Bugs
Across the Curriculum

Excerpts From Bridges in Mathematics
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Bugs Across the Curriculum
A Math Learning Center Publication

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illustrated by Tyson Smith

Bridges Breakout Units
  Bugs Across the Curriculum
  Crossing the Pond: A Probability Game
  Exploring Money: Adding, Counting, Sorting and Patterning
  Exploring Time: Hours, Minutes and Paper Clocks
  Frogs Across the Curriculum
  Geometry: Pattern Blocks, Polydrons and Paper Quilts (Grade 1)
  Geometry: Shapes, Symmetry, Area and Number (Grade 2)
  Math Buckets: Sorting and Patterning
  Math with a Sock: Probability and Fractions
  My Little Farm: Money, Place Value and Mapping
  Penguins: Measuring, Sorting, Computation and More
  Sea Creatures Across the Curriculum

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Bridges Breakouts

Bugs Across the Curriculum

These integrated activities are intended to enhance your use of the bucket of bugs, and may also be used as part of a larger unit on insects. Manipulatives and materials included in the breakout are listed below.

You'll need
★ optional materials are listed in the text

Deluxe Breakout includes
★ bucket of bugs
★ Bugs poems and songs*

*also included in Economy Breakout
Bugs Across the Curriculum

INTEGRATED THEMES

Science, Literacy, Art, Social Studies

Overview
Because young children learn best when things are framed in a context that is familiar and intriguing, we’ve used bugs to teach sorting, patterning, graphing, and counting. We’re also aware that the study of bugs is a fascinating topic in its own right, and that you might choose to make it an integral part of your curriculum for at least part of the fall. What follows is a collection of ideas we’ve used in our own classrooms to extend bugs into the rest of our program. These ideas bring science, literacy, art, social studies, and even more math together around a larger study of bugs.

Note We use the word bug to mean “an insect or other creeping or crawling invertebrate.” This term catches all the creatures which may have taken up residence in your bucket of bugs: insects (6 legs, 3 body parts—beetles, butterflies, grasshoppers, cicadas, etc.), arachnids (8 legs, 2 body parts—spiders and scorpions), and chilopods (centipedes). These creatures are all part of a larger group, known as the arthropods.

What Do You Already Know? What Do You Wonder?
We open any new study by finding out what children already know about the topic. There is rarely a school year that we don’t have students who are quite knowledgeable about insects, spiders, and other “bugs.” Nearly all our children know something about them already. It’s important to acknowledge the facts they’ve learned, along with their experiences and feelings, by asking them what they already know and what they wonder. This might be a discussion, or perhaps you’ll take time to record their thoughts and questions on chart paper.

What do you already know about bugs?
Some can sting you.
Some can fly.
Spiders can make webs.
Spiders are scary.
Insects have 6 legs. Spiders have 8.
Some beetles have long horns.
Butterflies are pretty.
Ladybugs are red.

What do you wonder about bugs?
Why do some sting?
How can they stick to the wall when they crawl on it?
What’s the biggest bug?
Are there any poison bugs?
These charts can be created in short sessions over 1 to 3 days depending upon the attentiveness of your group. If children give us incorrect information, we go back to the charts after they’ve learned more and have them help us make needed corrections. As an alternative to chart making, you might provide drawing paper, crayons, scissors, construction paper, and clay and ask students to draw, cut, and glue, or even make clay models of a bug or two to share some of the things they know about bugs. As they work, we circulate to listen and take dictation. You could have them meet in pairs to share their creations, and set up a display of their artwork under the label “Here Are Some of the Things We Already Know About Bugs.” This is an option to consider if you have a group of very active children who are perhaps better at expressing what they know through an art experience than sitting and listening patiently to their classmates for any length of time. (You’ll find this harder to do if you have a class of very young children whose cutting and drawing skills need lots more time to develop.)

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**Hands-On Experiences 10-Minute Field Trips**

Another thing we like to do at the beginning of any new study is to provide some experience that is as direct as possible. If we are studying bugs in the fall, we might take children out for a 10-minute field trip to see ants crawling along the sidewalk, sow bugs and centipedes lodged under some of the rocks at the far end of the playground, butterflies and bees in a nearby flower garden, or garden spiders making their webs. We encourage you to scout around your school yard and nearby environs to see what you can find in the way of bug life to share with your students.

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**Live Visitors**

If there are no bugs in the immediate neighborhood, or no practical way to arrange a short walking trip, you might consider bringing bugs into the classroom. Are there caterpillars where you live, or other bugs you might capture and bring in for a day or two? In good years, we’ve been able to find monarch caterpillars on milkweed and bring in two or three so our students can experience
the butterfly life cycle firsthand. When we haven’t been able to find them, we’ve ordered swallowtail caterpillars or painted lady chrysalises through Carolina Biological Supply. We also send for a new collection of ants to display in our inexpensive plastic ant farm each year. The children love watching the ants at work. Ant farms and ants can be purchased through many educational distributors and scientific supply houses. (Carolina Biological Supply can be contacted at 1 800 334–5551, or online at http://www.carolina.com/, and is a company with which we’ve had particularly good experiences over the years.)

