

SAMPLE Math Planning Product – MA.3.NSO.2.2

Benchmark:

MA.3.NSO.2.2 · Explore multiplication of two whole numbers with products from 0 to 144, and related division facts.

Benchmark Clarifications:

- Clarification 1: Instruction includes equal groups, arrays, area models and equations.
- Clarification 2: Within the benchmark, it is the expectation that one problem can be represented in multiple ways and understanding how the different representations are related to each other.
- Clarification 3: Factors and divisors are limited to up to 12.

Vocabulary:

· Area Model · Commutative Property of Multiplication · Dividend · Divisor · Equation · Expression · Factors · Rectangular Array

Connecting Benchmarks:

- Vertical Connection - Previous: MA.2.AR.3.2 · Next: MA.4.NSO.2.1
- Horizontal Connection - MA.3.NSO.2.3 · MA.3.NSO.2.4 · MA.3.AR.2.1 · MA.3.AR.2.2 · MA.3.GR.2.2 · MA.3.GR.2.4

Recommended MTRs: MTR.2.1, MTR.3.1

Instructional Strategies and Models

Strategy	Questions to Deepen Understanding
<p>Model/Visual:</p> <ul style="list-style-type: none"> • manipulatives (e.g., counters) - equal groups, repeated addition, • visual models (e.g., rectangular arrays, equal groups, area models) • discussions, estimation and drawings (e.g., rectangular arrays, equal groups, area models) • Multiplication/Division relationship <p>Purpose:</p> <ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • When multiplying 2 factors, what does each factor mean to you? • When you are asked to multiply, what does that mean to you? •

Misconceptions or Errors

Misconception/Error	Questions to Address Misconceptions
<ul style="list-style-type: none"> • Students may have difficulty relating word problems and real-world scenarios to models, expressions, and equations. For example, students may not differentiate the number of groups versus number in each group in multiplication, which then impacts their models, expressions, and equations. • Students may be confused by measurement (or quotative) division, when the amount in each group is given and the number of equal-sized groups is found. 	<ul style="list-style-type: none"> •

What questions can you ask to help students make connections between the models and strategies?

- What strategy will you use and explain what it means or represents?

SAMPLE Math Planning Product – MA.6.NSO.2.2

Benchmark: MA.6.NSO.2.2-Extend previous understanding of multiplication and division to compute products and quotients of positive fractions by positive fractions, including mixed numbers, with procedural fluency.

Clarifications:

Clarification 1: Instruction focuses on making connections between visual models, and the relationship between multiplication and division, reciprocals and algorithms.

Vocabulary:

· Area Model · Commutative · Property · Dividend · Divisor · Expression

Connecting Benchmarks:

Vertical Connection - Previous: MA.5.FR.2.2 · MA.5.FR.2.4 Next: MA.7.NSO.2.2

Recommended MTRs: MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1

Instructional Strategies and Models

Strategy	Questions to Deepen Understanding
<p>Model/Visual:</p> <ul style="list-style-type: none"> • Area Model • Linear Model • Bar Model <p>Purpose:</p>	<ul style="list-style-type: none"> • Do you recognize any patterns when multiplying fractions using the model? Explain them to me. •

Misconceptions or Errors

Misconception/Error	Questions to Address Misconceptions
<ul style="list-style-type: none"> • Students may forget that common denominators are not necessary for multiplying or dividing fractions. • Students may have incorrectly assumed that multiplication results in a product that is larger than the two factors. Instruction continues with students assessing the reasonableness of their answers by determining if the product will be greater or less than the factors within the given context. • Students may have incorrectly assumed that division results in a quotient that is smaller than the dividend. Instruction continues with students assessing the reasonableness of their answers by determining if the quotient will be greater or less than the dividend within the given context. 	<ul style="list-style-type: none"> •

What questions can you ask to help students make connections between the models and strategies?

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SAMPLE Math Planning Product

Benchmark:

Clarifications:

Vocabulary:

Connecting Benchmarks:

Recommended MTRs:

Instructional Strategies and Models

Strategy	Questions to Deepen Understanding
Model/Visual:	
Purpose:	

Misconceptions or Errors

Misconception/Error	Questions to Address Misconceptions
What questions can you ask to help students make connections between the models and strategies?	

Instructional Tasks and Items

Instructional Task or Item	Student Learning
Task/Item:	Questions to support student understanding:
Alignment and Purpose:	Evidence of Proficiency:

Mathematical Thinking and Reasoning Standards (MTRs) to support purpose of the task:

Teacher Actions:	Student Actions:
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Task Progression