

Problem Solvers Activity 6: Latimer the Ladybug Has Lost His Spots!

CHILDREN ARE LEARNING TO...¹

- Recognize the number of small objects in groups without counting (subitizing).
- Count and compare sets of objects that are about the same size with adult assistance.
- Add and subtract very small collections of objects with adult support.

Materials Needed:

Black round dot stickers

- If these are not available, a thick black magic marker can be used to draw dots on index cards.

20 index cards

4 envelopes or resealable bags

Dried black beans or other counters

5 small bowls

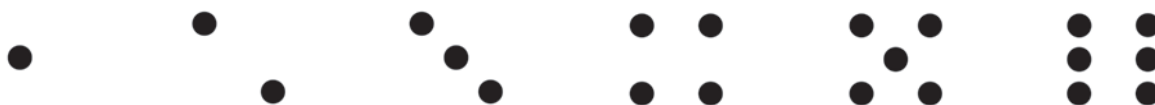
Small tray (optional)

Handout 1: Latimer the Ladybug Has Lost His Spots!

Handout 2: Lucy, Lawrence, and Lily Ladybug

PREPARATION:

- Make spot cards for the game by placing 1 dot sticker on each of 4 index cards; 2 dot stickers on each of 4 cards; 3 dot stickers on each of 4 cards; 4 dot stickers on each of 4 cards; and 5 dot stickers on each of 5 cards. Create 4 sets of cards (each set should have a 1, 2, 3, 4 and 5 card.) Place dots on cards using the patterns below:



- On the bottom of each spot card, write the appropriate numeral (1, 2, 3, 4, 5) and number word (one, two, three, four, five).
- Shuffle each set of spot cards and place in an envelope.
- Make 3 copies of **Handout 1** and glue each ladybug to sturdy cardboard/manila folder.
- Make a copy of **Handout 2** (Lucy, Lawrence and Lily) and glue each ladybug to sturdy cardboard/manila folder. Note that it does not matter which color you assign to the three ladybugs, but once you have decided, be consistent—for example, you might decide that Lawrence is always purple in the activity.

¹Head Start Early Learning Outcomes Framework: Ages Birth to Five. <https://eclkc.ohs.acf.hhs.gov/interactive-head-start-early-learning-outcomes-framework-ages-birth-five>

- Put 10 black beans (or counters) in each of 5 bowls.
- Optional: Put bowls on a small tray.
- Prepare copies of the parent handout for distribution.
- If you plan on implementing the optional book activity, refer to the preparation instructions in that section

Activity Instructions

ENGAGE

Gather a group of 4 children.

Have the Latimer, Lucy, Lawrence, and Lily handouts close by.

ASK: Problem Solvers, let's talk about ladybugs! Have any of you seen a ladybug? What do you know about ladybugs?

Lead a short discussion about ladybugs. If you wish, on a piece of paper or a small whiteboard, write down what children know about ladybugs. Make sure children know/understand that ladybugs have spots.

ASK: Problem Solvers, I want to tell you about my friend Latimer. [Take out Latimer handout.] My friend Latimer the Ladybug has a problem. Does anyone see what's wrong? What did Latimer lose? (*Wait to see if children notice Latimer has no spots.*) Latimer woke up this morning and realized he lost all his spots! Let's work together to give Latimer a new set of spots!

EXPAND

SAY: Let's give Latimer some spots. To find out how many, we're going to choose a spot card.

Take out a set of spot cards. Show children a card.

SAY: The spot cards tell us how many spots to put on Latimer's back. What does this card tell us? How many spots does Latimer need?

Select a child to tell you how many spots Latimer needs.

Note that if the quantity is small, the child may simply say the quantity: "Two!" If the quantity is larger (like five), the child may need to point to each spot and count it.

Take out a bowl of black beans or other counters to represent spots. Ask the child to place the correct number of spots on Latimer's back, counting as they place them.

SAY: That's how we play. I'll put these spots away and we'll choose a new card. (*Place beans back in the bowl.*) Who would like to choose a spot card next?

Place the sample card back in the stack, mix the cards up, and select a child to choose another card. Repeat the activity.

