Topic 02 / Overview

TOPIC 2

Use Patterns for Foundational Multiplication Facts

OVERVIEW

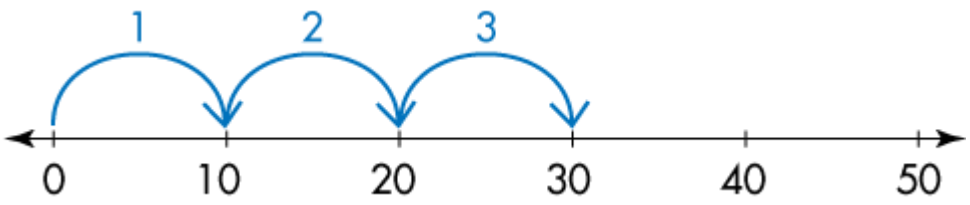
Topic 2 focuses on learning multiplication facts through 10 times 10 using patterns.

CONCEPTS

Multiples of 2 Your child will use doubling or skip counting to generate the 2s facts.

To find the number of socks in 7 pairs, your child can use doubling: $7 + 7 = 14$. Another way is to skip count by 2s: 2, 4, 6, 8, 10, 12, 14. There are 14 socks in 7 pairs. So, $7 \times 2 = 14$.

Multiples of 5, 9, and 10 Your child will use skip counting and patterns for the 5s, 9s, and 10s facts. Skip counting on a number line can help find a product. This number line shows that $3 \times 10 = 30$.



The 5s facts have a pattern in the ones place of the product. Your child can find 7 times 5 by skip counting: 5, 10, 15, 20, 25, 30, 35. Or, your child can use patterns.

$$1 \times 5 = 5$$
$$2 \times 5 = 10$$
$$3 \times 5 = 15$$
$$4 \times 5 = 20$$
$$5 \times 5 = 25$$
$$6 \times 5 = 30$$
$$7 \times 5 = 35$$

When you multiply a one-digit number by 10, the number tells you what digit is in the tens place. So, $9 \times 10 = 90$.

$$1 \times 10 = 10$$
$$2 \times 10 = 20$$
$$3 \times 10 = 30$$
$$4 \times 10 = 40$$
$$5 \times 10 = 50$$
$$6 \times 10 = 60$$
$$7 \times 10 = 70$$
$$8 \times 10 = 80$$
$$9 \times 10 = 90$$

There is also a pattern in the 9s facts. For 8 times 9, for example, look at 7 times 9, add 10 to get 73 and subtract 1 to get 72.

DATA

9s Facts

$0 \times 9 = 0$

$1 \times 9 = 9$

$2 \times 9 = 18$

$3 \times 9 = 27$

$4 \times 9 = 36$

$5 \times 9 = 45$

$6 \times 9 = 54$

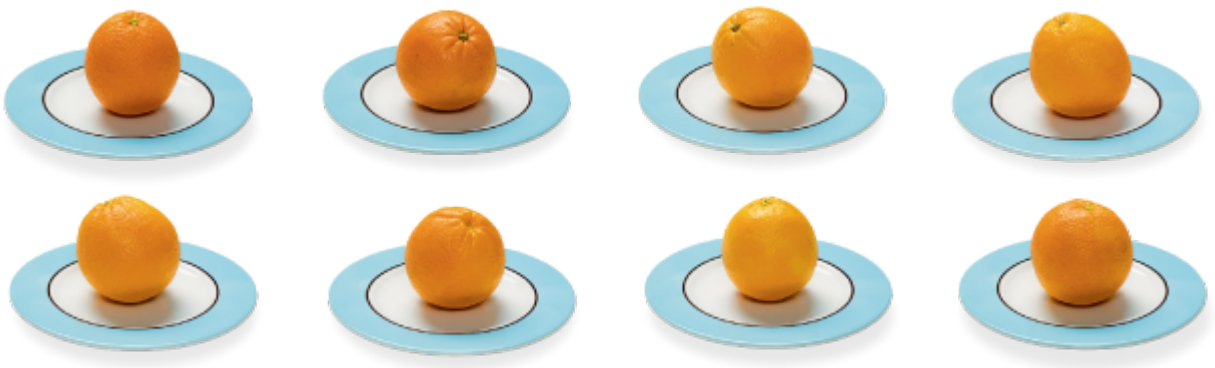
$7 \times 9 = 63$

$8 \times 9 = \square$

$9 \times 9 = \square$

Properties Your child will learn how the Identity Property of Multiplication and the Zero Property of Multiplication relate to the multiplication facts. Deep understanding of these properties is important. Your child will use these properties throughout work on multiplication and in the future to find equivalent fractions.

