

Problem of the Week Teacher Packet

How Many Berries Did I Eat?

I have a blueberry bush with 9 blueberries and a raspberry bush with 7 raspberries. I ate some blueberries and some raspberries. Now there are 4 blueberries and 4 raspberries on my bushes.

Did I eat more blueberries or more raspberries? How do you know?

Check your thinking by using pictures or numbers to show how many blueberries I ate and how many raspberries I ate.



Answer Check

After students submit their solution, they can choose to “check” their work by looking at the answer that we provide. Along with the answer itself (which never explains how to actually get the answer) we provide hints and tips for those whose answer doesn’t agree with ours, as well as for those whose answer does. You might use these as prompts in the classroom to help students who are stuck and also to encourage those who are correct to improve their explanation.

I ate more blueberries than raspberries.

If your answer does not match our answer, did you

- draw a picture?
- use red and blue counters?
- talk in your group?

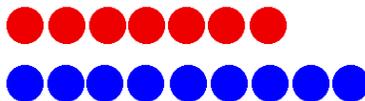
If your answer does match ours,

- explain?
- write a number sentence?
- help anyone in your group?

Our Solutions

Method 1: Use Red and Blue Counters

I used red and blue counters to think about the berries on the bushes. I counted out 7 red counters and 9 blue counters like this:



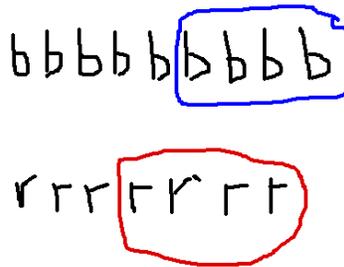
The problem said that after I ate berries, there are 4 berries left on each bush. I moved my counters to show this:



I can see that I ate 3 red raspberries and 5 blueberries. I ate more blueberries than raspberries. I ate 2 more!

Method 2: Draw a Picture

I drew 9 b's to show the blueberries I started with. I drew 7 r's to show the raspberries I started with. The problem said there were 4 berries left on each bush, so I put one circle around 4 in each of my lists to show the berries still on the two bushes. After I did this I could see what I must have eaten. I ate 5 blueberries and 3 raspberries. I ate more blueberries than raspberries.



Method 3: Make a Table

	blueberries	raspberries
on the bush at first	X X X X X X X X X	X X X X X X X
on the bush after I ate	X X X X	X X X X
berries I must have eaten	X X X X X	X X X
	I ate 5	I ate 3

I ate more blueberries than raspberries.

Method 4: Write Number Sentences

You ate more blueberries than raspberries. You started with 9 blueberries and 4 blueberries were left. I can write this number sentence:

$$9 - 4 = 5$$

So you ate 5 blueberries.

You started with 7 raspberries and 4 raspberries were left. I can write this number sentence:

$$7 - 4 = 3$$

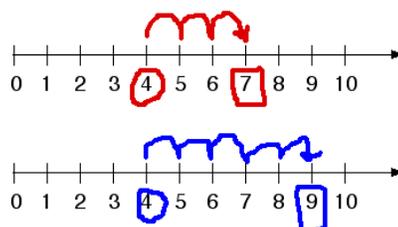
So you ate 3 raspberries.

5 blueberries is greater than 3 raspberries. You ate more blueberries.

Method 5: Use a Numberline

I used a numberline. I knew that there were 4 berries left on each bush. I had 7 raspberries in all and so I jumped from the 4 to the 7 and counted my jumps. I jumped 3 and so I ate 3 raspberries.

I had 9 blueberries in all and so I jumped from the 4 to the 9 and counted my jumps. I jumped 5 and so I ate 5 blueberries.



Since 5 is more than 3, I ate more blueberries.

Method 6: Algebraic Reasoning

After reading the problem, I used this reasoning:

9 blueberries - 4 blueberries left = 5 blueberries eaten
7 raspberries - 4 raspberries left = 3 raspberries eaten
5 blueberries > 3 raspberries

I ate more blueberries.

Method 7: Algebraic

Let b = the number of blue berries I ate
 r = the number of raspberries I ate

I know

I started with 9 blueberries on one bush and 7 raspberries on the other bush.
There were 4 of each kind of berry on each of the two bushes after I ate berries.

I can write these two equations:

$9 - b = 4$ and $7 - r = 4$
 $b = 5$ and $r = 3$

5 is greater than 3, therefore more blueberries were eaten.

Standards

If your state has adopted the [Common Core State Standards](#), you might find the following alignments helpful.

Kindergarten: Operations & Algebraic Thinking

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Grade 1 and Grade 2: Operations & Algebraic Thinking

Represent and solve problems involving addition and subtraction.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.

