2.OA, NBT Saving Money 2

Alignments to Content Standards: 2.OA.A.1 2.NBT.A.2 2.NBT.B.5

Task

Louis wants to give $15 to help kids who need school supplies. He also wants to buy a pair of shoes for $39.

a. How much money will he have to save for both?

b. Louis gets $5 a week for his allowance. He plans to save his allowance every week. How many weeks does it take him to reach this goal?

c. Louis remembers his sister's birthday is next month. He sets a goal of saving $16 for her gift. How many weeks does he have to save his allowance to reach this goal? How many weeks does he have to save his allowance for all three of his goals?

IM Commentary

The purpose of this task is for students to relate addition and subtraction problems to money and to situations and goals related to saving money. This problem shows the work advanced second graders might use for adding 2-digit numbers. To see a task appropriate for students who are just beginning this work; see 2.NBT Saving Money 1. In second grade students should get to the point where they can add two-digit numbers fluently (see 2.NBT.B.5); the solution below is written reflects how students who have made that transition might approach it.

Second graders learn to skip-count by 5's, 10's, and 100's (see 2.NBT.2) and work with equal groups of 2's and 5's (see 2.OA.C) both to support their understanding of place-value and in preparation for formal work with multiplication in third grade. This task is

an instructional task that brings many aspects of the mathematical work that second graders will be doing together with an opportunity to learn about financial literacy concepts.

Teachers can make the problem more personal by letting the student choose a toy he/she wants and the toy their sibling or friend may want and researching the costs. If students do this type of research, they will be engaging in MP 4, Model with mathematics. Students can also choose how much money they want to donate and for what cause. If the students in the class don't receive allowance, the child in the task can make money by helping a neighbor (perhaps walking a dog or bringing in the mail).

This task is part of a set collaboratively developed with *Money as You Learn,* an initiative of the President's Advisory Council on Financial Capability. Integrating essential financial literacy concepts into the teaching of the Common Core State Standards can strengthen teaching of the Common Core and expose students to knowledge and skills they need to become financially capable young adults. A mapping of essential personal finance concepts and skills against the Common Core State Standards as well as additional tasks and texts will be available athttp://www.moneyasyoulearn.org.

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 supports the demonstration of Mathematical Practice Standard 1, Make sense of problems and persevere in solving them. Problem solving is based upon students engaging in a task in which a solution pathway is not known in advance. As second graders approach this problem, they may draw upon skip-counting and their work with equal groups of 5 to help them determine a solution method. They may also decide to use a number line or create a table to record the savings by week. Since there are multiple solution methods, this allows students to think about this problem from different perspectives and choose a pathway that makes sense to them. Students may also need to search for a similar problem they have solved previously to give them a starting point. These types of experiences support a productive disposition towards problem solving as they provide students with multiple entry points and opportunities to build on what they already know.

Solutions

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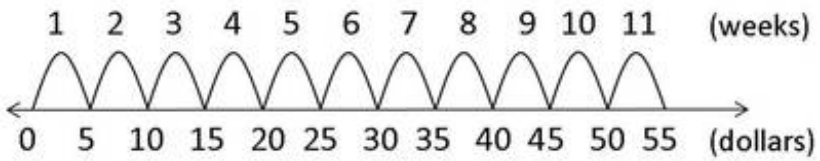
Solution: Using an empty number line

a. Louis needs to save 15+39 dollars:

$$\begin{aligned} 15 + 39 &= \\ 10 + 5 + 30 + 9 &= \\ 10 + 30 + 5 + 9 &= \\ 40 + 10 + 4 &= \\ 54. & \end{aligned}$$

So Louis needs to save $54.

b. If we count up by fives, we can see how long it will take:



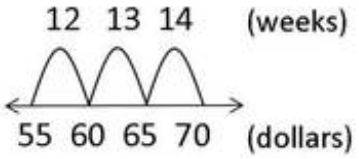
So it will take Louis 11 weeks to save enough money for both.

c. If we look at the number line above, we can see it will take Louis 4 weeks to save enough for his sister's birthday present.

To save enough for all three, Louis needs to save 54+16 dollars:

$$\begin{aligned} 54 + 16 &= \\ 50 + 4 + 10 + 6 &= \\ 60 + 10 &= \\ 70. & \end{aligned}$$

So Louis needs to save $70 for all three things. If we continue to count by fives:



we can see that it will take him 14 weeks all together. The reason it took one less week than if we had added up the number of weeks we found above is that the extra money earned in the 4th week above and beyond what he needed for his sister's present combined with the extra money saved in the 11th week equals one week's allowance.

Edit this solution

Solution: Recording the savings in a table

a. Louis needs to save 15+39 dollars:

$$\begin{aligned} 15 + 39 &= \\ 10 + 5 + 30 + 9 &= \\ 10 + 30 + 5 + 9 &= \\ 40 + 10 + 4 &= \\ 54. & \end{aligned}$$

So Louis needs to save $54.

b. If we count up by fives, we can see how long it will take:

Week	Amount saved
1	$5.00
2	$10.00
3	$15.00
4	$20.00
5	$25.00
6	$30.00
7	$35.00

8	$40.00
9	$45.00
10	$50.00
11	$55.00

So it will take Louis 11 weeks to save enough money for both.

c. If we look in the table above, we can see it will take Louis 4 weeks to save enough for his sister's birthday present.
Louis needs to save 54+16 dollars:

$$\begin{aligned} 54 + 16 &= \\ 50 + 4 + 10 + 6 &= \\ 60 + 10 &= \\ 70. & \end{aligned}$$

So Louis needs to save $70 for all three things. If we extend the table above, we can see how long it will take:

Week	Amount saved
12	$60.00
13	$65.00
14	$70.00

The reason it took one less week than if we had added up the number of weeks is that the extra money earned in the 4th week above and beyond what he needed for his sister's present combined with the extra money saved in the 11th week equals one week's allowance.