The **Identity Property of Multiplication** states that when you multiply a number by 1, the product is that number. So, $1 \times 1 = 1$, $1 \times 2 = 2$, $1 \times 3 = 3$, and so on. To illustrate the Identity Property of Multiplication, think of 8 plates with 1 orange on each plate, which can be represented as $8 \times 1 = 8$.



Then think of 1 plate with 8 oranges, which can be represented as $1 \times 8 = 8$.

The product of any number and 1 is always the number.

The **Zero Property of Multiplication** states that when you multiply a number by 0, the product is 0. So, $0 \times 1 = 0$, $0 \times 2 = 0$, $0 \times 3 = 0$, and so on.

SKILLS

Foundations for Fact Fluency In this topic, your child will learn the 0s, 1s, 2s, 5s, 9s, and 10s facts. These facts are introduced first because they build on previous experiences with skip counting and patterns. Your child will use these basic facts to help learn all of the multiplication and division facts within 144.

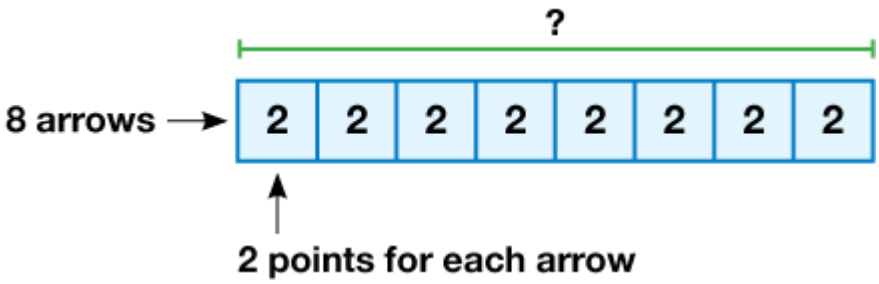
APPLICATIONS

Your child will solve a variety of real-world problems involving equal groups and arrays using multiplication facts. Here is how your child might solve the problem "Brendan practices archery. The target sections are each worth a certain number of points. How many total points did Brendan get from the arrows that hit the 2-point section? How many total points did he get from the arrows that hit the 5-point section?"

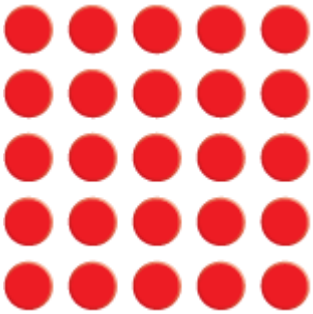
DATA

Section of Target	Number of Arrows
10	3
9	9
5	5
2	8
1	7

For the first question, your child might make a bar diagram to find 8 times 2.



For the second question, your child might make an array and skip count by 5s and find that Brendan got 25 points.



CONNECT THE MATH

You can connect the math in this topic to everyday experiences. As you do daily activities with your child, you can point out situations in which you use multiplication. For example, if you are tripling a batch of pancakes, you might say, "One batch uses 2

eggs, but we need 3 batches. How many eggs will we need?" If you are planting seeds and each row gets 9 seeds, ask, "How many seeds will we need for 8 rows?" Play a game where you provide the number of groups (such as rows of seeds) and your child provides the number in each group (such as seeds in a row). See how fast one of you can say the product, then switch roles.

TOPIC 2 LESSONS

Lesson 2-1	2 and 5 as Factors
Lesson 2-2	Multiply by 10
Lesson 2-3	Apply Properties: Multiply by 0 and 1
Lesson 2-4	9 as a Factor
Lesson 2-5	Practice Multiplication Facts: 0, 1, 2, 5, 9, and 10
Lesson 2-6	**MATH THINKING AND REASONING** Represent Problems in Multiple Ways