6 LADYBUG FACTS FOR TEACHERS

1. Ladybugs are actually beetles, a special kind of insect.
2. The most common ladybug in America is red and black with 7 spots.
3. Ladybugs help farmers because they eat insects that can damage crops (the plants that farmers grow). One ladybug can eat up to 5000 insects in its life!
4. Ladybugs have six legs.
5. Ladybugs lay their eggs on the underside of a leaf.
6. During the winter, ladybugs hibernate (or stay still and not active in a warm place—like rotting logs, under rocks, or even inside houses!).

(Find these and other facts at: <https://kids.nationalgeographic.com/animals/invertebrates/facts/ladybug>)

ASK: Does anyone see how many spots are on this card? What can we do to find out?

TIP: Observe to see if children are able to tell you the quantity of spots on the card without counting. This shows their subitizing skills at work! The key with subitizing is timing: Children will state the quantity right away, rather than pausing to count.

If the child doesn't immediately recognize/name the quantity, encourage the child to count out the correct number of beans (spots) and place them on Latimer's back. Repeat the total quantity once more: *There are _____ spots on Latimer now.*

SAY: Did you know that Latimer has a brother? Does anyone else have a brother? Here is Latimer's brother Lawrence. [Take out Lawrence handout.] Hmmmmmm, what do you notice about Lawrence's spots? Lawrence has ALSO lost his spots! Oh no! Should we get some spots for Lawrence?

Repeat the card activity. Then prompt children to compare the spots on Latimer and Lawrence: "What do you notice about the spots on Latimer and Lawrence?"

Wait to see if children use comparison language like *more*, *less*, the *same*. If they do not naturally begin to compare the spots, ask a question like: "Hmmm, what can we do to figure out who has more spots?"

Engage children in a discovery about how to compare the spots. Depending on the number of spots on each ladybug, children may be able to compare the sets visually (using subitizing skills). Otherwise, they may need to count to compare. See the matching strategy on page 4 for an instructional method to assist with these comparisons.

If the sets are the same quantity, you can introduce the term EQUAL. "Equal means that the two quantities are the same. Latimer has 3 spots and Lawrence has 3 spots."

EXPLORE

Continue playing the game as a group. Introduce Latimer's sisters Lucy and Lily. Repeat the activity with the Lucy and Lily handouts, prompting children to choose a card, place the beans or counters (spots), and compare each one with Latimer. When children have completed this, you can play the game outlined below as a group.

Try Latimer the Ladybug as a partner activity—for children aged 3.5 and up. This may be quite challenging so be sure to supervise and offer coaching/support if needed. Form pairs of children. Give one child in the pair a Latimer handout and the other child a Lawrence, Lily or Lucy handout. Give each child a bowl of dried beans or counters and a set of spot cards. Each child in the pair should choose a card. They put that quantity of beans or counters (spots) on their ladybug. Then they can compare with their partner. Which ladybug has MORE? Which has LESS? Are they EQUAL? When the children are done, they put the beans or counters back in the bowl and put the card on the bottom of the pile. They continue choosing cards and comparing quantities for 3-4 turns.

TIP: Children may notice the repeated use of the /L/ sound in the word "ladybug" and in the ladybug names (Latimer, Lawrence, Lucy and Lily) and how they have "lost" their spots. If children do notice, you can point out that the letter "L" (write it for children on paper) makes the /L/ sound. Starting at about 3-4 years of age, children enjoy alliteration (the repetition of starting letters/sounds).

OBSERVE the pairs to see if children are recognizing the quantities on the spot cards without counting them (subitizing). This is most likely to happen with small numbers (1-3).

If you see children make a counting error in recognizing the quantity on the spot card or placing that quantity of spots on Latimer, you might say: "Hmmm, let's be Problem Solvers and doublecheck." Point to each dot on the card as you both count aloud. When done, ask the child: "The card tells us that Latimer needs ____ spots. How many counters do you need? (*Wait for child response.*) That's right. You need ____ counters to put on Latimer. Let's count to make sure." Then suggest the child count the beans (spots) once more.

If you see children make a comparison error in comparing sets of spots, say: "Let's be Problem Solvers! Problem Solvers doublecheck to be sure. So let's count again to compare our spots." Observe as children count and then summarize: "You counted 4 spots on Latimer. And you counted 5 spots on Lawrence. Who has more? What do you think? What can we do to find out??"

