

## MA.3.AR.3.2

**Overarching Standard: MA.3.AR.3** *Identify numerical patterns, including multiplicative patterns*

### Benchmark of Focus

MA.3.AR.3.2: Determine whether a whole number from 1 to 144 is a multiple of a given one-digit number.

### Benchmark Clarifications:

*Clarification 1:* Instruction includes determining if a number is a multiple of a given number by using multiplication or division.

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### Related Benchmark/Horizontal Alignment

- MA.3.NSO.2.2/2.4

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### Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.2.AR.3.2	MA.4.NSO.2.1
	MA.4.AR.3.1

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### Purpose and Instructional Strategies

The purpose of this benchmark is for students to determine whether a whole number is a multiple of a given one-digit number (e.g., Is 45 a multiple of 5?). Understanding of multiples extends what students learned in Grade 2 about skip-counting (e.g., skip-counting by 2s results in multiples of 2). Building a strong foundational understanding of multiples prepares students for relating multiples and factors to prime and composite numbers in Grade 4 (MA.4.AR.3.1).

- Understanding of multiples extends from multiplication by expecting students to understand that the products of the given one-digit number and other factors create multiples of that one-digit number. For example, the products of  $5 \times 1$ ,  $5 \times 2$ ,  $5 \times 3$ ,... are multiples of 5 (5, 10, 15,...). Understanding of multiples extends from division by expected students to understand if a given whole number from 1 to 144 is divisible by a given one-digit number, then that dividend is a multiple of it (e.g., 45 is divisible by 5, so 45 is a multiple of 5) (MTR.5.1)
- The focus of instruction should be on the vocabulary of multiples as it relates to multiplication and division. Students should first have a strong understanding of how multiplication and division work before developing their knowledge of multiples. Instruction can include real-world applications (e.g., Can 45 cookies be placed into 5 bags with an equal number in each bag?) (MTR.4.1, MTR.5.1).

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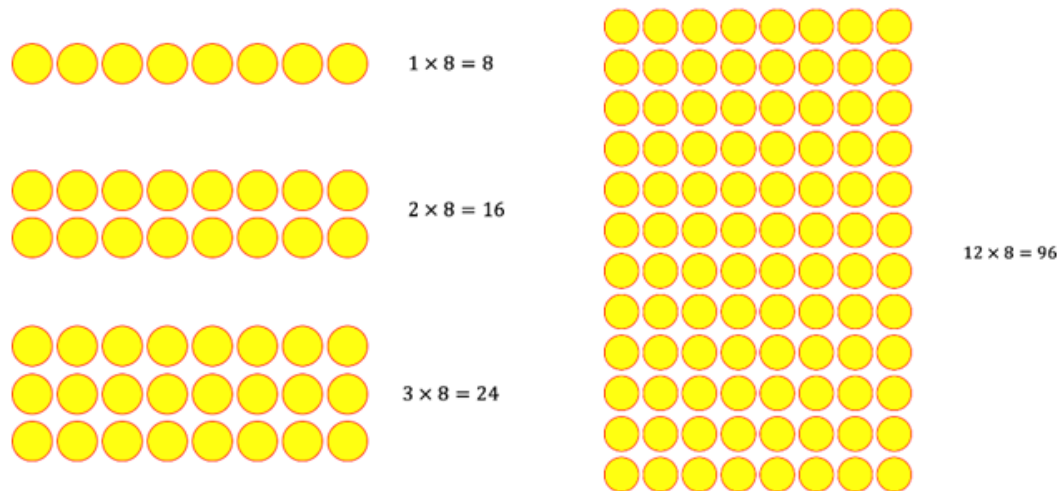
### Common Misconceptions or Errors

- When listing multiples of numbers, students may not list the number itself. It is important to emphasize that the smallest multiple is the number itself. Having students write multiples of a number by consecutive factors beginning with one.

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## Strategies to Support Tiered Instruction

- Instruction includes opportunities to write multiples of a number by consecutive factors beginning with the factor 1.
- Instruction includes opportunities to connect finding multiples to skip counting.
  - For example, to find the multiples of 8, students can generate lists of multiples beginning with  $1 \times 8$ . Their generated list should include each of the counting numbers through  $12 \times 8$ . Students model generating multiples with counters. The teacher asks students to make one group of 8, having them record how many counters there are in an equation ( $1 \times 8 = 8$ ). Next, students add another group of 8, recording the number of counters in an equation ( $2 \times 8 = 16$ ). Students add more groups of 8 while recording the number of counters they have in an equation. Students should make all multiples of 8 through  $12 \times 8 = 96$ . When students have created their multiples, they record the products in a horizontal list in order from  $1 \times 8 = 8$  to  $12 \times 8 = 96$  and explain the connection between the products in their equations and the multiples in their list.



Multiples of 8: 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96

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## Questions to ask students:

- **Ask: What is a multiple?**
    - Sample answer that indicates understanding: A multiple of a given number is the number itself multiplied by another factor. The multiple is the product.
  - **Ask: What are the first 3 multiples of 4? How do you know?**
    - Sample answer that indicates understanding: The first 3 multiples of 4 are 4, 8, and 12. The first multiple is the product of  $1 \times 4 = 4$ , the second multiple is the product of  $2 \times 4 = 8$ , and the third multiple is the product of  $3 \times 4 = 12$ .
  - **Ask: Is 20 a multiple of 5? How do you know?**
    - Sample answer that indicates understanding: I know 20 is a multiple of 5 because if I multiply 5 by 4 it has a product of 20.
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## Instructional Tasks

### Instructional Task 1

Use a visual model or write an equation to show whether 27 is a multiple of 3.

### Instructional Task 2

Use a visual model or write an equation to show whether 36 is a multiple of 8.

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## Instructional Items

### Instructional Item 1

Select all the numbers below that are multiples of 8.

- a. 28
- b. 56
- c. 18
- d. 24
- e. 30

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## Achievement Level Descriptors

Benchmark		Context	Assessment Limits
MA.3.AR.3.2 Determine whether a whole number from 1 to 144 is a multiple of a given one-digit number. Clarification 1: Instruction includes determining if a number is a multiple of a given number by using multiplication or division		Mathematical	N/A
ALD 2	ALD 3	ALD 4	ALD 5
determines whether a whole number in the range of 1 to 100 is a multiple of a given one-digit number, given visual representations.	determines whether a whole number in the range of 1 to 100 is a multiple of a given one-digit number.	determines whether a whole number from 1 to 144 is a multiple of a given one-digit number	N/A

## Additional Resources:

[CPALMS Resources](#)

[Identifying Multiples \(Khan Academy Video\)](#)

[More About Multiples](#)

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## Resources/Tasks to Support Your Child at Home:

- Choose a number from 1-10 and have your child skip count by that given number to determine the multiples. Could use a [120s chart](#) or a [number line](#) to practice. Then have your child record the multiplication equations and a list of those multiples.
- [Ninja Multiples](#) – This game allows students to practice identifying multiples of a given number.
- Play [Quick Draw Multiples](#) to determine which numbers are multiples of given numbers.