Our local university has a science lending lab and will let us borrow items for the classroom. Be sure to look into that possibility if you have a college or university nearby. We’ve borrowed a tarantula for a few days each year, along with an excellent insect collection (displayed under glass in a wooden box). The tarantula was to be kept in its cage the entire visit, so we never worried about having to handle it.

Eyes-On Experiences  Picture Walks

In addition to taking trips and hosting live specimens, we like to set up picture walks in our classrooms. Similar to field trips, picture walks provide children with opportunities to learn about a particular topic by studying illustrations and photographs. The advantage of picture walks, especially when studying wildlife, is that the creatures hold still, and photos and illustrations are able to capture things in full-color close-up that we couldn't hope to see in the corner of the school yard, or even the garden up the street. In order to set up a picture walk, we lay out a large photograph or two at each table and set up clotheslines of pictures tied across a couple of corners of the room. Bugs have been so popular over the last few years that we’ve been able to find calendars that feature large, beautifully colored photos of butterflies, ants, spiders, and many other bug favorites. (We usually wait until after the new year to find these calendars on sale, and have been able to build up good photo collections in a few short years. We’ve also scanned pictures from books about bugs or set out the books themselves, clipped or banded to display particular pages.)

Once we’ve set things up, we assign children to small groups or partners, and ask them to examine the pictures and find out as much as they can. We start a formal rotation in the beginning, but as interest wanes, we encourage everyone to be sure they’ve seen every picture. We occasionally ask for parent
volunteers or fifth or sixth grade volunteers to come in and serve as a scribes to record children's observations. We seat the scribes at a few key areas. As each new group comes to a picture, they first examine the picture and talk to one another about what they notice. Then the scribe reads the chart for that picture to them and asks if they'd like to add anything. You'll need to consider the maturity of your group in terms of whether or not to use scribes.

At locations where there are no scribes, we trust children's observations and conversation to carry the day. We often go back to a set of pictures a second and third day and elicit discussion.

Insect Life Cycles—Songs & Poems

The Butterfly Life Cycle
We suggest reading of The Very Hungry Caterpillar, a book which is both delightful and probably familiar to many of your children. Follow the story by reading “The Monarch” (Blackline 3), and singing “The Butterfly” (Blacklines 4–5).
Take a few minutes after reading and singing to have children summarize the four stages in a butterfly's life—egg, caterpillar (larva), chrysalis (pupa), and adult—as you display the Butterfly Life Cycle cards (Blacklines 6–7). Children will return to the idea of a life cycle a number of times this year, and seem to find this very basic pattern deeply satisfying in all its many forms.

The Beetle Life Cycle

Reviewing the song you taught, “The Butterfly,” and then explain that you have a new song to teach, this time about beetles (Blackline 8). What are some differences between beetles and butterflies children can already tell you about? Are there any ways in which the two insects are similar? Tell your students that if they listen very carefully to the beetle song, they might discover some likenesses and differences they hadn’t thought of before. Sing the song once as you point to the words and then invite children to join in as you sing the song a second and possibly third time.
After singing this song, discuss some of the similarities and differences between the two insects. If no one mentions it, call children’s attention to the beetle’s life cycle. What are the stages in a beetle’s life? How do they compare to the stages in a butterfly’s life? Continue to discuss this question as you display the Beetle Life Cycle cards (Blacklines 9–10) alongside the Butterfly Life Cycle cards.

The Praying Mantis Life Cycle

Introduce the new song about praying mantises (Blackline 11). Challenge children to listen carefully as you sing it through one time. If they listen closely, they’ll find out what mantises eat, how they grow, and something about how they lay their eggs. Discuss these facts after you’ve sung the song to the children and then have them sing it with you once or twice as you point to the words.

Praying Mantis
(to the tune of “Are You Sleeping?”)

Praying mantis, praying mantis,
Three pairs of legs, three pairs of legs.
Can you find some food to eat?
Snatch an insect off its feet
With your “praying” legs, with your “praying” legs.

Praying mantis, praying mantis,
Hanging upside down, hanging upside down,
Whiggling out of old skin,
Growing bigger new skin,
Six to nine times, six to nine times.

Praying mantis, praying mantis,
Sitting on a plant, sitting on a plant,
Watching for an insect
To have a fine meal.
Groom yourself, groom yourself.

Praying mantis, praying mantis,
Hanging upside down, hanging upside down,
Making foam egg cases,
Filling them with eggs,
Before winter comes, before winter comes.

Praying mantis, praying mantis,
Winter has come, winter has come,
Food has gotten scarce,
Your life is at its end,
Your eggs will survive, your eggs will survive.

Praying mantis, praying mantis,
Summer is here, summer is here,
Hundreds of your babies
Crawling out of cases,
The circle of life, the circle of life.
by Donna Burk
Finally, display the Praying Mantis Life Cycle cards (Blacklines 12–13) alongside the Butterfly and Beetle cards. What do children notice? Can they pick out similarities and differences? (Unlike butterflies, beetles, and other insects, mantids undergo what’s called simple or incomplete metamorphosis. Instead of going through four distinct stages—egg, larva, pupa, and adult—each of which looks quite different, the praying mantis hatches out of its egg looking just like an adult mantis without wings, and simply grows bigger, shedding its skin periodically on the way to adulthood.)

