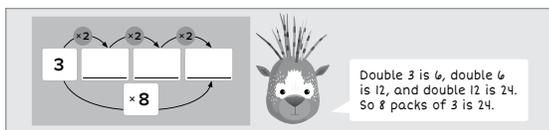


Core Focus

- Multiplication: Working with eights, ones and zeros facts
- Subtraction: Composing and decomposing with two and three-digit numbers, and solving word problems

Multiplication

- Mastery of multiplication and division requires more than just memorization. In Grade 3, fact families are introduced in a logical order, building on what students already know, so working with the facts makes sense.
- In this module, doubling and halving strategies for the twos and fours multiplication and division facts are extended to the eights facts using **double double double**.



This arrow diagram shows how using the double double double strategy supports learning the $\times 8$ facts. "Double 3 is 6, double 6 is 12, and double 12 is 24, so $3 \times 8 = 24$."

- Ones and zeros facts are some of the last multiplication facts introduced. While easy for adults, it is challenging for students to visualize $\times 0$ as *no groups with some in each group*, or $\times 1$ as *one group with no repeating*.

5.6 Multiplication: Reinforcing the ones and zeros facts

Step In Damon planted seedlings in one row of 6.

How many seedlings did he plant? How do you know?

STICKERS Mia had 6 packets of stickers. She gave stickers to each of her friends until the packets were empty.

How many stickers did Mia have left? How do you know?

Ruby had 6 pencils on her desk. Then her friend gave her another pencil.

How many pencils did Ruby have in total? How do you know?

Andrew had 6 mushrooms on his plate. He ate none of them.

How many mushrooms did Andrew eat? How do you know?

What can you say about the math involved in each story?

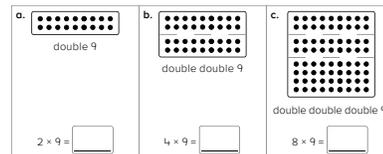
In this lesson, students think about situations that have either one or zero groups, or one or zero in each group.

Ideas for Home

- Practice the eights doubling facts, like *what is 8×7* ? Ask your child to explain with doubling. "I know that double 7 is 14, double 14 is 28, and double 28 is 56, so 8×7 is 56."
- Take turns making up zeros and ones fact stories. For 4×0 , you might say, "4 crayon boxes were emptied of crayons, how many crayons were left to use?" Or 1×5 , "There was one package of cookies with 5 in it."

Glossary

- The **double-double-double strategy** is an approach to mental multiplication by 8. It builds on previous use of doubling in earlier grades.



Helpful videos

View these short one-minute videos to see these ideas in action.

www.bit.ly/OI_32
www.bit.ly/OI_2

Subtraction

- Students use number lines and blocks to show their thinking when figuring out a subtraction equation using the the count-back strategy.

5.9 Subtraction: Counting back to subtract two- and three-digit numbers (with decomposing)

Step In How could you figure out the amount of money left on the gift card after buying the skateboard?

Nicole used a number line to figure it out.

How does she figure out the amount left on the gift card?
Dixon drew this picture to figure out the amount of money left on the gift card after buying the helmet.

Why did he draw 3 tens blocks and 15 ones blocks?
How much money is left on the gift card?

In this lesson, students calculate how much is left on a gift card using the count-back strategy.

- Count-on is also a strategy that helps make it easier to calculate exact answers in subtraction. Both strategies **decompose** a two or three-digit number into parts: hundreds, tens and ones. The count-on strategy is also called **think addition**.

5.10 Subtraction: Counting on to subtract two-digit numbers (with composing)

Step In How many more points did the visiting team score than the home team?

Gavin used a count-on strategy to calculate the difference.

How would you calculate the difference?
Where is it located on the number line?

Counting on is a useful strategy when the difference is small.

In this lesson, students review finding the difference using the count-on strategy.

Ideas for Home

- When you are shopping at the grocery store or watching a sports game, point to or say two two-digit numbers and ask your child to add or subtract them mentally. Remember to ask which count on/count back strategies were used.

Glossary

- Students **decompose** (pull apart) and **compose** (put together) numbers to make them more convenient to calculate mentally.