



# Introducing the Eights Multiplication Facts

In this lesson, students extend the double, double strategy for the set of fours facts to double again. This thinking helps them figure out answers when they need to multiply by eight. The mathematical practices *Reason abstractly and quantitatively* (SMP2) and *Look for and make use of repeated reasoning* (SMP8) are embedded in this lesson.

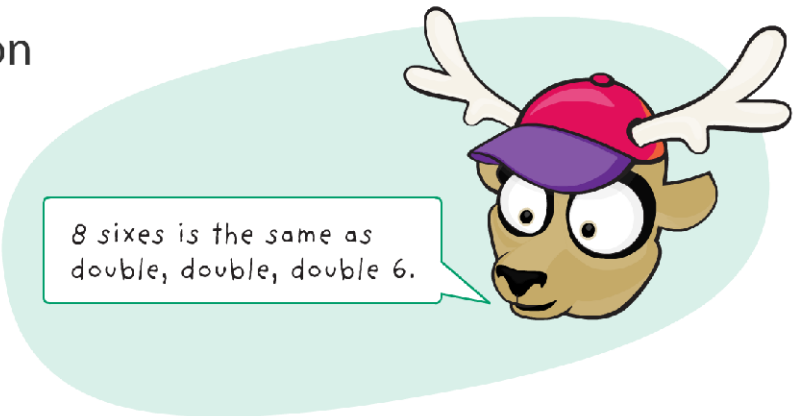
## step 1 preparing the lesson

Each pair of students will need:

- 1 copy of Support 5
- scissors

Each student will need:

- Student Journal 6.1



8 sixes is the same as double, double, double 6.

**(Please note:** Artwork and some terminology have been changed on the Spanish page. If using the printed Spanish journal, you may wish to provide your students with a copy of the online page.)

## step 2 starting the lesson

Project the numbers 1 to 10 on the board. Randomly point to numbers and ask questions such as, *What is the double of this number? What is the double, double of this number? What do you get when you multiply this number by 2? What strategy did you use? What do you get when you multiply this number by 4? What strategy did you use?* Continue until all the students have had the opportunity to double or double, double at least one number.

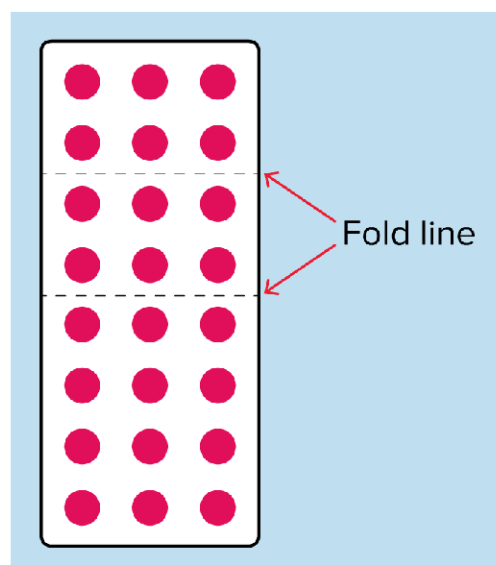
## step 3 teaching the lesson

- Project a 2-by-5 array and ask, *What do you know about this array? How would you figure out the number of dots in the array? What multiplication sentence would you write?* Invite a student to verbalize the doubling strategy such as, "Double 5 is 10" and to write  $2 \times 5 = 10$

on the board. Project the 4-by-5 array and repeat the discussion. Invite a student to verbalize the doubling strategy such as, “Double 5 is 10, and double 10 is 20” and to write  $4 \times 5 = 20$  on the board.

- Then project the 8-by-5 array and ask, **What do you know about this array? How could you figure out the number of dots in the array?** Allow students to share ideas, then ask, **Could we use repeated doubling to figure it out?** Invite a student to verbalize the doubling strategy by saying, “Double 5 is 10, double 10 is 20, double 20 is 40.” Then ask, **What multiplication sentence would you write?** Invite a student to write  $8 \times 5 = 40$  on the board.
- Refer to the three number sentences on the board and ask, **What do you notice about these number sentences?** Bring out that the factor that is not 5 and the total is being doubled each time.
- Repeat the whole discussion for the 8-by-3 sequence of arrays.

- Organize the students into pairs and distribute the support page and scissors. Demonstrate how to create a doubling strategy card by cutting out an array to match an eights fact and drawing lines as shown right. Allocate an eights fact to each pair and then allow time for them to create the card. Afterward, have each of students work with their card to practice verbalizing their thinking for the twos, fours, and eights facts it shows. Direct them to record the multiplication sentences for each fact. The pairs can exchange cards as time allows.



- Project the Step In discussion from Student Journal 6.1 and work through the questions with the whole class. Read the Step Up and Step Ahead instructions with the students. Make sure they know what to do and then have them work independently to complete the task.

## step 4 reflecting on the work

- Discuss the students' answers to Student Journal 6.1.
- Project  $8 \times 7 = \underline{\quad}$  on the board and ask, **What number fact that will help figure out this product? Why did you choose that fact?** Encourage an individual to explain why the fours

fact  $4 \times 7 = 28$  could be used. Repeat this discussion for  $3 \times 8 = \underline{\quad}$ ,  $8 \times 6 = \underline{\quad}$ , and then  $9 \times 8 = \underline{\quad}$ .