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**Access M/J Mathematics**

**Grade 7**

**(#7812020)**

**Course Standards**

[MA.7.AR.1.1:](https://www.cpalms.org//PreviewStandard/Preview/15460) Apply properties of operations to add and subtract linear expressions with rational coefficients.

**Clarifications:**
*Clarification 1:* Instruction includes linear expressions in the form ax±b or b±ax, where a and b are rational numbers.

*Clarification 2:* Refer to [Properties of Operations, Equality and Inequality (Appendix D)](https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/best/ma/appendixd.pdf)

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.1.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18196) | Add and subtract linear expressions that include like terms. |  |  |  |
| EssentialUnderstandings | * Use manipulatives to combine like terms (i.e., demonstrate 5x + 3x by combining like manipulatives)
* Create an array of objects for the mathematical equation and match the answer symbol (+ or -) following addition rules for an equation
* Create an array of objects for the mathematical equation and match the answer symbol (+ or -) following subtraction rules for an equation
* Understand the following concepts, symbols, and vocabulary for: like terms, combine, variables, positive integer, and negative integer
* Use tools, as needed, to complete the four operations when adding and subtracting like terms
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| Resources: |  |  |  |  |

[MA.7.AR.1.2:](https://www.cpalms.org//PreviewStandard/Preview/15461) Determine whether two linear expressions are equivalent.

**Clarifications:**
*Clarification 1:* Instruction includes using properties of operations accurately and efficiently.

*Clarification 2:* Instruction includes linear expressions in any form with rational coefficients.

*Clarification 3:* Refer to [Properties of Operations, Equality and Inequality (Appendix D)](https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/best/ma/appendixd.pdf).

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.1.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18197) | Use tools or manipulatives to compare two linear expressions, with no more than two operations to determine whether they are equivalent. |  |  |  |
| EssentialUnderstandings | * Create an array of objects into groups to model the role of equal groups in a multiplication situation
* Create an array of objects (e.g., two colored counters to represent positive and negative numbers) for the mathematical expression following division rules for an expression
* Create an array of objects (e.g., two colored counters to represent positive and negative numbers) for the mathematical expression following multiplication rules for an expression
* Use base ten blocks to represent the numbers in the distributive property (e.g., 4 (9 + 2) would look like nine blocks plus two blocks repeated four times)
* Draw a picture representing the distributive property
* Use manipulatives to combine like terms (i.e., demonstrate 5x + 3x by combining 5 blue blocks and 3 blue blocks)
* Use objects to determine if the linear expressions are equal
* Use visual representations to determine if the linear expressions are equal
* Use objects to compare the linear expressions
* Use visual representations to compare the linear expressions
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| Resources: |  |  |  |  |

[MA.7.AR.2.1:](https://www.cpalms.org//PreviewStandard/Preview/15462) Write and solve one-step inequalities in one variable within a mathematical context and represent solutions algebraically or graphically.

**Clarifications:**
*Clarification 1:* Instruction focuses on the properties of inequality. Refer to [Properties of Operations, Equality and Inequality (Appendix D)](https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/best/ma/appendixd.pdf).

*Clarification 2:* Instruction includes inequalities in the forms ;; x±p>q and p±x>q, where p and q are specific rational numbers and any inequality symbol can be represented.

*Clarification 3:* Problems include inequalities where the variable may be on either side of the inequality symbol.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.2.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18198)  | Select a one-step inequality from a list that represents a real-world situation and given a set of three or fewer values, use substitution to solve. |  |  |  |
| EssentialUnderstandings | * Use objects to compare whole numbers
* Use objects to represent inequalities with whole numbers
* Understand the following symbols +, -, ÷, =, ×, <, >, ≠, ≤, ≥
* Use pictures/tables to represent inequalities with whole numbers (i.e., input/output chart or graphic organizer)

An image of inequalities with whole numbers* Understand the following concept and vocabulary of inequality
* Evaluate an expression using substitution (e.g., find the value of x + 4 when x = 2 using manipulatives)
* Use objects to solve inequalities with whole numbers
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| Resources: |  |  |  |  |

[MA.7.AR.2.2:](https://www.cpalms.org//PreviewStandard/Preview/15463) Write and solve two-step equations in one variable within a mathematical or real-world context, where all terms are rational numbers.

**Clarifications:**
*Clarification 1:* Instruction focuses the application of the properties of equality. Refer to [Properties of Operations, Equality and Inequality (Appendix D)](https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/best/ma/appendixd.pdf).

*Clarification 2:* Instruction includes equations in the forms px±q=r and p(x±q)=r, where p, q and r are specific rational numbers.

*Clarification 3:* Problems include linear equations where the variable may be on either side of the equal sign.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.2.AP.2a:](https://www.cpalms.org/PreviewAccessPoint/Preview/18199) | Set up two-step equations in one variable based on real-world problems. |  |  |  |
| Essential Understandings | * Demonstrate operations using manipulative when presented with common language (altogether, left over, sum, etc.)
* Create an array of objects into groups to model the role of equal groups in a multiplication or division situation
* Given a set number of manipulatives, distribute them evenly to create a deficit (e.g., given 10 markers distribute 1 each to 15 students)
* Given a set number of manipulatives, distribute them evenly to create a fraction (e.g., given 10 pieces of chalk distribute ½ piece to 20 students)
* Use tools (i.e., template, anchor chart) to support students in performing operations to combine like terms (if needed) in the appropriate order
* Use manipulatives to represent quantities in an equation in the form px + q = r from a word problem using a graphic organizer
* Use visual cues (text marking) to support setting up the equation
* Understand the following concepts, vocabulary, and symbols: +, -, ×, ÷, =, ≠, <, >, equation, equal, variable, substitution
 |  |  |  |
| Resources: |  |  |  |  |
| [MA.7.AR.2.AP.2b:](https://www.cpalms.org/PreviewAccessPoint/Preview/18200) | Solve two-step equations in one variable based on real-world problems, where all the terms have positive integer coefficients. |  |  |  |
| EssentialUnderstandings | * Demonstrate operations using manipulative when presented with common language (altogether, left over, sum, etc.)
* Create an array of objects into groups to model the role of equal groups in a multiplication or division situation
* Use tools (i.e., template, anchor chart) to support students in performing operations to combine like terms (if needed) in the appropriate order
* Use manipulatives to solve real-world problems in the format px + q = r