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**Minds-On Experiences  Songs, Poems & Books**

Songs, poems, and books, both fiction and nonfiction, add another dimension to any study. There has been a virtual explosion of bug books published for young children recently. The best of them are simply written and beautifully illustrated with full-color photos. On pages 18–19, we’ve included a list of our current favorites. You may find some of these in your school or public library. Many recent publications can be ordered through a web book sellers.

Having lived through the frustration of not being able to find (or afford) good books for our students, we’ve also included a number of information-packed bug songs and poems. You’ll find these printed on 11” × 17” sheets, which can be bound to make big books or backed with construction or butcher paper to make wall charts. These poems and songs pack a lot of data into a small package, are easy to come back to several days in a row, and won’t go out of print. They do triple duty in our classrooms, setting foundations for children to approach some of the math lessons with greater depth and investment, teaching science content and research skills, and providing another source of literacy learning. In addition, we’ve included the simple book, *Bugs Live Everywhere* (Blacklines 14–26), for you to share with your students.
Spiders
(to the tune of “Did You Ever See A Lassie?”)

Did you ever see a spider,
a spider, a spider,
Did you ever see a spider with eight hairy legs?
With four on the left side
And four on the right side,
Did you ever see a spider with eight hairy legs?

“Bringing It All Home” to Young Learners

Some of the most powerful learning experiences we’ve been able to create for young children involve bridging the gap between home and school. Presenting information in a way that moves from children’s own experiences to the lives of others (plants, animals, people living in other times, places, or cultures), is tremendously effective with this age group. Jennifer Eaton, a student intern in one of our classes, put this idea into practice as she introduced ants to the children. Using a simple drawing similar to the one shown below, done on a large sheet of butcher paper, she engaged students in a discussion of their own homes. Although some lived in apartments and others in single family dwellings, all could relate to the sketch and shared eagerly with her about each room (e.g., who spent time there, the kinds of things they did, and so on).
She then moved to another simple sketch she'd made, again on a large sheet of butcher paper, of the underground chambers that would be inhabited by harvester ants.

Drawing on children’s experiences in their own homes, she described the lives of the harvester ants in their chambers. (The numbers on the sketch above correspond to the activities listed below.) As she spoke, she added quick sketches to the chambers to highlight each activity. These included a garbage can, a baby bottle, food, eggs, a shovel—items that helped the students remember more easily what happens in each chamber of an underground ant tunnel.

The Underground Life of a Group of Harvester Ants
1. entrances to the nest
2. digging a new chamber
3. the queen ant laying eggs
4. chamber where eggs are carried for hatching
5. nursery where young larvae are tended
6. a worker ant feeding another
7. nursery where larvae turn into pupae
8. chamber where seeds are stored
9. chamber used for trash disposal

Finally, she had the children make construction paper ants to glue to the drawing. As they worked, they became very involved in talking about the chamber where they wanted to glue their ant, and what job it would do there.

**Guided Writing**

Once you’ve launched any sort of bug study, you’ll find that children are reporting on their experiences with insects, spiders, and other arthropods daily. You might want to take dictation from students to create a bug news chart every so often. The very best news writing we ever saw came from a group of K–1 students who befriended a garden spider that our health clerk had captured...
Bugs Across the Curriculum

and housed in a plastic cage. The children gathered sow bugs to feed the spider, but it didn't appear to be eating. We added a fly, but the fly was dead on the bottom of the cage the next day. The spider never seemed to move. Our news reports began with the excitement of having a classroom spider, but each day reflected more concern. We all thought the spider was dead and felt badly about it. Two or three days went by before Aaron and his dad brought crickets. We didn't have the heart to tell them we thought the spider had died, so we stuck the crickets in the cage and what a shock! That spider was very much alive! It lived for another six weeks in our fall garden before it disappeared.

9/20 Spider News
Mrs. P. gave us a big spider in a cage. We found out that spiders eat insects so we're going to catch some and feed it.

9/21 Spider News
Taj-Michael tried to catch some bugs for our spider but his mom got scared. We put in some sow bugs we found in the garden.

9/22 Spider News
A fly got in our room and Mrs. Burk caught it. She stuck it in the cage, but it didn't get caught in the web yet.

9/23 Spider News
The spider isn't moving. The fly is dead and the sow bugs are hardly moving. Maybe the spider is dead.

9/26 Spider News
Aaron and his dad brought some crickets. Mrs. Burk put them in the cage. The spider went really fast. The spider isn't dead.

9/27 Spider News
We put the spider out in our class garden. It made a giant web on a plant. We'll check it every day.

Interactive Writing

If you've brought insects or spiders into the classroom for observation, you might also do a bit of interactive writing, where the children share the pen and act as scribes. In this sort of lesson, the group and the teacher help with the ideas and spelling as students take turns writing a beginning sound or two (or even a word) of a phrase or sentence at the board or on a piece of chart paper. This works particularly well if children are excited about the topic, and the amount of writing is a single sentence.
Independent Writing

We have found it useful to post our Bug Sorting cards in a pocket chart, along with hand-lettered 3” × 5” index cards that name each creature.

Children enjoy matching the picture and word cards, and can use them, along with a sentence starter such as “This is a .......” to write pages in their journals or create their own illustrated bug books.