OBSERVE If children still are having difficulty, take the larger quantity of counters off the Latimer handout and place in a line on the table. Place the smaller quantity of counters in a line directly below. Point to the longer line: "Here are the spots from Lawrence." Point to the shorter line: "Here are the spots from Latimer. Which set of spots has MORE?" Summarize: "That's right. You saw that the line of spots from Lawrence has MORE than Latimer's line of spots. Lawrence has MORE spots. Latimer has LESS spots."

This strategy is called **matching**, which is a "direct-modeling" strategy. Using this approach, children compare items in a set by matching them using one-to-one correspondence. This hands-on, highly visual strategy helps children "prove" there are more/less in a set because the is longer/shorter (Erikson Early Math Collaborative, 2014).

REFLECT

To close the activity, bring the children back together. Use a reflective question/s - like those below - to prompt children's thinking about counting and quantity.

- What did you do to figure out which ladybug had more spots?
- Tell me how you found out whether Latimer or Lawrence had more spots.
- Did anyone discover that Lawrence and Latimer had an equal number of spots? What did you do to figure that out?

SAY: Let's do good-bye high-fives! You can choose a card and we'll do that number of high-fives.

Take out a set of spot cards and let each child choose one. Figure out together how many high-fives to do as you dismiss each child.

TIP: When comparing sets, be sure to do so in a nonjudgmental fashion. Children may unconsciously have a sense that "more = better." It is best to communicate that more, less and equal are simply descriptions of quantity and "help us make comparisons."

Individualizing the Activity

MAKE IT MORE CHALLENGING:

- Create spot cards that go up to quantities of 10.
- As children near four years of age: For each card, point out the numeral and number word at the bottom of the card to promote children's growing number recognition skills. Children can trace the numeral on the card with their finger or try to draw it in the air as part of the activity.
- Give pairs 3 (or even 4) ladybug handouts. Have them choose cards and place spots on each handout. Then have them put the ladybugs in order from the ladybug with the MOST spots to the ladybug with the LEAST spots. This activity introduces the skill of ordering—where the number sequence determines the relationship between sets (more, less, equal).

MAKE IT LESS CHALLENGING:

- Use only cards showing quantities of 1 to 3.
- If children are struggling with the ladybug aspect of the activity, start by using the spot cards only. Place the card on the table and explore how many spots are there. Suggest children move one bean on top of each dot on the card and then count to discover the quantity.
- Play the game as a group and wait on partner work until children have mastered the concept of comparing based on quantity.

MAKING CONNECTIONS ACROSS THE DAY:

- Look for natural opportunities to compare the quantities of two different collections. For example, you might notice that one child's shirt has more buttons or stripes, as compared to another child. Or one child has less or fewer crackers on their plate at snack than another child because they have eaten them up!
- When offering children snack, ask if they would like 1, 2, or 3 crackers. Take this opportunity to compare the cracker sets of two or more children.
- Use the spot cards in other activities, such as the block or train area, where children choose cards to see how many blocks or trains they take at each turn.
- Point out small quantities that can be understood without counting—like a window with two panes or three light switches.
- Use the spot cards as a visual reminder for how many children can be in each center or how many children can sit at each lunch or snack table.
- Point out when you see equal quantities: "I have two crackers, and you have two crackers. We have an equal quantity of snack."

Song: *Ladybug Spots*

Latimer the Ladybug has lost his spots;
Let's help give Latimer some shiny new dots.

]I see three (3!) It's easy as can be!
Now our friend, Latimer, has three new spots.

]Lawrence the Ladybug has lost his spots;
Let's help give Lawrence some shiny new dots.

]I see one (1!) It's so much fun!
Now our friend, Lawrence, has one new spot.

]Time to compare; who has more spots?
Which is more, three or one? Yes!
Latimer the Ladybug has more spots than Lawrence.

]Lucy the Ladybug has lost her spots;
Let's help give Lucy some shiny new dots.

]I see two (2!) shiny and new!
Now our friend, Lucy, has two new spots.

]Lily the Ladybug has lost her spots;
Let's help give Lily some shiny new dots.

]I see four (4!) They look like a door!
Now our friend, Lucy, has four new spots.

]Time to compare; who has more spots?
Which is more, two or four? Yes!
Lily the Ladybug has more spots than Lucy.