e.g., Michael paid $15 for lunch. He paid $3 for fries and purchased 2 burgers. How much did he pay for each burger? 2x + 3 = 15Have $15 (play money)Subtract $3 for the friesDivide the remaining money between 2 groups for each burger* Use a graphic organizer to represent quantities in an equation in the form px + q = r from a word problem
* Use anchor charts to support student in remembering the steps for solving equations and aligning key terms to operations
* Use visual cues (text marking) to support setting up and solving equations
* Identify when quantities are equal or unequal in a real-world situation. (Check your work on the problem)
* Create a pictorial array of a simple equation to translate wording
* Understand the following concepts, vocabulary, and symbols: +, -, ×, ÷, =, ≠, <, >, equation, equal, variable, substitution
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| Resources: |  |  |  |  |

[MA.7.AR.3.1:](https://www.cpalms.org//PreviewStandard/Preview/15464) Apply previous understanding of percentages and ratios to solve multi-step real-world percent problems.

**Clarifications:**
*Clarification 1:* Instruction includes discounts, markups, simple interest, tax, tips, fees, percent increase, percent decrease and percent error.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.3.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18201) | Solve simple percentage problems in real-world contexts. |  |  |  |
| EssentialUnderstandings | * Use graphic organizers to support the set up and solving of percentage problems
* Use tools (calculator, manipulatives, and base ten blocks) to multiply decimals
* Convert percentages to decimals; convert decimals to percentages
* Understand the relationship between fractions and percentages (e.g., 100% is one whole or 1, 50% is a one half or 1/2)
* Understand the relationship between decimals, fractions, percentages, ratios, and proportions (e.g., 100% is a whole or 1, 50% is a half or 1/2)
* Identify quantities in a problem that relate to the solution (e.g., Jane bought 3 blouses for $5 each. Her items were on sale for 50% off. How much did Jane pay?)
* Understand the following concepts and vocabulary: percentage, decimal, fraction
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.AR.3.2:](https://www.cpalms.org//PreviewStandard/Preview/15465) Apply previous understanding of ratios to solve real-world problems involving proportions.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.3.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18202) | Solve simple ratio problems in real-world contexts. |  |  |  |
| EssentialUnderstandings | * Locate relevant information within a word problem
* Given a scenario, find the two quantities in a ratio (e.g., Bill has traveled 460 miles on 10 gallons of gas. Miles and gallons of gas)
* Relate the placement of numbers in a ratio to the given context (the meaning of 460:10, 460 equals miles, 10 equals a gallon of gas)
* Use a table with visuals or objects to represent a proportional relationship to solve a ratio problem

image of a table with visuals or objects to represent a proportional relationship to solve a ratio problem* Understand the following concepts and vocabulary: ratio, proportion, and rate
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.AR.3.3:](https://www.cpalms.org//PreviewStandard/Preview/15466) Solve mathematical and real-world problems involving the conversion of units across different measurement systems.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.3.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18203)  | Use tools to solve real-world problems involving conversion of units in the same measurement system. |  |  |  |
| EssentialUnderstandings | * Multiply using concrete objects
* Divide using concrete objects
* Use a ratio or ratio tables to solve a measurement conversion problem
* Use a pictorial representation of a ratio to solve problem
* Use tools to compute conversions between measurements
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.AR.4.1:](https://www.cpalms.org//PreviewStandard/Preview/15467) Determine whether two quantities have a proportional relationship by examining a table, graph or written description.

**Clarifications:**
*Clarification 1:* Instruction focuses on the connection to ratios and on the constant of proportionality, which is the ratio between two quantities in a proportional relationship.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.4.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18204) | Given a table or a graph, determine whether two quantities have a proportional relationship |  |  |  |
| EssentialUnderstandings | * Understand that the relationship must be able to generate the point (0,0) in order to be a proportional relationship, even if (0,0) is not in the table
* Recognize input and output values in a table
* Use the input-output rule to generate values in a table
* Understand that proportional relationships intersect with the origin (0,0) on a graph
* Recognize a line on a graph
* Read a line graph with manipulatives to recognize a line on a graph
* Identify whether the line intersects with the origin
* Recognize the meaning of the placement of numbers in a ratio for a given situation
* Understand the following concepts: proportional relationship, origin, input, output, coordinate, initial value, intersect, slope, constant of proportionality
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.AR.4.2:](https://www.cpalms.org//PreviewStandard/Preview/15468) Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.4.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18205)  | Identify the constant of proportionality when given a table or graph of a proportional relationship. |  |  |  |
| EssentialUnderstandings | * Understand that proportional relationships intersect with the origin (0,0) on a graph
* Recognize input and output values in a table(understand x as the input and y as the output)
* Use the input-output rule to generate values in a table
* Identify whether the input values are increasing or decreasing
* Identify whether the output values are increasing or decreasing
* Given 2 points in a table, determine the change in the 2 input values

|  |  |
| --- | --- |
| x | y |
| 2 | 6 |
| 3 | 9 |
| 4 | 12 |

* Given 2 points in a table, determine the change in the 2 output values

|  |  |
| --- | --- |
| x | y |
| 2 | 6 |
| 3 | 9 |
| 4 | 12 |

* Recognize that the constant of proportionality is the ratiothat identifies change in output to change in input.
* Identify if the line on a coordinate plane is going up or going down to determine whether the slope is positive or negative
* Given 2 points on the line, count the change going up and down between the 2 points

An image of 2 points on the line, count the change going up and down between the 2 pointsGiven 2 points on the line, count the change going left and right between the 2 pointsan image of 2 points on the line, count the change going left and right between the 2 points* Define the term “constant of proportionality
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.AR.4.3:](https://www.cpalms.org//PreviewStandard/Preview/15469) Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description.