Pocket Chart Poetry

Many young children delight in simple, even silly poems about bugs. We print ours on sentence strip pieces and put them in the chart as shown below. If we can find pictures of bugs to match, all the better. Children love mixing the words up, one line at a time, reading it the silly way, and then trying to fix it. The possibilities are endless.
A Graphic Organizer

While we don’t create a graphic organizer for every nonfiction theme we teach, if our children seem to be excited about the new facts they’re learning, charting the information in this way provides a wonderful review and a chance to compare and contrast the different creatures we’re studying. To create a graphic organizer, take a large sheet of butcher paper and fold it into columns. Label it with simple questions to create a chart similar to the one shown. The information in the boxes will come from your students as they collect facts about each different bug.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ant</td>
<td>in tunnels</td>
<td>bugs</td>
<td>2 antenna</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spiders</td>
<td>3 body parts,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>insects</td>
<td>6 legs</td>
</tr>
<tr>
<td>ladybird beetle</td>
<td>on plants</td>
<td>aphids</td>
<td>2 antenna</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mealybugs</td>
<td>3 body parts,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 legs</td>
</tr>
<tr>
<td>spider</td>
<td>gardens houses</td>
<td>lots of insects</td>
<td>hard outer</td>
</tr>
<tr>
<td></td>
<td>trees dirt school</td>
<td></td>
<td>wings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>transparent</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>flying wings</td>
</tr>
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<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Don’t try to have them enter too much information on the chart in one day. It’s important to keep interest high, and shorter sessions seem to work best.

Ladybugs, Spiders & Ants  A Sorting Worksheet

You’ll need
★ Ladybugs, Spiders & Ants Sorting chart (Blackline 1, run a class set plus a few extra)
★ Ladybugs, Spiders & Ants Sorting cards (Blackline 2, run a class set plus a few extra)
★ glue and scissors

If you want to offer children an opportunity to do some independent thinking about the bugs they’ve been studying, this sorting worksheet is just the thing. Distribute copies of the sheet of illustrated facts about these three arthropods and explain that some of the facts are true of ladybugs, some are true of spiders,
and some are true of ants. Take a minute or two to read through the blackline as the children examine the pictures. Then ask students to work together to cut, sort, and glue the facts to their sorting worksheets.

This sheet serves as an assessment piece for you and a conversation piece for your students. We save these in their work files for parents to see just how many things their children are learning. The correct answers are shown.

<table>
<thead>
<tr>
<th>Ladybug</th>
<th>Spider</th>
<th>Ant</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Ladybug" /></td>
<td><img src="image2.png" alt="Spider" /></td>
<td><img src="image3.png" alt="Ant" /></td>
</tr>
<tr>
<td>She has hard outer wings and transparent flying wings.</td>
<td>Many make webs to catch their food.</td>
<td>They care for the larvae.</td>
</tr>
<tr>
<td>The eggs hatch into larvae.</td>
<td>8 eyes 2 that are larger, 6 that are smaller.</td>
<td>The queen has wings.</td>
</tr>
<tr>
<td>The larva turns into a pupa.</td>
<td>8 legs</td>
<td>They make tunnels.</td>
</tr>
<tr>
<td>She lays her eggs on a leaf.</td>
<td>2 body parts.</td>
<td>They can carry a heavy load.</td>
</tr>
</tbody>
</table>
Continuing to Count On Bugs

More Math Activities

Here are two more counting lessons based around bugs. The first, Spider Countdown, is a slightly more sophisticated version of Butterfly Countdown. The second, Growing & Shrinking by 1’s, reviews the idea of adding and subtracting one at a time. This activity makes use of calculators, which you may be able to borrow from another classroom if you don’t have any of your own.

The Spider Countdown

You’ll need

- Spider Countdown (Blacklines 27–38, run a copy of each sheet on paper or lightweight cardstock and bind to make a class book.)
- 10 numbered spider necklaces with yarn attached (Blacklines 39–40)
- Unifix cubes in small containers to distribute easily (Each child will need a stack of 10.)
- helper jar

Show children the Spider Countdown book. Ask them if they like finding spiders. Where are they likely to see the most in one place? After reading a page or two, ask them to predict how many spiders will be on the next page. What is happening? Why were they able to predict accurately? Count the spiders on each page before you read the text to confirm their predictions.

Before reading the book a second time, select ten children to play the role of spiders. Hand out numbered spider necklaces and have them line up in order
from 1 to 10 in front of the group. As you read the pages, have them sit down one by one, working their way back down the line from 10 to 1, until none remain standing. Go through the book quickly so you can do it a second time for those who still want a turn. Pacing is critical with children so young. They’re quite interested until they’ve had a turn to be a spider.

Finally, have each student get out ten Unifix cubes and put them in a stack. How many spiders were in the story on the first page? Do all of the children have ten cubes to represent the spiders? How many were building webs on the first page of the story? Then what happened? (One got eaten by a bird!) Ask each student to remove one of the cubes from his or her stack to represent the spider that got eaten. How many spiders/cubes are left?

As you work your way through the book, some children will know the answers very quickly, while others will need to count their remaining cubes over and over. Build in wait time before the children respond. You may want to ask students to keep the answer a secret and not call it out until you give some kind of signal (such as a wave of your hand), so youngsters who need more time don’t become discouraged. Ask them each time how they’re figuring it out.