BUILD ON THE SONG:

For each stanza, use the song lyrics as prompts for how many spots to place on the ladybugs. If you wish, pause the song when it asks, "Time to compare; who has more spots?" and ask for children to respond.

Making Literacy Connections

Share the following book with children as an opportunity to deepen their understanding of counting and quantity. The literacy extension activity below suggests another play-based experience to invite counting.

Suggested Book: *How Many Snails? A Counting Book* by Paul Giganti, Jr.

AS YOU READ:

The text of the story asks children to count different sets pictured in the illustrations. Follow the story prompts and engage children in counting and comparing. For example, they will discover there are 14 fish. But within the collection of fish, 7 are red. And 4 are red with their mouths open!

The quantities featured in the two-page spreads may be too large for younger children (like the 14 fish mentioned above). In that case, you can cover one of the pages with a piece of construction paper so that children only count items in one half of the illustration. For the fish example, when the right-side illustration is covered, there are 6 fish. Of these, 3 are red fish, and 1 red fish has its mouth open.

Before prompting children to count, you might ask children to do a visual check: "I wonder if there are more red fish or yellow fish? Let's look at the picture. What do you see? Can we make a prediction?" Once children have made a prediction, say: "Okay, Problem Solvers, I like your math thinking (describe a strategy that a child used to make their guess). Now let's discover which is more!" Point to each set and count. As you do, place a counter in view of the children. As you count the second set, do the same, placing the line of counters directly underneath the first. This helps children visually see which set has more.

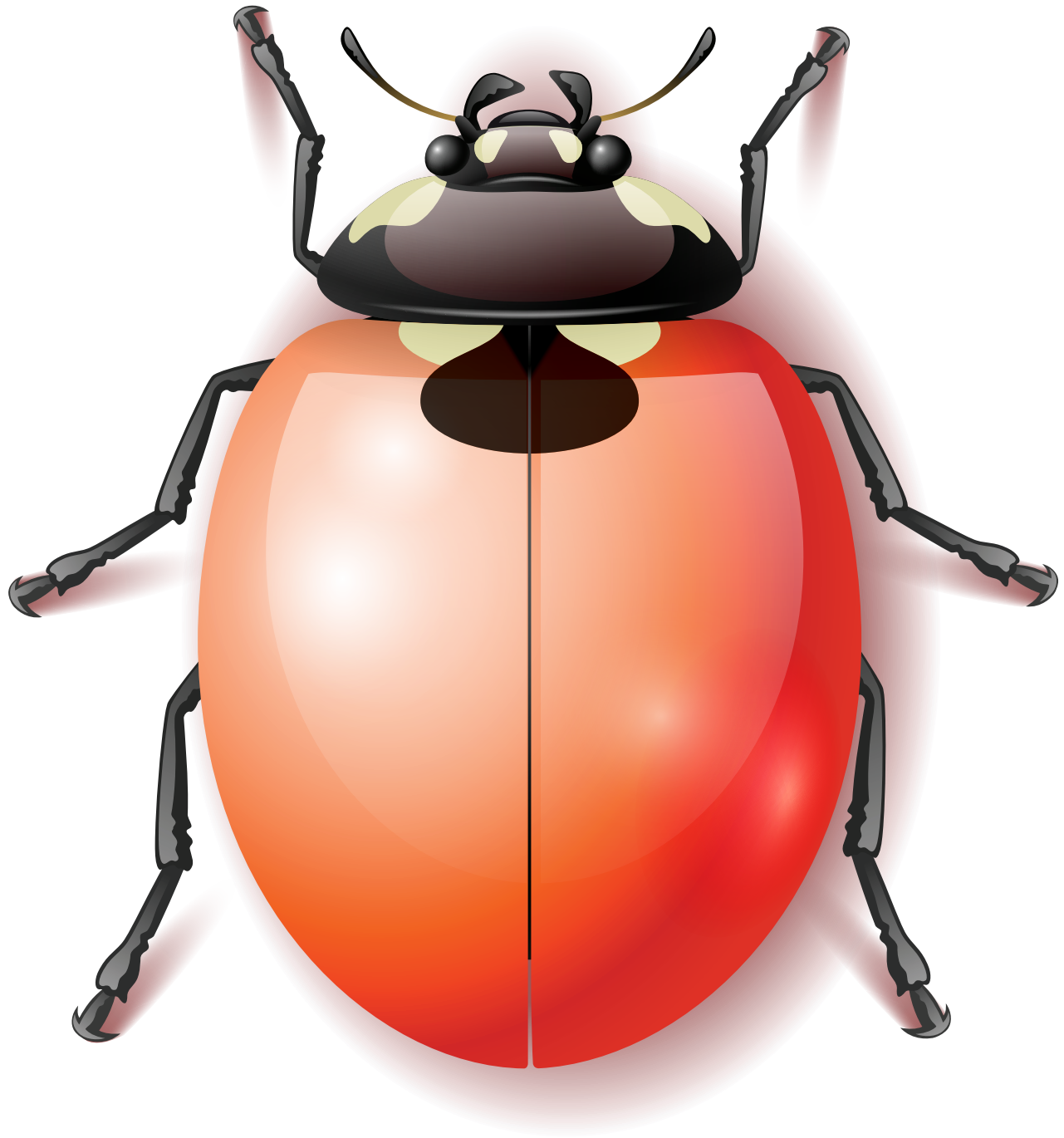
On the page with the clouds, you might notice: "Hmmm, are there more gray clouds than white clouds? Or is there an equal amount of gray clouds and white clouds? What could we do to find out?"