**Clarifications:**
*Clarification 1:* Instruction includes equations of proportional relationships in the form of y=px, where p is the constant of proportionality.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.4.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18206)  | Give a table or equation, graph a proportional relationship. |  |  |  |
| EssentialUnderstandings | * Recognize input and output values in a table(understand x as the input and y as the output
* Given a set of input values, use substitution to complete an input-output table
* Use the input-output rule (equation) to generate values in a table
* Identify whether the input values are increasing or decreasing
* Identify whether the output values are increasing or decreasing
* Graph input/output values from a table on a coordinate plane
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.AR.4.4:](https://www.cpalms.org//PreviewStandard/Preview/15470) Given any representation of a proportional relationship, translate the representation to a written description, table or equation.

**Clarifications:**
*Clarification 1:* Given representations are limited to a written description, graph, table or equation.

*Clarification 2:* Instruction includes equations of proportional relationships in the form of y=px, where p is the constant of proportionality.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.4.AP.4:](https://www.cpalms.org/PreviewAccessPoint/Preview/18207)  | Given a table representation of a proportional relationship translate the relationship into an equation or a graph. |  |  |  |
| EssentialUnderstandings | * Recognize input and output values in a table (understand x as the input and y as the output)
* Identify the rule that creates the output value
* Use the rule for an input-output table to create an equation
* Identify whether the input values are increasing or decreasing
* Identify whether the output values are increasing or decreasing
* Graph input/output values from a table on a coordinate plane
* Use objects to represent the quantities in the table to help identify the equation

|  |  |  |
| --- | --- | --- |
| Legs of a chair | People | Image |
| 4 | 1 | image of a person sitting in a chair |
| 8 | 2 |  |
| 12 | 3 |  |

 |  |  |  |

[MA.7.AR.4.5:](https://www.cpalms.org//PreviewStandard/Preview/15471) Solve real-world problems involving proportional relationships.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.AR.4.AP.5:](https://www.cpalms.org/PreviewAccessPoint/Preview/18208) | Solve simple real-world problems involving proportional relationships |  |  |  |
| EssentialUnderstandings | * Relate the placement of numbers in a ratio to the given context (the meaning of 460:10, 460 equals miles, 10 equals a gallon of gas)
* Identify two equivalent ratios
* Use tools to create equivalent ratios
* Given a scenario, find the two quantities in a ratio (e.g., “Bill has traveled 460 miles on 10 gallons of gas. Miles and gallons of gas)
* Given a scenario, find the quantities in a proportion
* For example: The sale price of a phone was $150, which was only 80% of normal price. What was the normal price? The quantities are the regular price of the phone, the sale price of the phone, the percentage written as a fraction.
* Given a scenario, match the appropriate numerical value in the problem to its quantity.

image of "sale price"/"Original price" = "Percent/100"image of "$150/Original price" = "80/100"* Use tools (graphic organizer, table, manipulatives, etc.) to find a missing value in a proportion.
* Use tools to find the constant of variation illustrated by a proportion. For example, image of 2/3 = 8/12 the constant of variation is 4.
* Understand the following concepts and vocabulary: ratio, proportion, equivalent, constant of variation, factor, fraction, quantity, cross multiply
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.1.1:](https://www.cpalms.org//PreviewStandard/Preview/15480) Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers.

**Clarifications:**
*Clarification 1:* Instruction includes recognizing whether a measure of center or measure of variation is appropriate and can be justified based on the given context or the statistical purpose.

*Clarification 2:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots.

*Clarification 3:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.1.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18217) | Use context to determine the appropriate measure of center (mean or median) or range to summarize a numerical data set with 10 or fewer elements, represented numerically or graphically. |  |  |  |
| EssentialUnderstandings | * Understand the concept of distribution in a data set
* Use tools to calculate the mean, median, and range in a data set
* Identify the mean, median and range that are displayed in a bell curve, box plot, or bar graph
* Read and interpret a display of given data (e.g., bell curve, scatter plot, box plot, or bar graph) to draw inferences (e.g., looking at the frequency of days of rain by month to determine which month I want to go camping)
* Understand the following concepts and vocabulary: ascending, descending, maximum, minimum, mean, median, range, spread of data and outlier
* Identify the smallest number and the largest number in the range
* Create a number sentence that represents the range of responses
* Identify the lowest to highest value in a data set given a number line
* Arrange data from lowest to highest
* Use concrete materials to produce the mean (leveled plastic snap cubes)
* Find the object or manipulative in a sequence that represents the middle (median)
* Use anchor charts to support calculating the mean of a data set
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.1.2:](https://www.cpalms.org//PreviewStandard/Preview/15481) Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations.

**Clarifications:**
*Clarification 1:* Graphical representations are limited to histograms, line plots, box plots and stem-and-leaf plots.

