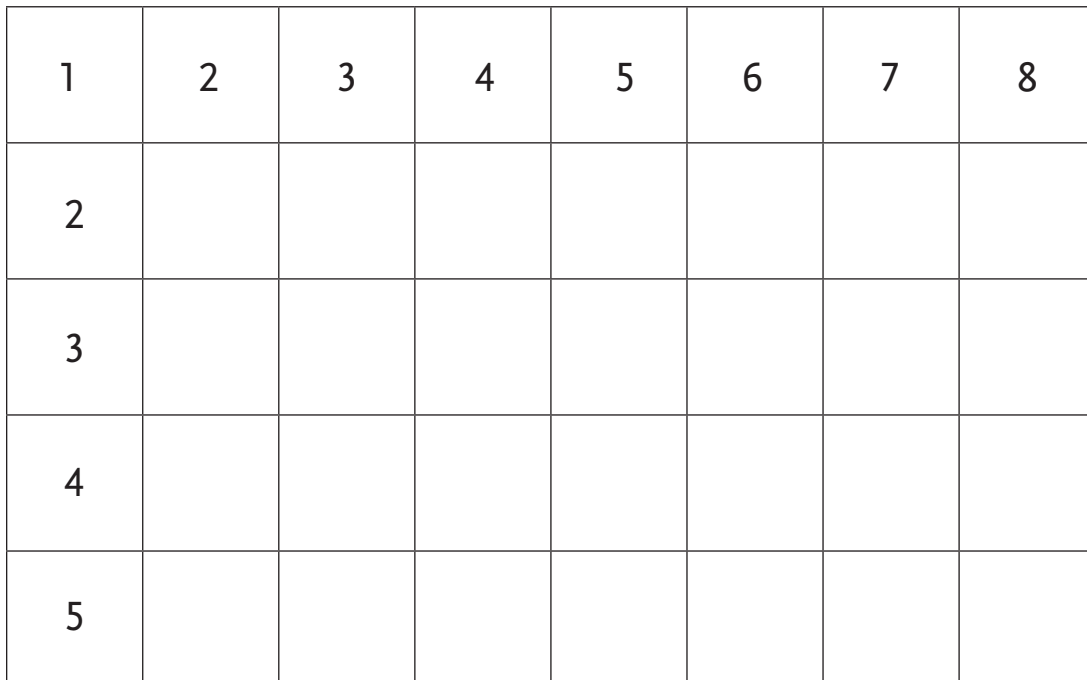
Name _____

Ant Tunnels 2

This is a map of tunnels made by ants.



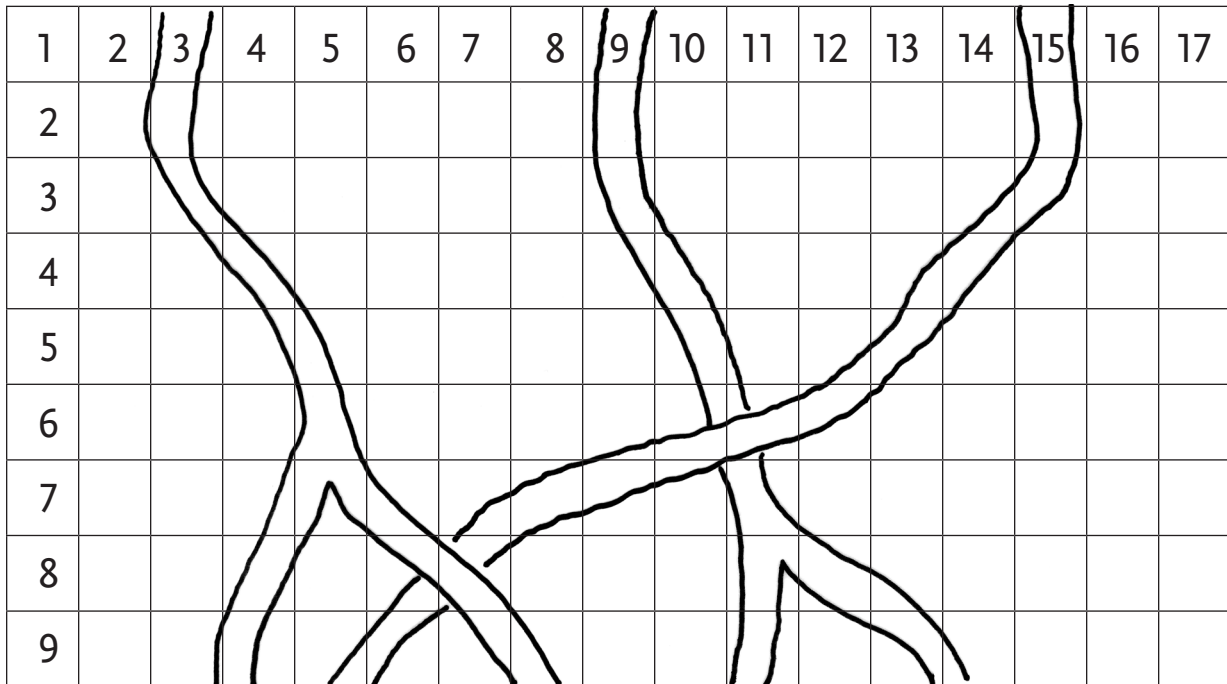
Copy the tunnels on this grid.



Name _____

Ant Tunnels 3

This is a map of tunnels made by ants.



Copy the tunnels on this grid.

