

2.NBT How Many Days Until Summer Vacation?

Task

Materials

* Paper * Pencil * Hundreds board * Base-ten blocks

Actions

Pose this problem to the children: We are in school 180 days. Today is the 124th day of school. How many more days until we are out of school for summer vacation? Explain how you know.

IM Commentary

The purpose of the task is to allow children an opportunity to subtract a three-digit number including a zero that requires regrouping. The solutions show how students can solve this problem before they have learned the traditional algorithm. Children need to be familiar with the 100s board, base ten blocks, counting on, and counting backwards. The solutions given make sense to children and are often easier for them to explain and justify than using the traditional algorithm.

The complexity of this task can be modified depending on the day such a problem is given. For example, on the 110th day of school, the subtraction is very simple: once students can count by tens, they can easily solve it. This task could also be used to give students extra practice outside of math instructional time; for example, if teachers go over the calendar at some point during the day, such a problem could be given then as a way to get them doing math, even though they're not in math time.

The Standards for Mathematical Practice focus on the nature of the learning experiences by attending to the thinking processes and habits of mind that students need to develop in order to attain a deep and flexible understanding of mathematics. Certain tasks lend themselves to the demonstration of specific practices by students. The practices that are observable during exploration of a task depend on how instruction unfolds in the classroom. While it is possible that tasks may be connected to several practices, only one practice connection will be discussed in depth. Possible secondary practice connections may be discussed but not in the same degree of detail.

This particular task engages students in the ideas of Mathematical Practice Standard 5, Use appropriate tools strategically. During this exploration, second graders solve a contextual problem that requires them to regroup while subtracting a three-digit number. Children may use multiple tools to solve this problem as detailed in the commentary, such as the 100s board, base ten blocks, counting on, and counting backwards. As students become proficient in this practice, they will be able to consider a tool's usefulness and consider its strengths and limitations, as well as know how to use it appropriately. The solution pathway that a student selects needs to make sense to him/her to be able to explain and justify (MP.3). Students will come to realize that certain methods/tools are more efficient and they will abandon old ways and consider more appropriate strategies/tools. Problems such as these lay the foundation for understanding subtraction with regrouping so when they tackle the traditional algorithm they can apply this understanding to the new method.

Solutions

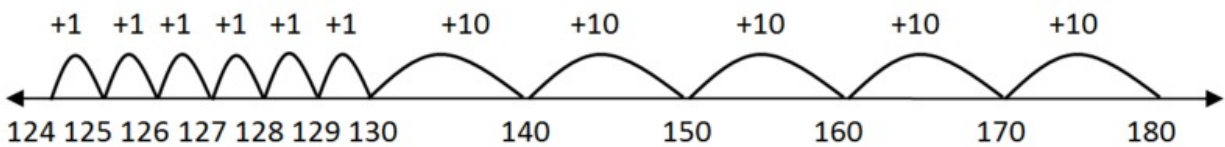
Solution: 1

Count by ones to the next decade: 125, 126, 127, 128, 129, 130. So we have added 6.

Then count by tens: 140, 150, 160, 170, 180, which makes 5 tens or 50.

Since $50 + 6 = 56$, there are 56 days left before we get out of school for summer vacation.

Students can use the 100s board or draw an "empty number line" to help them count.

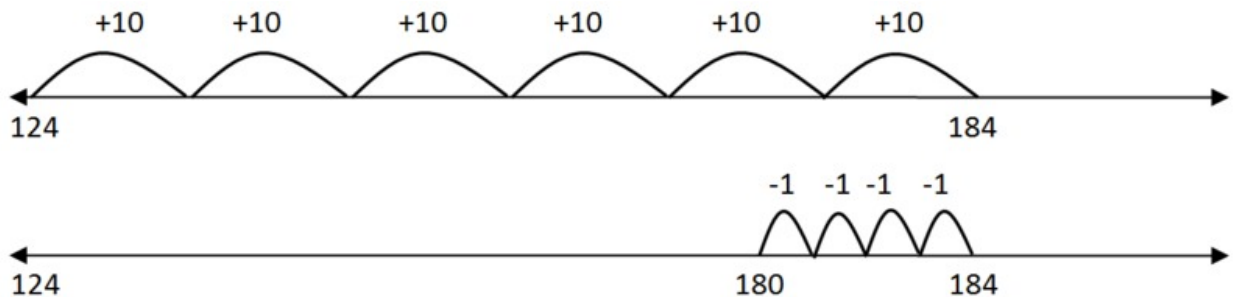


Solution: 2

Count by tens from 124: 134, 144, 154, 164, 174, 184. That is 6 tens or 60.

But 184 is too big so count back to 180, which is 4.

Subtract 4 from 60 to get 56. We have 56 days of school left.



Solution: 3

Using base-ten blocks:

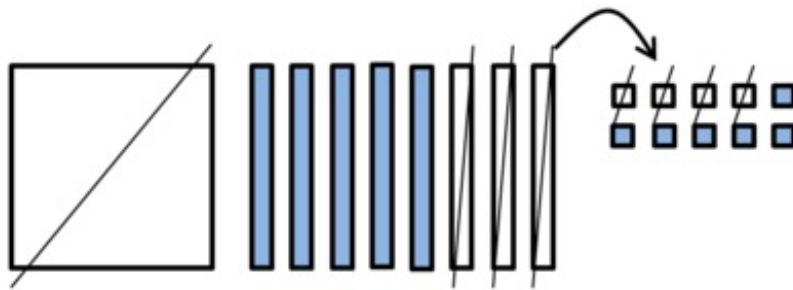
Start with 1 hundred, 8 tens, 0 ones. We can't take away 4 ones from 0 ones so we have to break a ten into 10 ones. I now have 7 tens 10 ones. Now we can subtract using the take-away model.

$$10 - 4 = 6.$$

$$70 - 20 = 50.$$

$$100 - 100 = 0.$$

So there are 56 days of school before we get out for summer vacation. Here is a picturing showing the 100s, 10s and 1s.



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