*Clarification 2:* The measure of center is limited to mean and median. The measure of variation is limited to range and interquartile range.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.1.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18218)  | Given two numerical or graphical representations of data in the same form, compare the mean, median, or range of each representation. |  |  |  |
| EssentialUnderstandings | * Understand the concept of distribution in a single data set and two different data sets
* Use tools to calculate the mean, median, and range in two different data sets
* Identify the mean, median and range that are displayed in a bell curve, box plot, and bar graph
* Use graphs or graphic organizers to compare the mean, median and range of two different data sets
* Identify the same measure (mean, median or range) in two different data sets
* Identify the lowest to highest value in a data set
* Arrange data from lowest to highest on a number line
* Identify the mean of two different data sets using manipulatives (leveled plastic snap cubes) or a line graph
* Use anchor charts to support calculating the mean, median and range of a data set
* Understand the following concepts and vocabulary: compare, ascending, descending, maximum, minimum, mean, median, range, spread of data and outlier
* Compare the visual of the distribution of two data sets
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.1.3:](https://www.cpalms.org//PreviewStandard/Preview/15482) Given categorical data from a random sample, use proportional relationships to make predictions about a population.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.1.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18219)  | Given data from a random sample of the population, select from a list an appropriate prediction about the population based on the data. |  |  |  |
| EssentialUnderstandings | * Understand basic information about a sample of a population
* Identify a representation of two bar graphs (one category apiece) as having greater or less frequency of members/events related to a single variable (e.g., compare number of boys in soccer to girls in two graphs)
* Identify characteristics of a population and of its random sample
* Understand that the characteristics of a random sample should be similar to its population
* Given a population and a random sample, identify which is the random sample and which is the population
* Select statements from a list that apply to a given sample
* Select statements from a list that apply to a given data set
* Identify potential inferences when given data from a sample
* Select statements from a list that make predictions about a random sample based on the characteristics of the population
* Understand the following concepts and vocabulary: statistics, inference, conclusion, estimation, probability (likelihood), prediction and hypothesis testing (cause/effect), more, less, higher, lower, random, characteristic, ratio, proportional, and prediction
* Understand that statistics is collecting, organizing, analyzing, and interpreting data in order to make decisions
* Understand that each item/subject in a random sample has the same chance of being selected
* Understand that generalizations are only valid if they are based on similar characteristics in both the sample and the population
* Understand that decisions about the population can be made based on the information gathered from the random sample
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.1.4:](https://www.cpalms.org//PreviewStandard/Preview/15483) Use proportional reasoning to construct, display and interpret data in circle graphs.

**Clarifications:**
*Clarification 1:* Data is limited to no more than 6 categories.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.1.AP.4:](https://www.cpalms.org/PreviewAccessPoint/Preview/18220)  | Use proportional reasoning to interpret data in a pie chart. |  |  |  |
| EssentialUnderstandings | * Match the data category with its data
* Identify differences in the sizes of the circle graph sections in relation to each other
* Compare the values of the categories in the data set
* Order categories of the data set based on their relative size or percentage
* Identify the largest and smallest categories in the data set
* Match the percent values to their fraction value
* Select statements from a list that describe the data set
* Use fraction circle manipulatives to identify fractional representations
* Use tools to calculate the percent value of a category from the data set
* Use tools to calculate the data quantity when given the percent value of a data set
* Use manipulatives (pie shaped) to build a circle

image of Fractional circles Whole, 1/2 or 50%, 1/3 or 33.33%, 1/4 or 25%, 1/5/ or 20%, 1/6 or 16.6%, 1/8 or 12.5%, 1/10 or 10% |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.1.5:](https://www.cpalms.org//PreviewStandard/Preview/15484) Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation.

**Clarifications:**
*Clarification 1:* Graphical representations are limited to histograms, bar charts, circle graphs, line plots, box plots and stem-and-leaf plots.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.1.AP.5:](https://www.cpalms.org/PreviewAccessPoint/Preview/18221)  | Given a data set, select an appropriate graphical representation (histogram, bar chart, or line plot). |  |  |  |
| EssentialUnderstandings | * Use manipulative to display the frequency of a data set on a line
* Identify what a data point represents
* Understand that each point may represent more than one item (i.e., the car on a histogram may represent five cars although only one is pictured)
* Match a frequency table with its data plot
* Select a data display that best fits a given set of information
* Use manipulatives to create a simple representation of the data from a frequency table
* Match a point on a graph as being part of a real-world data set for a given line or bar
* Match or plot the points from a data table on a graph
* Determine if a point is or is not on a graphical display
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.2.1:](https://www.cpalms.org//PreviewStandard/Preview/15485) Determine the sample space for a simple experiment.

**Clarifications:**
*Clarification 1:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.2.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18222) | Use tree diagrams, frequency tables, organized lists, and/or simulations to collect data from a simple experiment. |  |  |  |
| EssentialUnderstandings | * Use items like coins to determine the probability of an outcome (1/2 heads)
* Using manipulatives and a chart to capture the outcomes of coin flips or dice rolls
* Identify the formula for finding experimental probability of an event (experimental probability of an event = number of times it actually happened/total number of outcomes)
* Use a chart to capture the outcomes of coin flips or dice rolls
* Use a tree diagram to display the possible options for outcomes
* Use a frequency table or organized list to record the outcomes from an experiment
* Given a chance event, find the probability using a manipulative. For example, the probability of landing on yellow = 1/4 or 0.25

image of a circle divided into 4 different colors (yellow, blue, orange, grey) with an arrow pointing to the yellow quarter* Understand probability notation, for example P(heads) = ½
* Understand the concepts, symbols, and vocabulary: probability, likelihood
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.2.2:](https://www.cpalms.org//PreviewStandard/Preview/15486) Given the probability of a chance event, interpret the likelihood of it occurring. Compare the probabilities of chance events.