**Bugs Growing & Shrinking by 1’s**

**You’ll need**

★ *Butterfly Countdown* (Blacklines 57–68)

★ *Munch, Crunch, What a Lunch!* (Blacklines 41–56)

★ three 3” x 5” index cards, one that shows a large addition sign, one that shows a large subtraction sign, and one that shows a large equals sign.

★ Unifix cubes in small containers (Each child will need 10)

★ calculators for partners to share

Take a few minutes to read the *Butterfly Countdown* book together and then read *Munch, Crunch, What a Lunch!* How are the books alike? How are they different? Can the children predict how many bugs will be on each new page? How are they figuring it out?

Next, have each student find a partner, ten Unifix cubes, and a calculator to share. This will probably cause chaos at first because everyone will want to touch and try. Assure them that everyone will get some turns. Take time to
show children how to turn on their calculators. Ask them to touch their favorite number. Did it appear in the window? Did it appear more than one time in the window? Explain that a light touch is important to maintain control. Show them how to clear the calculators. Have them take turns giving the calculators a try. Can children turn the calculators on? Can they get just one number to appear in the window? Can they clear them?

Next, hold up the card you’ve made with a plus sign on it, and ask children find this symbol on their calculators.

Then, turn to the “Three hungry spiders” page of the *Munch, Crunch* book. Count the spiders on the page.

**Three hungry spiders** looking for some food,

Flies here, mosquitoes there, mm-mmm good!

*Munch, crunch, what a lunch!*
Ask students to set out three Unifix cubes to represent the spiders. Suppose that one more spider came along. How many would there be? Can they show that with their cubes?

Ask them to touch the 3 on their calculators. What does that 3 stand for? Show them your plus card and ask them to touch the plus because another spider is coming, and the spiders are going to munch and crunch together.

**Teacher** One more spider came along. Touch the 1 on your calculator. What do you see in the window? Now touch the “equals” sign. (Teacher holds up the card with this symbol for children to see.) What do you see in your calculator window now?

Write the numbers and signs on your white board or chalkboard for students to see.

Continue in this manner, using different pages from the *Munch, Crunch* book as points of departure for adding new bugs, and the *Butterfly Countdown* book as a way to narrate subtract-1 stories. Have the children in each pair switch jobs with every new page you use—one of them can work with the cubes while the other handles the calculator, passing the materials back and forth each time you pose a new problem. You may want to leave the calculators out during Work Place time over the next week or so and sit with children who would like to continue exploring them. Anything that is introduced for the first time to young children is always a bit hectic, or worse. Don’t despair! It gets easier for students to use calculators as the weeks, months, and years go by.
Good Books About Bugs

Ants

Butterflies and Caterpillars

Crickets

Ladybugs
Ladybugs (cont.)

Spiders

Other Well-Loved Bugs

General Bug Resource
<table>
<thead>
<tr>
<th>Ladybug</th>
<th>Spider</th>
<th>Ant</th>
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### Ladybugs, Spiders & Ants Sorting cards

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<th>Ladybugs</th>
<th>Spiders</th>
<th>Ants</th>
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<tbody>
<tr>
<td>Many make webs to catch their food.</td>
<td>The larva turns into a pupa.</td>
<td>They make tunnels.</td>
</tr>
<tr>
<td>They can carry a heavy load.</td>
<td>8 eyes  2 that are larger, 6 that are smaller.</td>
<td>She has hard outer wings and transparent flying wings.</td>
</tr>
<tr>
<td>She lays her eggs on a leaf.</td>
<td>The queen has wings.</td>
<td>8 legs</td>
</tr>
<tr>
<td>2 body parts.</td>
<td>They care for the larvae</td>
<td>The eggs hatch into larvae</td>
</tr>
</tbody>
</table>
The Monarch

A little egg on some milkweed green,
Became a caterpillar, tiny and lean.

It ate and ate, both day and night,
Then made a chrysalis, oh so bright.

It stayed very still, the time seemed long,
But now it’s a butterfly. Good-bye, so long!

by Donna Burk
illustrated by Tyson Smith
The Butterfly
(to the tune of “Row, Row, Row Your Boat”)

A butterfly is in the air,
Flying all around,
Stopping here,
Sipping there,
She never makes a sound.

The butterfly will find a mate,
Many eggs she’ll lay.
What will happen?
We shall wait,
We’ll wait for many days.

An egg is hatching, such a sight,
A caterpillar crawls out,
Munching leaves
By day and night,
Crawling all about.

The caterpillar splits its skin,
It’s growing every day.
Its old skin has
Gotten thin,
It’s hanging in a J.

Its new skin will wrap it up
Into a safe cocoon.
Days will pass,
It will not sup,
We hope it changes soon.
Caterpillar, you’ve disappeared,
The cocoon is opening now.
Your lovely wings
Have appeared,
You should take a bow.

Butterfly, it’s time to go,
Spread your wings and fly.
Find a flower,
Swoop down low,
We hate to say good-bye.

by Donna Burk
illustrated by Tyson Smith
Run 1 copy on cardstock. Cut apart. Color and laminate if desired.

