

Use the four operations with whole numbers (addition, subtraction, multiplication, and division) to solve problems (Standards 4.OA.1–3).

Standard 4.OA.3 Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.

- a. Represent these problems using equations with a letter standing for the unknown quantity.
- b. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.

Key Elements: Solving multi-step word problems with all four operations. Interpreting remainders. Placing a variable in an equation for the unknown. Using strategies to solve story problems with mental math, estimation, and rounding.

Multi-step Word Problems

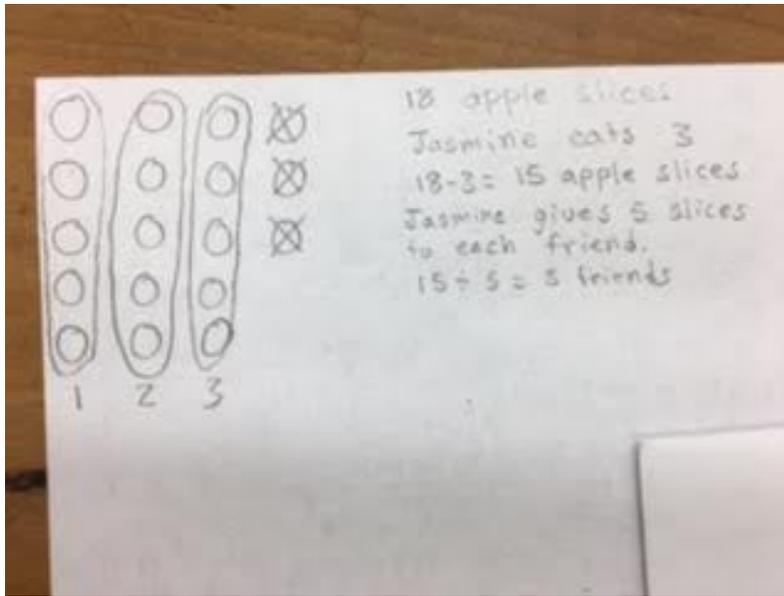
Ask yourself:

“What do I know”

“What do I need to know”

Jasmine had 18 apple slices. She ate 3 slices and gave 5 slices each to some friends. With how many friends did Jasmine share? Draw to show your work.

STEP 1 Use 18 counters to show all of the apple slices.	
STEP 2 Take 3 counters from the 18 counters to show the number of slices Jasmine ate. Subtract to show how many slices are left.	$18 - \underline{\quad} = \underline{\quad}$
STEP 3 Make groups of 5 counters to show the number of slices Jasmine shared with each friend. Complete the division sentence and solve.	$15 \bigcirc \underline{\quad} = \underline{\quad} \text{ friends}$



What the text next to the picture says

18 apple slices (Draw 18 circles)

Jasmine eats 3 (cross out 3)

$18 - 3 = 15$ apple slices

Jasmine gives 5 slices to each friend (Group into groups of 5)

$15 \div 5 = 3$ friends (There are three groups of 5)

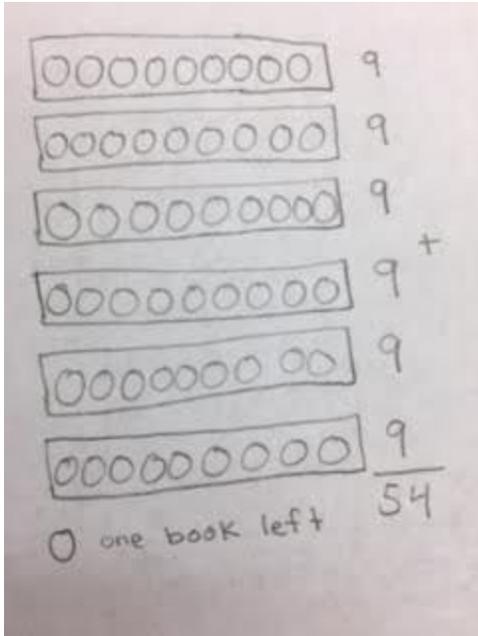
Interpreting remainders

Read the story problem to see if you need to include the remainder (add in) or leave out the remainder. Remainders can be written as a fraction or whole number.

A teacher places 55 books onto shelves. Each shelf has 9 books. How many shelves does the teacher fill completely?

$$55/9=S$$

The question asks how many shelves are filled completely. Since there is a remainder of 1, this shelf won't be added in because it does not create a full shelf. In this instance the remainder is left out and "6 shelves completely filled" is the answer.

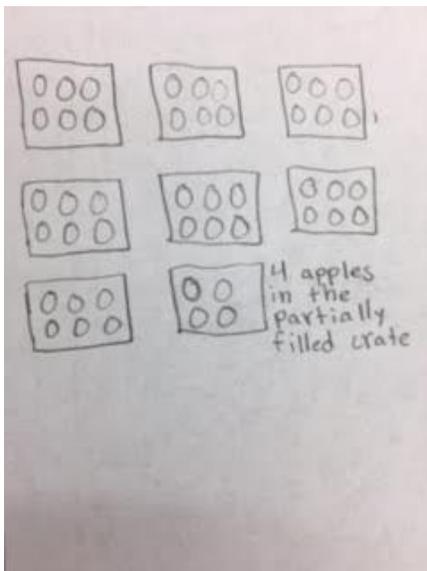


55 circles have been drawn with 9 circles on each shelf. Drawing 6 shelves with 9 books leaves one book off the shelf.

A farmer packs 46 apples into crates for the market. Each crate holds 6 apples. How many apples are in the partially filled crate?

$$46/6 = A$$

This question refers to the remainder, how many apples in the partially filled crate. In this instance the whole number is disregarded and the remainder, "4 apples are in the partially filled crates," is the answer.

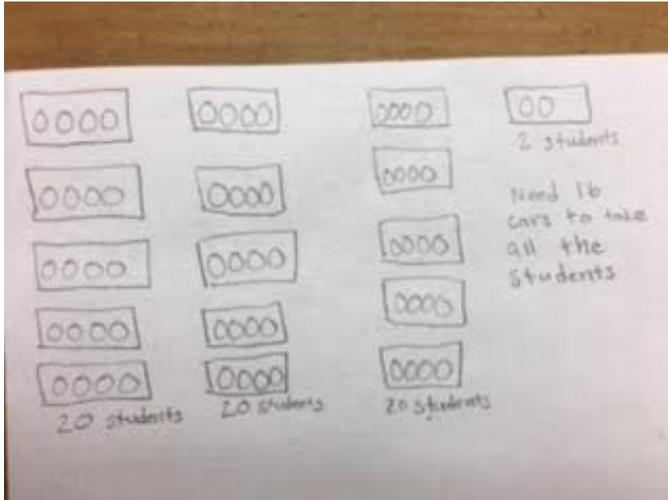


Draw 6 circles in one box to represent 6 apples in one crate. Once 46 circles have been drawn it will show only 4 circles in the last crate.

62 fourth graders are going on a field trip to the museum and will travel in cars. If each car holds 4 students, how many cars will be needed?

$$62/4=C$$

For this problem the remainder needs to be included in the answer. Two students can't be left behind so an extra car will be needed but it won't be complete. Adding the remainder in brings the answer to "16 cars needed."



Draw 4 circles into one box to represent 4 students in 1 car. Once 62 circles have been drawn there will be 2 students left that will be placed in the extra car.

Estimation, Rounding and Mental Math See 3.NBT

There are 247 stalks of corn in the field. If each stalk has 4 ears of corn, about how many ears of corn are in the field?

Round 247 to 250 and then multiply by 4.

Add 247 four times for mental math or $247 \times 4 = C$