**Clarifications:**
*Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal between 0 and 1 with probabilities close to 1 corresponding to highly likely events and probabilities close to 0 corresponding to highly unlikely events.

*Clarification 2:* Instruction includes P(event) notation.

*Clarification 3:* Instruction includes representing probability as a fraction, percentage or decimal.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.2.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18223)  | Given the probability of a simple chance event written as a fraction, percentage or decimal between 0 and 1, determine how likely is it that an event will occur. |  |  |  |
| EssentialUnderstandings | * Understand the value for probability of a chance event ranges between 0 and 1
* Understand probabilities close to 1 correspond to highly likely events and probabilities close to 0 correspond to highly unlikely events
* Given a set of items. Identify items that are in the set and items that are not in the set
* Identify the formula for finding experimental probability of an event (Experimental probability of an event = number of times it actually happened/total number of outcomes)
* Given a chance event, find the probability of an outcome that is likely
* For example, the probability of rolling a 2 with a die is 1/6 or 0.166...
* Given a chance event, find the probability of an outcome that is highly unlikely
* For example, the probability of rolling a B on a number die is 0/6 or 0
* Given a chance event, find the probability of an outcome that is highly likely
* For example, the probability of pulling a marble out of a bag of 5 marbles is 5/5 or 1
* Use tools to convert fractions to decimals
* Match a scenario with its likelihood
* Use a model to identify the likelihood of a chance event
* Understand the following concepts, symbols, and vocabulary: chance event, probability, likelihood, outcome, event, simple event
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.2.3:](https://www.cpalms.org//PreviewStandard/Preview/15487) Find the theoretical probability of an event related to a simple experiment.

**Clarifications:**
*Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal. *Clarification 2:* Simple experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.2.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18224) | Determine the theoretical probability of a simple chance event. |  |  |  |
| EssentialUnderstandings | * Understand that sample space is the set of all possible outcomes of an experiment
* Create/recognize possible outcomes
* Given a set of items, identify the probability of selecting a specific item from the set
* Use items like coins to determine the probability of an outcome (1/2 heads)
* Identify the formula for finding the theoretical probability of an event (probability of an event happening = number of ways it can happen/total number of outcomes)
* Understand the following concepts, symbols, and vocabulary: probability, likelihood, outcome, sample space, trial
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.DP.2.4:](https://www.cpalms.org//PreviewStandard/Preview/15488) Use a simulation of a simple experiment to find experimental probabilities and compare them to theoretical probabilities.

**Clarifications:**
*Clarification 1:* Instruction includes representing probability as a fraction, percentage or decimal.

*Clarification 2:* Instruction includes recognizing that experimental probabilities may differ from theoretical probabilities due to random variation. As the number of repetitions increases experimental probabilities will typically better approximate the theoretical probabilities.

*Clarification 3:* Experiments include tossing a fair coin, rolling a fair die, picking a card randomly from a deck, picking marbles randomly from a bag and spinning a fair spinner.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.DP.2.AP.4:](https://www.cpalms.org/PreviewAccessPoint/Preview/18225) | Conduct a simple experiment to find experimental probabilities. |  |  |  |
| EssentialUnderstandings | * Using manipulatives and a chart to capture the outcomes of coin flips or dice rolls
* Use technology generated outcomes to find experimental probabilities for an event (i.e., Random.org, justflipacoin.com)
* Use tools to calculate the probability of a simple chance event
* Understand that sample space is the set of all possible outcomes (combinations) of an experiment
* Match an outcome to its theoretical probability from a list
* Match an outcome to its experimental probability from the sample space
* Identify the possible outcomes for a specified probability in the sample space
* Count the number of times the specified outcome occurs in the sample space
* Identify the formula for finding experimental probability of an event (experimental probability of an event = number of times it actually happened/total number of outcomes)
* Given a chance event, find the probability of an outcome that is likely
* For example, the probability of rolling a 2 with a die is 1/6 or 0.166...
* Given a chance event, find the probability of an outcome that is highly unlikely
* For example, the probability of rolling a B on a number die is 0/6 or 0
* Given a chance event, find the probability of an outcome that is highly likely
* For example, the probability of pulling a marble out of a bag of 5 marbles is 5/5 or 1
* Use a model to identify the probability of a chance event
* Understand the following concepts, symbols, and vocabulary: more, less, same, different, equal, compare, chance event, probability, likelihood, outcome, event, compound event, simple event
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.1.1:](https://www.cpalms.org//PreviewStandard/Preview/15472) Apply formulas to find the areas of trapezoids, parallelograms and rhombi.

**Clarifications:**
*Clarification 1:* Instruction focuses on the connection from the areas of trapezoids, parallelograms and rhombi to the areas of rectangles or triangles.

*Clarification 2:* Within this benchmark, the expectation is not to memorize area formulas for trapezoids, parallelograms and rhombi.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.1.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18209) | Given the formulas, find the area of parallelograms and rhombi. |  |  |  |
| EssentialUnderstandings | * Identify the dimensions of a parallelogram or rhombi
* Use square tiles to cover a rectangle
* Use square tiles to cover a parallelogram or rhombus and estimate the area
* Count the number of tiles to determine the area
* Substitute dimensional values into the area formula
* Use formula to find area
* Use appropriate tools to calculate, as needed
* Understand the following concepts and vocabulary: base, height, area, parallelogram, rhombus, and quadrilateral
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.1.2:](https://www.cpalms.org//PreviewStandard/Preview/15473) Solve mathematical or real-world problems involving the area of polygons or composite figures by decomposing them into triangles or quadrilaterals.