1. Egg

2. Larva  Caterpillar
Run 1 copy on cardstock. Cut apart. Color and laminate if desired.

3. Pupa  Chrysalis

4. Adult
Beetles
(to the tune of “I’m a Little Teapot”)

The world is full of beetles
All around,
Most are brightly colored,
Some live underground.

Some live in the water,
Some on land,
Some are helpful,
They help man.

A beetle lives a long time,
It starts as an egg,
Then it’s a larvae.
Beetles have six legs.

Later it’s a pupa,
Then an adult,
With two pairs of wings
To fly about.

The outer wings are horny,
The soft wings fly.
Beetles eat all kinds of things
Before they die.

Some hide in your carpet,
Some eat grain,
Some eat insects
In sun or rain.

by Donna Burk
illustrated by Tyson Smith
1. Egg

2. Larva
Run 1 copy on cardstock. Cut apart. Color and laminate if desired.

3. Pupa

4. Adult
Praying Mantis
(to the tune of “Are You Sleeping?”)

Praying mantis, praying mantis,
Three pairs of legs, three pairs of legs.
Can you find some food to eat?
Snatch an insect off its feet
With your “praying” legs, with your “praying” legs.

Praying mantis, praying mantis,
Hanging upside down, hanging upside down,
Wriggling out of old skin,
Growing bigger new skin,
Six to nine times, six to nine times.

Praying mantis, praying mantis,
Sitting on a plant, sitting on a plant,
Watching for an insect
To have a fine meal.
Groom yourself, groom yourself.

Praying mantis, praying mantis,
Hanging upside down, hanging upside down,
Making foam egg cases,
Filling them with eggs,
Before winter comes, before winter comes.

Praying mantis, praying mantis,
Winter has come, winter has come,
Food has gotten scarce,
Your life is at its end,
Your eggs will survive, your eggs will survive.

Praying mantis, praying mantis,
Summer is here, summer is here,
Hundreds of your babies
Crawling out of cases,
The circle of life, the circle of life.

by Donna Burk
illustrated by Tyson Smith
Run 1 copy on cardstock. Cut apart. Color and laminate if desired.

1. The adult filling her foam egg case

2. Tiny mantises emerging from the egg case
3. A young mantis has no wings

4. An adult mantis
Bugs Live Everywhere

Written by Donna Burk
Illustrated by Tyson Smith
Bugs Live Everywhere

Written by Donna Burk

Illustrated by Tyson Smith

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Blackline 15

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Bugs live everywhere...
in the deserts,
by the sea,
in the mountains,
in a tree,
in our gardens,
in our homes,
sometimes in combs,
Most any place on earth you go,
You find bugs living high and low.
Bridges Breakouts

In the mountains
Deer Fly
Stag Beetle
Wood Ant
Mosquito
In a tree
Ichneumon Fly
Carpenter Ant
Leaf Beetle
Longhorn Beetle

On the ground
Lynx Spider
Grasshopper
Blisters Beetle
Black Widow Spider

Sometimes on combs
Lice

In our gardens
Butterfly
Earwigs
Ladybugs
Honey Bee

By the sea
Ant
Monarch Butterfly
Yellow Jacket

In the deserts
Tarantula
Scorpion
Darkling Beetle

In our homes
Flea
Mosquito
Wood Ant

In the mountains
Mosquito
Wood Ant

Live... where they live...
SPIDER COUNTDOWN

Written by Donna Burk
Illustrated by Tyson Smith

© 2000, The Math Learning Center
Illustrated by Tyson Smith
by Donna Burk

Spider Countdown
10 busy spiders building webs so fine,
A bird ate 1, then there were 9.
9 new spiderlings on a garden gate,
1 caught a little breeze, now there were 8.
8 hairy spiders floating on their threads,
A scorpion caught 1, can 7 find their beds?
7 redback spiders with tangled webs to fix, along came a hungry wasp, and that left 6.
6 busy spiders waiting for insects live!
I had to molt, and then there were 5.
5 trapdoor spiders, each behind its door,
I got eaten by a frog, then there were 4.
4 water spiders in bubble bells so free,
A hungry fish ate 1, then there were 3.
3 crafty raft spiders walked on the water blue,  
Along came a hungry toad, then there were 2.
2 spitting spiders rather hungry in the sun, I spit at a tasty fly, now there’s only 1.
He became so frightened, he began to prance.

I big tarantula made the people dance,
Spider Necklaces

Run 10 copies on white paper or cardstock. Glue a numeral box from Blackline 40 to each spider’s abdomen to create a set of spiders numbered 1 to 10. Trim the top to remove the print and laminate if desired. Punch a hole at either side of the top and run enough yarn through to make a necklace.
Spider Necklace Numerals

Run 1 copy and cut apart on thin lines.
Munch, Crunch, What a Lunch!
Munch, Crunch, What a Lunch!
One praying mantis looking for some food.

Bees here, flies there, mm-mm good!

Munch, crunch, what a lunch!
Two busy honeybees looking for some food.
Pollen here, nectar there, mm-mmm good!

Munch, crunch, what a lunch!
Three hungry spiders looking for some food.

Flies here, mosquitoes there, mm-mmm good!

Munch, crunch, what a lunch!
Four hungry beetles looking for some food.

Flowers here, leaves there, mm-mmm good!