BUILD ON THE BOOK:

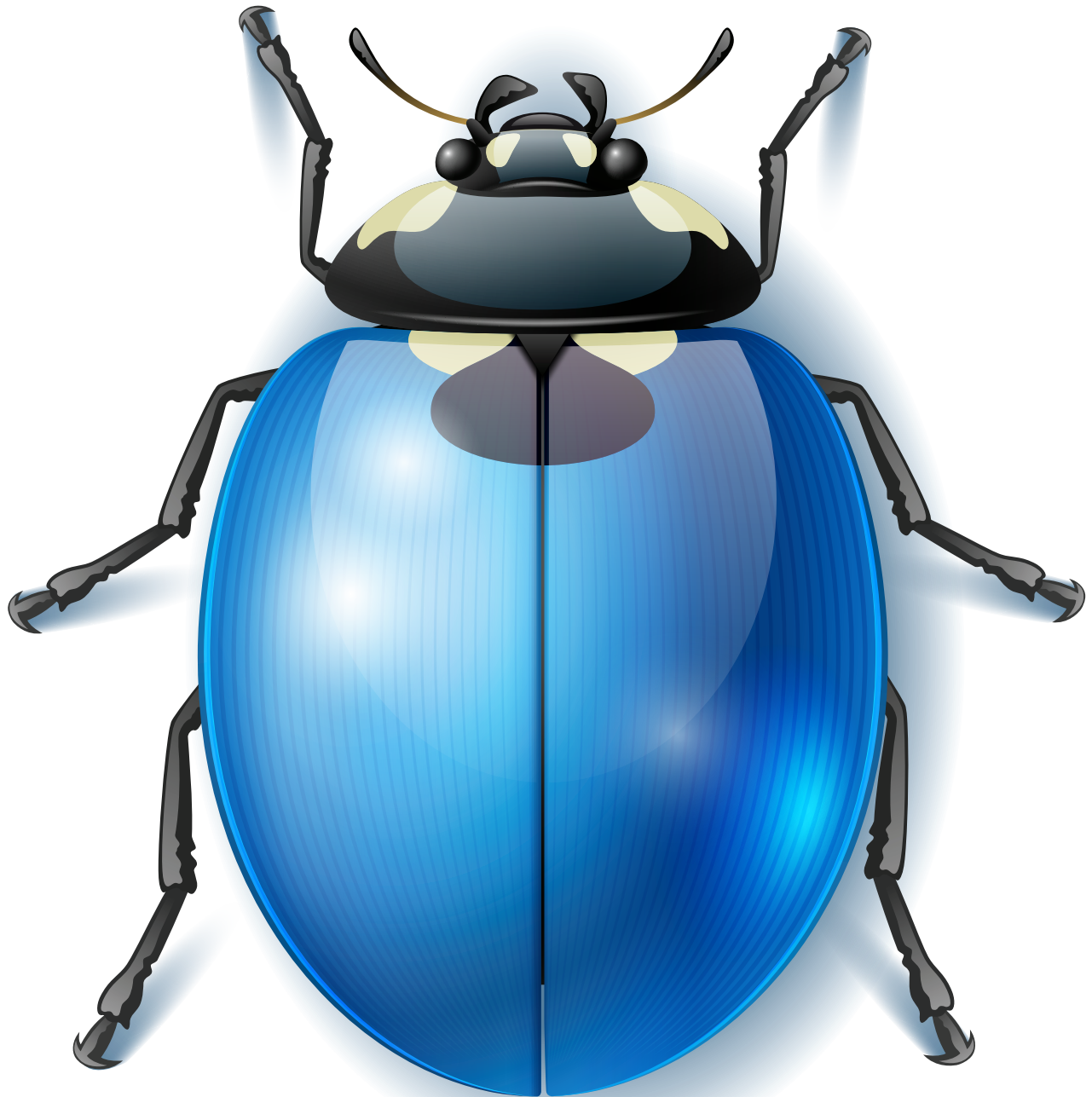
Materials: 2 child-size teacups; 3 plastic figures; 5 toy cars; 7 wooden cube blocks