**Clarifications:**
*Clarification 1:* Within this benchmark, the expectation is not to find areas of figures on the coordinate plane or to find missing dimensions.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.1.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18210)  | Decompose complex shapes (polygon, trapezoid, and pentagon) into simple shapes (rectangles, squares, triangles) to measure area. |  |  |  |
| EssentialUnderstandings | * Recognize simple shapes within a larger shape
* Use a grid to count dimensions in a figure
* Identify the dimensions (base, height, length, width, etc.) of smaller shapes.
* Multiply fractions and whole numbers
* Given a picture, identify the dimensions of two-dimensional shapes
* Substitute dimensional values into the area formula
* Use formula to find area
* Use appropriate tools to calculate, as needed
* Understand the following concepts and vocabulary: polygon, trapezoid, pentagon, rectangles, squares, triangles, area
* image of four different sized squares of varying sizes
* an image of a trapezoidimage of two rectangles with one the first 10 x ^in and the second 8 x 3 in
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.1.3:](https://www.cpalms.org//PreviewStandard/Preview/15474) Explore the proportional relationship between circumferences and diameters of circles. Apply a formula for the circumference of a circle to solve mathematical and real-world problems.

**Clarifications:**
*Clarification 1:* Instruction includes the exploration and analysis of circular objects to examine the proportional relationship between circumference and diameter and arrive at an approximation of pi (π) as the constant of proportionality.

*Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.1.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18211)  | Given the formula, apply a formula for the circumference of a circle to solve mathematical problems. |  |  |  |
| EssentialUnderstandings | * Identify the radius and diameter of a circle
* Substitute dimensional values into the circumference formula
* Use appropriate tools to calculate, as needed
* Understand the following concepts and vocabulary: circumference, area, pi, diameter, and radius
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.1.4:](https://www.cpalms.org//PreviewStandard/Preview/15475) Explore and apply a formula to find the area of a circle to solve mathematical and real-world problems.

**Clarifications:**
*Clarification 1:* Instruction focuses on the connection between formulas for the area of a rectangle and the area of a circle.

*Clarification 2:* Problem types include finding areas of fractional parts of a circle.

*Clarification 3:* Solutions may be represented in terms of pi (π) or approximately.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.1.AP.4:](https://www.cpalms.org/PreviewAccessPoint/Preview/18212)  | Apply a given formula to find the area of a circle to solve mathematical problems. |  |  |  |
| EssentialUnderstandings | * Substitute dimensional values into the area formula
* Identify the radius and diameter of a circle
* Use a transparency of grid paper to place over a shape
* Use the grid paper to estimate the area of a circle by counting the squares and partial squares
* Use manipulatives, i.e., 1-inch cubes, uni-fix cubes, to estimate the area of a circle by placing the cubes on top of the circle
* Use appropriate tools to calculate, as needed
* Understand the following concepts and vocabulary: circumference, area, pi, diameter, and radius
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.1.5:](https://www.cpalms.org//PreviewStandard/Preview/15476) Solve mathematical and real-world problems involving dimensions and areas of geometric figures, including scale drawings and scale factors.

**Clarifications:**
*Clarification 1:* Instruction focuses on seeing the scale factor as a constant of proportionality between corresponding lengths in the scale drawing and the original object.

*Clarification 2:* Instruction includes the understanding that if the scaling factor is k, then the constant of proportionality between corresponding areas is k² .

*Clarification 3:* Problem types include finding the scale factor given a set of dimensions as well as finding dimensions when given a scale factor.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.1.AP.5:](https://www.cpalms.org/PreviewAccessPoint/Preview/18213)  | Use a scale factor to draw a scale drawing of a real-world two-dimensional polygon on graph paper. |  |  |  |
| EssentialUnderstandings | * Identify when shapes are similar, but different sizes (e.g., show the same shape at various sizes – 25%, 50%, 150% –when presented with two-dimensional or three-dimensional shapes).
* Use manipulatives to solve a one-step equation.
* Understand that multiplying makes an object bigger and dividing makes an object smaller.
* Use appropriate tools to solve a one-step equation.
* Understand the following concepts and vocabulary: scale factor, polygon, two-dimensional, dimension, enlarge, reduce
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.2.1:](https://www.cpalms.org//PreviewStandard/Preview/15477) Given a mathematical or real-world context, find the surface area of a right circular cylinder using the figure’s net.

**Clarifications:**
*Clarification 1:* Instruction focuses on representing a right circular cylinder with its net and on the connection between surface area of a figure and its net.

*Clarification 2:* Within this benchmark, the expectation is to find the surface area when given a net or when given a three-dimensional figure.

*Clarification 3:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder.

*Clarification 4:* Solutions may be represented in terms of pi (π) or approximately.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.2.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18214)  | Match the parts of a given formula to the right circular cylinder using the figure’s net. |  |  |  |
| EssentialUnderstandings | * Identify the parts of a right circular cylinder
* Identify the dimensions of a right circular cylinder
* Match the parts of the figure to the parts of the net
* Unfold three-dimensional objects into flat nets where all faces are visible.
* Recognize that surface area is found by adding up the individual areas of each face.
* Understand symbols from a formula.
* Understand the following concepts and vocabulary: area, base, height, units of measure, surface area, circle, net, face, and quadrilateral.
* Surface Area of a cylinder = 2πrh + 2πr2 = (Circumference of the circle x height) + (Area of circle 1 + Area of circle 2)
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.2.2:](https://www.cpalms.org//PreviewStandard/Preview/15478) Solve real-world problems involving surface area of right circular cylinders.

**Clarifications:**
*Clarification 1:* Within this benchmark, the expectation is not to memorize the surface area formula for a right circular cylinder or to find radius as a missing dimension.

*Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.2.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18215) | Given the formula, use tools to find the surface area of a right circular cylinder using the figure’s net. |  |  |  |
| EssentialUnderstandings | * Use appropriate tools to calculate, as needed
* Identify the parts of a right circular cylinder
* Identify the dimensions of a right circular cylinder
* Match the parts of the figure to the parts of the net
* Match the parts of the net to the parts of the formula
* Unfold three-dimensional objects into flat nets where all faces are visible
* Recognize that surface area is found by adding up the individual areas of each face
* Understand symbols from a formula
* Understand the following concepts and vocabulary: area, base, height, units of measure, surface area, circle, net, face, and quadrilateral
* Surface Area of a cylinder = 2πrh + 2πr2 = (Circumference of the circle x height) + (Area of circle 1 + Area of circle 2)
* Use square tiles to cover a figure
* Count the number of tiles to determine the area
* Calculate the area of each part of the net
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.GR.2.3:](https://www.cpalms.org//PreviewStandard/Preview/15479) Solve mathematical and real-world problems involving volume of right circular cylinders.

**Clarifications:**
*Clarification 1:* Within this benchmark, the expectation is not to memorize the volume formula for a right circular cylinder or to find radius as a missing dimension.

*Clarification 2:* Solutions may be represented in terms of pi (π) or approximately.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.GR.2.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18216)  | Given a formula, use tools to calculate the volume of right circular cylinders. |  |  |  |
| EssentialUnderstandings | * Identify attributes of a right circular cylinder.
* Use base ten blocks to approximate the volume of a figure.
* Understand two- and three-dimensional dimensionality (two-dimensional is space covered, three-dimensional is the space within).
* Understand symbols from a formula.
* Understand the following concepts and vocabulary: area, base, height, slant, volume, units of measure, cylinder, prism, net, and face.
* Use appropriate tools to calculate, as needed.
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.NSO.1.1:](https://www.cpalms.org//PreviewStandard/Preview/15455) Know and apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions, limited to whole-number exponents and rational number bases.

**Clarifications:**
*Clarification 1:* Instruction focuses on building the Laws of Exponents from specific examples. Refer to the [K-12 Formulas (Appendix E)](https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/best/ma/appendixe.pdf) for the Laws of Exponents.

*Clarification 2:* Problems in the form must result in a whole-number value for p.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.NSO.1.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18191)  | Use properties of whole number exponents to produce equivalent expressions. |  |  |  |
| EssentialUnderstandings | * Use manipulatives to demonstrate what an exponent represents (e.g., 8³ = 8 × 8 × 8).
* Produce the correct amount of base numbers to be multiplied given a graphic organizer or template
* Select the correct expanded form of what an exponent represents (e.g., 8³ = 8 × 8 × 8)
* Identify the number of times the base number will be multiplied based on the exponent
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.NSO.1.2:](https://www.cpalms.org//PreviewStandard/Preview/15456) Rewrite rational numbers in different but equivalent forms including fractions, mixed numbers, repeating decimals and percentages to solve mathematical and real-world problems.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.NSO.1.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18192)  | Rewrite positive rational numbers in different but equivalent forms such as fractions, mixed numbers, repeating decimals and/or percentages to solve problems. |  |  |  |
| EssentialUnderstandings | * Demonstrate operations using manipulative when presented with common language (altogether, left over, sum, etc.)
* Create an array of objects into groups to model the role of equal groups in a multiplication or division situation.
* Use tools (i.e., number line, fraction tiles, calculator, and graphic representation) to model equivalent forms of numbers
* Understand the following symbols for +, -, ×, ÷
* Use tools, as needed, to complete the four operations
* Solve problems using supports (Picture, Models, Representation cards, Number sentences, Mathematical word problems)
* Match multiple representations of equivalent quantities (i.e., 4/2 = 2 = 2.0)
* Demonstrate understanding of the terms equivalent, fractions, mixed numbers, repeating decimals and percentages
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.NSO.2.1:](https://www.cpalms.org//PreviewStandard/Preview/15457) Solve mathematical problems using multi-step order of operations with rational numbers including grouping symbols, whole-number exponents and absolute value.

**Clarifications:**
*Clarification 1:* Multi-step expressions are limited to 6 or fewer steps.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.NSO.2.AP.1:](https://www.cpalms.org/PreviewAccessPoint/Preview/18193) | Solve mathematical problems, using no more than 4 operations, with rational numbers including grouping symbols, whole-number exponents, and absolute value. |  |  |  |
| EssentialUnderstandings | * Use manipulatives to represent a situation (i.e., John has five apples, and he gives some to Jim = 5 – x)
* When given a verbal expression (i.e., eight plus y), students must select the appropriate algebraic expression (8 + y)
* Use tools (i.e., template, anchor chart) to support students in performing operations in the appropriate order and with numbers in different forms
* Use tools (i.e., number line, fraction tiles, calculator, and graphic representation) to model equivalent forms of numbers
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.NSO.2.2:](https://www.cpalms.org//PreviewStandard/Preview/15458) Add, subtract, multiply and divide rational numbers with procedural fluency.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.NSO.2.AP.2:](https://www.cpalms.org/PreviewAccessPoint/Preview/18194)  | Using tools or models, add, subtract, multiply and divide rational numbers. |  |  |  |
| EssentialUnderstandings | * Combine (+) or decompose (-) with concrete objects; use counting to get the answers
* Combine (x) or decompose (÷) with concrete objects; use counting to get the answers
* Understand the symbols +, -, ÷, =, ×
* Create a pictorial array for the mathematical equation and match the answer symbol (+ or -) following multiplication rules for an equation
* Create a pictorial array for the mathematical equation and match the answer symbol (+ or -) following division rules for an equation
* Use tools (i.e., template, anchor chart) to support students in performing operations in the appropriate order and with numbers in different forms
 |  |  |  |
| Resources: |  |  |  |  |

[MA.7.NSO.2.3:](https://www.cpalms.org//PreviewStandard/Preview/15459) Solve real-world problems involving any of the four operations with rational numbers.