Munch, crunch, what a lunch!
Five hungry grasshoppers looking for some food.

Wheat here, corn there, mm-mmm good!

Munch, crunch, what a lunch!
Six monarch butterflies looking for some food. Pollen here, nectar there, mm-mmm good!
Seven buzzing mosquitoes looking for some food.

A nibble here, a bite there, mm-mmm good!

Munch, crunch, what a lunch!
Eight nasty deer flies looking for some food,

A nibble here, a bite there, mm-mmm good!

Munch, crunch, what a lunch!
Nine green tomato worms looking for some food.

A leaf here, a blossom there, mm-mmm good!

Munch, crunch, what a lunch!
What a lunch!

Munch, crunch,
m-m-mm good!

Aphids there,
Aphids here,

For some food,

Ladybugs looking

Ten lovely

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Munch Crunch Book Flaps sheet I

One Praying Mantis 1
Two Busy Honeybees 2
Six Monarch Butterflies 6
Ten Lovely Ladybugs 10
Munch Crunch Book Flaps sheet 2

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<th>Eight Nasty Deer Flies</th>
<th>Three Hungry Spiders</th>
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</thead>
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<tr>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Four Hungry Beetles</td>
<td>Seven Buzzing Mosquitoes</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>
Butterfly Countdown

written by Donna Burk
illustrated by Tyson Smith
Ten lovely butterflies over a garden fine,
One stopped to sip some nectar,
And then there were nine.
Nine lovely butterflies hovering over a gate,
One stopped to rest awhile,
Then there were eight.
Eight lovely butterflies flying towards heaven,
One found a tree in bloom,
Then there were seven.
Seven lovely butterflies, such a pretty mix,
One saw some flowers to sip,
Then there were six.
Six lovely butterflies saw a large beehive,
One stopped to find some honey,
Then there were five.
Five lovely butterflies flying near a door,
One saw some flowers for sale,
Then there were four.

Then there were four.
Four lovely butterflies flying oh so free!
One stopped to see the pumpkins,
Then there were three.
Three lovely butterflies in the morning dew,
One stopped to see some plants,
Then there were two.
Two lovely butterflies in the midday sun,
One got a bit too hot,
Then there was one.
One lovely butterfly said, “Being lonely is no fun.
She left to find her friends,
Then there were none.
Bugs
Poems & Songs
Bugs Across the Curriculum  Poems & Songs
A Math Learning Center Publication

by Donna Burk & Allyn Snider
illustrated by Tyson Smith

Bridges Breakout Units
   Bugs Across the Curriculum
   Crossing the Pond: A Probability Game
   Exploring Money: Adding, Counting, Sorting and Patterning
   Exploring Time: Hours, Minutes and Paper Clocks
   Frogs Across the Curriculum
   Geometry: Pattern Blocks, Polydrons and Paper Quilts (Grade 1)
   Geometry: Shapes, Symmetry, Area and Number (Grade 2)
   Math Buckets: Sorting and Patterning
   Math with a Sock: Probability and Fractions
   My Little Farm: Money, Place Value and Mapping
   Penguins: Measuring, Sorting, Computation and More
   Sea Creatures Across the Curriculum
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<td>Beetles</td>
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<tr>
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<td>41</td>
</tr>
</tbody>
</table>
The Monarch
by Donna Burk
illustrated by Tyson Smith
A little egg on some Milkweed green,
Became a caterpillar,
Tiny and lean.
It ate and ate,
Both day and night,
Then made a chrysalis,
Oh so bright.
It stayed very still,
The time seemed long,
But now it’s a butterfly.
Good-bye, so long!
She never makes a sound,
Sipping there,
Sipping here,
Flying all around,
A butterfly is in the air,

(to the tune of "Row, Row, Row Your Boat")
We'll wait for many days,
We shall wait,
What will happen?
Many eggs she'll lay,
The butterfly will find a mate,
Crawling all about.
By day and night,
Munching leaves
A caterpillar crawls out,
An egg is hatching, such a sight.
It’s hanging in a J,
Gotten thin,
It’s old skin has
Growing every day.

The caterpillar splits its skin,
It's new skin will wrap it up
In a safe cocoon.
Days will pass,
It will not sup,
We hope it changes soon.

It's new skin will wrap it up
In a safe cocoon.
Days will pass,
It will not sup,
We hope it changes soon.
Caterpillar, you’ve disappeared,
The cocoon is opening now.
Your lovely wings have appeared,
You should take a bow.
Butterfly, it’s time to go,
Spread your wings and fly.
Find a flower,
Swoop down low,
We hate to say good-bye.

written by Donna Burk
illustrated by Tyson Smith
Beetles
(to the tune of “I’m a Little Teapot”)

The world is full of beetles
All around,
Most are brightly colored,
Some live underground.

Some live in the water,
Some on land,
Some are helpful,
They help man.
A beetle lives a long time,
It starts as an egg,
Then it’s a larva.
Beetles have six legs.

Later it’s a pupa,
Then an adult,
With two pairs of wings
To fly about.
The outer wings are horny,
The soft wings fly.
Beetles eat all kinds of things
Before they die.