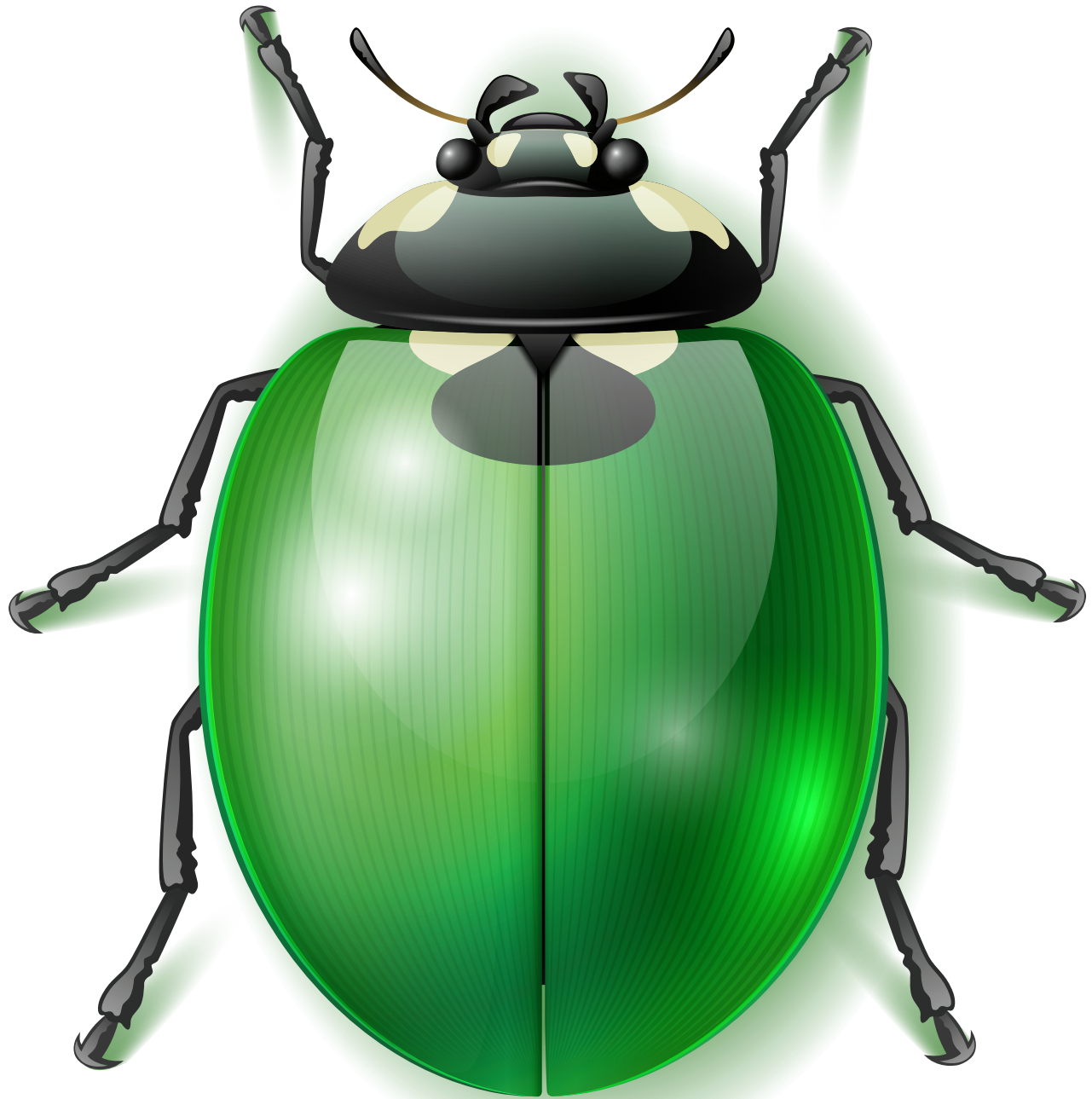
1. Place teacups and toy cars in a random order on the floor.
2. Ask children: "Let's be Problem Solvers! What do you think—are there more teacups or cars? Let's make a prediction! (After eliciting children's thinking): What can we do to check which one has more?" Wait for children to share their ideas.
3. Say, "Let's see!" Choose a helper to line up the teacups. Ask another helper to line up the blocks under the cups. Ask: "What do you notice?" Wait to see if children compare the quantities visually.
4. Say, "Let's doublecheck by counting!" As you point to each cup and then each block, encourage the children to count along. As you finish counting each set, repeat the total quantity: "2 Teacups!" When you have counted both sets, ask: "So what did we discover? Are there more cups or more blocks? How do we know?" Summarize children's learning.
5. Repeat with the plastic figures and toy cars. You can also repeat with the teacups and cars, and the plastic figures and blocks. Each time, encourage children to visually compare the sets and then "doublecheck" by counting.