Teaching Suggestions

This problem is one that was discussed during an online course offered to a group of primary level teachers from Montgomery County, Maryland. Here are some thoughts that were shared in the course about this particular problem:

Patti's Thoughts

One of the strategies that we were taught to use when solving the PoW's on the Math Forum, was to use the notice and wonder strategy. When doing this we withhold the question and have them talk simply about what they notice in the problem. There is no question so they don't know to look for one and they just talk about what they notice. Then we talk about what they might wonder about and it is here where students start to pose possible questions that could possibly be what the problem is intending to ask.

I absolutely think that this strategy is so helpful because it allows the child to get clarity about the information in the problem. My students come up with some really interesting possibilities for questions. It is during this time that they might wonder about other things other than the question. That is what is so positive about this strategy.

I think I would provide my students with two tree mats and some cubes to use to represent the berries on each tree. I think a visual first would help most of my students solve this. Perhaps I might change

the problem around a little. The problem could say something like “my blueberry bush has some berries” and “my raspberry bush has some berries” and that way my students could start with an unknown, which would make it more open ended with more possibilities.

Jennifer’s and Maya’s Thoughts

Jennifer made the statement that “More blueberries were eaten because there were more blueberries to begin with.” When questioned if that is always the case, she added, “...obviously if the starting amounts were different, to obtain an equal amount as the solution, the number eaten would need to vary.”

Maya said, “You ate more blueberries than raspberries. I know this because you started with more blueberries than raspberries. If you started with 9 and now you have 4 left, then you ate 5. You started with only 7 raspberries, therefore, you only needed to eat 3 of them to have 4 remaining. Suzanne- Good question! No, it would not always be true. It was true in this case because the unknown amount of eaten blueberries was not equal. Had the question said that the person ate more raspberries to start with than blueberries, then the answer could have been different.”

Terrie’s Thoughts

I believe most of my second graders would use the manipulatives provided or draw a picture. Most would begin with how many blueberries they started with and how many they ended with (same with raspberries). They would then compare the amounts on the bush they started with, with the amounts the bush ended with. They could then see how many raspberries or blueberries were eaten. For this problem I would provide some sort of counters – probably red and blue unifix cubes.

BBBBBBBBBB - started with RRRRRRR - started with
BBBB - ended with RRRR - ended with

BBBBB - There would have been 5 blueberries eaten.

RRR - There would have been 3 raspberries eaten.

My students would probably cross off the berries that have a partner to show how many berries would be left over or eaten.

Stacey’s Thoughts

I thought about this problem using equations. I just taught my students the challenge section of unit 3 for grade 3 math and we worked with solving problems where we had to identify the known and the unknown and write equations. I solved the problem from this aspect thinking about how the students could solve this in pairs which would make them orally discuss what information is know, what information they do not have, what is the problem they are trying to solve, and what function they would perform to solve the problem (addition, subtraction, multiplication, or division). They would use this information to write and solve an equation. They would then also identify what the solution tells us about the problem. With this method, students are not only orally discussing the problem, but they are also use written communication also.

Java’s Thoughts

My second graders would be able to communicate effectively in solving this problem by using pictures, manipulatives and/or words. We always use pictures and manipulates to show our work but now they are being encouraged to explain what they drew or what the manipulatives represent. The students will be more effectively able to explain their thinking orally than they would written but they would be able to do both. Therefore, it is always good to get them to work in pair or small groups because then they can help each other to verbalize what they are trying to say. These methods will also provide them with various strategies, because they will learn from each other.

Sarah’s Thoughts

With kindergarteners, it is difficult to get them to communicate with each other on the specific topic that is directed. They often get off task and forget what they are supposed to be communicating about. With “How Many Berries Did I Eat?,” we did the usual think-pair-share to generate ideas about solving the problem. Then I joined two pairs together (4 students total) and the groups discussed and

worked on the problem together. Of course, some groups were more successful than others, but all groups were more actively involved than before. They had manipulatives to use to act out the problem which helped a lot.

Beverly's Thoughts

At the first grade level communication is a big part of problem solving/strategies to solve problems. We usually begin discussions with a knee to knee partner then add two other knee to knee partners or think pair share. The students are comfortable enough now to share out their way for solving a problem and then someone else shares a different way. We use pictures, words, manipulatives or act out a problem to come up with solutions. For those students that still need a little more help or guidance I use the Elmo to display the problem and a different student every week will come up and show their solution on the screen. This seems to calm everyone's frustration level while celebrating someone's solution.

Engrid's Thoughts

For the problem "How Many Berries Did I Eat?," my first graders would communicate effectively through pictures and manipulatives. We use these in math a lot to explain our thinking or show our work. Many times they can explain themselves through pictures and manipulatives better than words. When they see a problem model out, they tend to understand it better. Also working with partners or in groups can help them hear and see different strategies.

I think a good way to develop student communication with this problem is to first start with a Think-Pair-Share. That way they can communicate with a partner and share the thinking. They would have access to white boards and manipulatives, too. After talking with a partner, they could share with another group. Then we could have a class discussion.

We hope this information is useful in helping you make the most of this Primary Problems of the Week. If you have stories to tell about this or other problems, we'd love to hear from you.

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