Some hide in your carpet,
Some eat grain,
Some eat insects
In sun or rain.

by Donna Burk
illustrated by Tyson Smith
Ladybird Beetle

Three body parts, three body parts,
Eating lots of aphids,
You help us in our gardens
Red with black spots, red with black spots,
Ladybird beetle, ladybird beetle,
Ladybird beetle, ladybird beetle,
(to the tune of “Are You Sleeping?”)
Ladybird beetle, ladybird beetle,
Two pairs of wings, two pairs of wings,
Hard red outer wings
Protect transparent flying wings,
Six fine legs, six fine legs.

Ladybird beetle, ladybird beetle,
Ladybird, ladybird, ladybird, ladybird,
Two big eyes, two big eyes,
Antennae help you sniff out food,
Two big eyes, two big eyes.

And find a mate, and find a mate,
They help you find a mealybug.

Antennae help you sniff out food,
Two big eyes, two big eyes.
It's time for you to die, it's time for you to die.

They're hungry when they hatch.

Lay them near some aphids,

Time to lay your eggs, time to lay your eggs,

Ladybird, female, ladybird female,
Ladybird eggs, ladybird eggs,
Hatching into larvae, hatching into larvae,
Can you find some food to eat?
As you grow your skin will split,
Then you are a pupa, then you are a pupa.

Ladybird! ladybird! ladybird!
Ladybird! ladybird! ladybird!
Ladybird pupa, ladybird pupa,
Hanging there so still, hanging there so still,
In five days your shell will split,
Then you’ll be a ladybird,
The circle of life, the circle of life.

by Donna Burk, illustrated by Tyson Smith
Praying Mantis

Praying Mantis
Praying Mantis
Three pairs of legs,
Three pairs of legs.
Can you find some food to eat?
Praying Mantis,
Praying Mantis,
Praying Mantis,
Praying Mantis.

With your “praying” legs,
With your “praying” legs,
Snatch an insect off its feet
(to the tune of “Are You Sleeping?”

Praying Mantis
Praying Mantis
Praying mantis, hanging upside down,
Wriggling out of old skin,
Growing bigger new skin,
Six to nine times,
Six to nine times.

Praying mantis, hanging upside down,
Praying mantis, hanging upside down,
Praying mantis, hanging upside down.
Praying mantis,
Praying mantis,
Sitting on a plant,
Sitting on a plant,
Watching for an insect
To have a fine meal.
Groom yourself,
Groom yourself,
Praying mantis,
Praying mantis,
Praying mantis, hanging upside down,
Making foam egg cases,
Filling them with eggs,
Before winter comes.

Praying mantis, hanging upside down,
Praying mantis,
Praying mantis,
Praying mantis,
Winter has come,
Winter has come,
Food has gotten scarce,
Your life is at its end,
Your eggs will survive,
Your eggs will survive,
Praying mantis,
Praying mantis,
Praying mantis,
Praying mantis,  
Praying mantis,  
Summer is here,  
Summer is here,  
Hundreds of your babies  
Crawling out of cases,  
The circle of life,  
The circle of life,  
Praying mantis,  
Praying mantis,  

by Donna Burk, illustrated by Tyson Smith
ANTS
Ants here, ants there,
Hurrying, scurrying everywhere,

Ants here, ants there,
Up my leg, on my chair,
Ants in my pants and my underwear!

by Donna Burk, illustrated by Tyson Smith
Ants
(to the tune of “Twinkle, Twinkle, Little Star”)

Ants are scurrying all around,
In their tunnels underground,

Guarding entrances,
Finding food,
Tending the larvae,
What a brood!

Ants are scurrying all around,
In their tunnels underground.

by Donna Burk, illustrated by Tyson Smith
Did you ever see a spider, a spider, a spider,
Did you ever see a spider with eight hairy legs?
With four on the left side
And four on the right side,
Did you ever see a spider with eight hairy legs?
Did you ever see a spider, a spider, a spider, Did you ever see a spider with eight shiny eyes? With two that are large And six that are smaller, Did you ever see a spider with eight shiny eyes?
Did you ever see a spider, a spider, a spider, Did you ever see a spider with two body parts? A joined head and chest And an abdomen behind, Did you ever see a spider with two body parts?
Did you ever see a spider, a spider, a spider, Did you ever see a spider with no spine at all? Just skin on the outside, All covered in oil, Did you ever see a spider with no spine at all?
Please don’t step on a spider, a spider, a spider, Please don’t step on a spider, Most spiders are friends. They eat lots of insects, Which helps all of us, Please, don’t step on a spider, Most spiders are friends.

by Donna Burk, illustrated by Tyson Smith
Don’t Step on That Spider

Please, stop!
Don’t step on that spider.
She might be hungry,
She’ll make a trap.
She’ll wait until she catches an insect,
She’ll have her dinner,
Then take a nap.

by Donna Burk, illustrated by Tyson Smith
Spiderlings, stop!
Don’t eat each other.
Hurry, scurry!
You must get away.
Make a web,
Catch an insect,
Swing on your thread,
But please, don’t stay!

by Donna Burk, illustrated by Tyson Smith
Spider, Spider!
It’s time to molt.
Wiggle out of your old, hard skin.
You’ll need to hide.
You cannot fight.
Don’t get stuck in skin that’s too thin.

by Donna Burk, illustrated by Tyson Smith