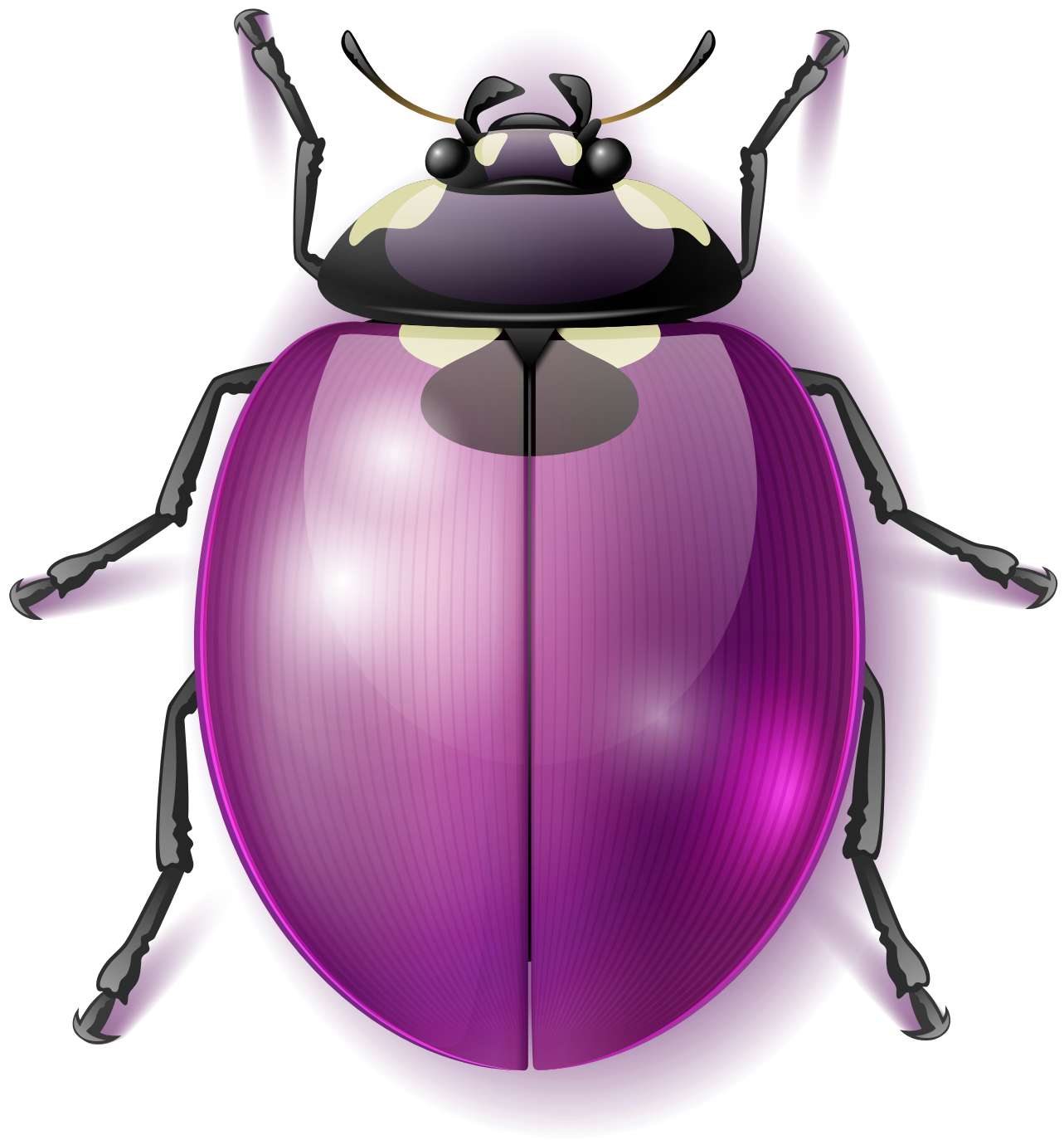
Handout 1: Latimer the Ladybug

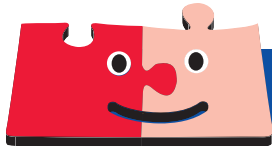


Handout 2: Lucy, Lawrence, and Lily Ladybug









Just for Families

More, Less or Equal

This week, use the math words **more**, **less**, and **equal** with your child in a comparison game!

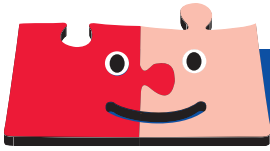
1. At snack-time, give your child—for example—3 pretzels. Then choose 2 for yourself.
2. Point to the pretzels and say: “Let’s play More, Less, or Equal. What can we do to figure out who has more pretzels?” Wait to see what your child does.



Your child may be able to answer just by looking at the pretzels. But for larger quantities (more than 3 pretzels), they may need to count. Help them by pointing to each pretzel and counting out loud with them. Then ask, “So, who has more: you or me?”

3. Once your child has told you “more” or “less,” you can describe what they discovered: “Yes! I have 2 pretzels, and you have 3 pretzels. 3 is MORE than 2. I have less pretzels than you do because 2 is less than 3.”
4. Play again, but choose a different quantity of pretzels. Stick to quantities of 5 and under.

If this game is too easy for your child, you can use larger quantities of snack (up to 8-10). If it’s too hard, use quantities of 1-3.



