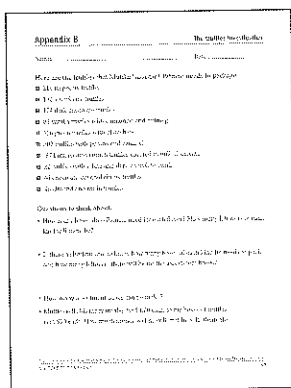
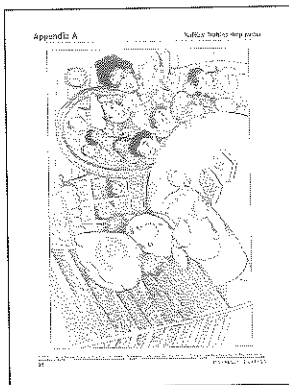


Developing the Context

- ☀ Tell the story of Muffles' truffles boxes and discuss how many truffles would fit in a 2×5 box.
- ☀ Ask students to work on the problems in Appendix B.



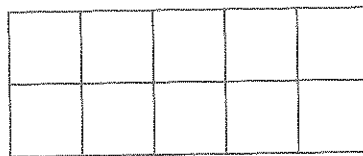
Display the truffles shop poster (or Appendix A) as you tell the following story:

Muffles has a small truffles shop. He makes truffles and packages them in boxes of ten. When he first opened his shop, he had only a few customers—his family and friends. His truffles were so delicious, so delectable, that soon his customers couldn't stop eating them. They also couldn't stop talking about the most delicious truffles in the world. They told their friends, who in turn told their friends, who in turn told their friends, and before Muffles knew it he had so many customers he could hardly keep up with the demand for truffles. Long lines of people waited outside his door; sometimes the line snaked around the corner. Sometimes there were so many customers that Muffles ran out of truffles. What sad faces! What disappointment!

Muffles tried to keep up. He got up very early in the morning. He worked late into the night. But no matter what he did, he just couldn't keep up with the demand for truffles. Finally, Muffles had an idea. He hired assistants to help him. Now one assistant packages the truffles and the other sells them. All Muffles has to do is make the truffles, which is what he really, truly loves to do.

Muffles is happy again. He loves getting up early in the morning to make his candies. After he makes a batch of a certain kind of truffle, he counts them, puts them on a tray, and labels the tray for his assistant, Patricio, who will package them. When Patricio arrives later in the morning, he has many trays or batches of many kinds of truffles to package. He has strawberry truffles, dark chocolate truffles, truffles with pecans and caramel, and raspberry truffles. He has green truffles with pistachios, and vanilla truffles with cinnamon and nutmeg. So many kinds, it's no wonder Muffles is becoming famous! When Patricio sees all the trays, he thinks, "How many boxes do I need to get from the shelf? Will there be any leftovers that can be used to make boxes that might contain an assortment?" This is what each box looks like.

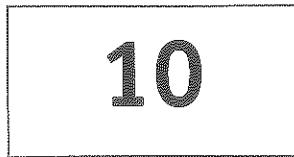
Pause at this point in the story and draw the box as a 2×5 grid, like this:



Ask students,

- One truffle fits in each square. How many truffles would this box hold?
- How do you know?

Ask students to describe how they know and listen for whether they add five and five, notice two rows of five or five columns of two, or need to count by ones, etc. Acknowledge all the ways to think about the box and then label it 2×5 , for two rows and five columns. Then draw a rectangle and write 10 on it, like this:



Now go on with the story.

One day Muffles makes ten different kinds of truffles. This is the list of the different trays Patricio sees when he comes into work that day:

- 218 raspberry truffles
- 132 strawberry truffles
- 174 dark chocolate truffles
- 83 vanilla truffles with cinnamon and nutmeg
- 126 green truffles with pistachios
- 308 truffles with pecans and caramel
- 97 butterscotch crunch truffles covered in milk chocolate
- 22 truffles with white and dark chocolate swirls
- 44 chocolate-covered cherry truffles
- 46 almond and raisin truffles

Ask students to investigate the following:

- *How many boxes does Patricio need for each flavor? How many leftovers of each kind will there be?*
- *Is there a shortcut way to know how many boxes of each kind he needs to pack and how many leftovers there will be for the assortment boxes?*
- *How many assortment boxes can he make?*
- *Muffles sells his fancy truffles for \$1.00 each so his boxes of truffles cost \$10 each. How much money will he collect if he sells them all?*

Facilitate a brief preliminary discussion in the meeting area before the students set to work, just to ensure that they understand the investigation. Assign math partners and distribute a copy of Appendix B to each pair of students. Have drawing paper and bins of connecting cubes available for students to use if they wish.

Behind the Numbers

The total number of boxes that can be made, including the assortment boxes, is 125. The numbers have been chosen very carefully to allow for various levels of mathematizing. The units (for the assortment boxes) as well as the tens (for the boxes of one kind of truffle) can be cleverly grouped into tens and multiples of tens. The question about the money is also important as it allows you to notice if students can think reversibly. For example, once they have determined that 8 boxes will be used for 83 vanilla truffles, do they realize that the cost of the 8 boxes will be \$80? Once they determine that a total of 125 boxes will be needed, do they multiply by 10 to calculate the money (\$1250), skip-count, or perhaps even think this is a new, unrelated problem?