Solo para familias

Más, menos o iguales

¡Esta semana, use las palabras matemáticas **más**, **menos** e **igual** con su hijo en un juego de comparación!

1. A la hora de la merienda, dele a su hijo, por ejemplo, 3 galletas saladas. Luego elija 2 para usted.
2. Señale las galletas saladas y diga: "Juguemos a más, menos o igual. ¿Qué podemos hacer para saber cuál de nosotros tiene más galletas saladas? ¿Puedes mirar las galletas saladas y ver si tienes más que yo? ¿O tienes menos galletas saladas que yo? ¿Cómo lo descubriste?"



Es posible que su hijo pueda responder con solo mirar las galletas saladas. Pero para cantidades más grandes de bocadillos (más de 3 galletas saladas), es posible que deban contar. Ayúdelo señalando cada galleta salada y contando en voz alta con él.

3. Una vez que su hijo le haya dicho "más" o "menos", puede volver a declarar lo que descubrió: "¡Sí! Tengo 2 galletas saladas, y tú tienes 3 galletas saladas. 3 es MÁS que 2".
4. Juegue de nuevo, pero elija una cantidad diferente de galletas saladas. Apéguese a cantidades de 5 o menos.

Si este juego es demasiado fácil para su hijo, puede usar grandes cantidades de bocadillos (hasta 8 o-10). Si es demasiado difícil, use cantidades de 1a-3.