**Clarifications:**
*Clarification 1:* Instruction includes using one or more operations to solve problems.

**Related Access Points**

| **Name** | **Description** | **Date(s) Instruction** | **Date(s) Assessment** | **Date Mastery** |
| --- | --- | --- | --- | --- |
| [MA.7.NSO.2.AP.3:](https://www.cpalms.org/PreviewAccessPoint/Preview/18195) | Using tools or models, solve real-world problems involving any of the four operations with rational numbers. |  |  |  |
| EssentialUnderstandings | * Match the action of combining with vocabulary (i.e., in all; altogether) or the action of decomposing with vocabulary (i.e., have left; take away, difference) in a word problem
* Identify the purpose to find a total (sum for addition or product for multiplication), remaining amount (difference for subtraction), or one component (number of sets or number within each set-dividend or divisor for division), depending upon the words in the problem
* Translate wording into numeric equation
* Draw or use a representation of a word problem
* Create a pictorial array for the mathematical equation and match the answer symbol (+ or -) following multiplication rules for an equation
* Create a pictorial array for the mathematical equation and match the answer symbol (+ or -) following division rules for an equation
* Combine (+) or decompose (-) with concrete objects; use counting to get the answers
* Combine (x) or decompose (÷) with concrete objects; use counting to get the answers
* Understand the symbols +, -, ÷, =, ×
* Use tools (i.e., template, anchor chart) to support students in performing operations in the appropriate order and with numbers in different forms
 |  |  |  |
| Resources: |  |  |  |  |

[MA.K12.MTR.1.1:](https://www.cpalms.org//PreviewStandard/Preview/15875) Actively participate in effortful learning both individually and collectively. Mathematicians who participate in effortful learning both individually and with others:

* Analyze the problem in a way that makes sense given the task.
* Ask questions that will help with solving the task.
* Build perseverance by modifying methods as needed while solving a challenging task.
* Stay engaged and maintain a positive mindset when working to solve tasks.
* Help and support each other when attempting a new method or approach.

**Clarifications:**
Teachers who encourage students to participate actively in effortful learning both individually and with others:

* Cultivate a community of growth mindset learners.
* Foster perseverance in students by choosing tasks that are challenging.
* Develop students’ ability to analyze and problem solve.
* Recognize students’ effort when solving challenging problems.

[MA.K12.MTR.2.1:](https://www.cpalms.org//PreviewStandard/Preview/15876) Demonstrate understanding by representing problems in multiple ways.

Mathematicians who demonstrate understanding by representing problems in multiple ways:

* Build understanding through modeling and using manipulatives.
* Represent solutions to problems in multiple ways using objects, drawings, tables, graphs and equations.
* Progress from modeling problems with objects and drawings to using algorithms and equations.
* Express connections between concepts and representations.
* Choose a representation based on the given context or purpose.

**Clarifications:**
Teachers who encourage students to demonstrate understanding by representing problems in multiple ways:

* Help students make connections between concepts and representations.
* Provide opportunities for students to use manipulatives when investigating concepts.
* Guide students from concrete to pictorial to abstract representations as understanding progresses.
* Show students that various representations can have different purposes and can be useful in different situations.

[MA.K12.MTR.3.1:](https://www.cpalms.org//PreviewStandard/Preview/15877) Complete tasks with mathematical fluency.

Mathematicians who complete tasks with mathematical fluency:

* Select efficient and appropriate methods for solving problems within the given context.
* Maintain flexibility and accuracy while performing procedures and mental calculations.
* Complete tasks accurately and with confidence.
* Adapt procedures to apply them to a new context.
* Use feedback to improve efficiency when performing calculations.

**Clarifications:**
Teachers who encourage students to complete tasks with mathematical fluency:

* Provide students with the flexibility to solve problems by selecting a procedure that allows them to solve efficiently and accurately.
* Offer multiple opportunities for students to practice efficient and generalizable methods.
* Provide opportunities for students to reflect on the method they used and determine if a more efficient method could have been used.

[MA.K12.MTR.4.1:](https://www.cpalms.org//PreviewStandard/Preview/15878) Engage in discussions that reflect on the mathematical thinking of self and others.

Mathematicians who engage in discussions that reflect on the mathematical thinking of self and others:

* Communicate mathematical ideas, vocabulary and methods effectively.
* Analyze the mathematical thinking of others.
* Compare the efficiency of a method to those expressed by others.
* Recognize errors and suggest how to correctly solve the task.
* Justify results by explaining methods and processes.
* Construct possible arguments based on evidence.

**Clarifications:**
Teachers who encourage students to engage in discussions that reflect on the mathematical thinking of self and others:

* Establish a culture in which students ask questions of the teacher and their peers, and error is an opportunity for learning.
* Create opportunities for students to discuss their thinking with peers.
* Select, sequence and present student work to advance and deepen understanding of correct and increasingly efficient methods.
* Develop students’ ability to justify methods and compare their responses to the responses of their peers.

[MA.K12.MTR.5.1:](https://www.cpalms.org//PreviewStandard/Preview/15879) Use patterns and structure to help understand and connect mathematical concepts.

Mathematicians who use patterns and structure to help understand and connect mathematical concepts:

* Focus on relevant details within a problem.
* Create plans and procedures to logically order events, steps or ideas to solve problems.
* Decompose a complex problem into manageable parts.
* Relate previously learned concepts to new concepts.
* Look for similarities among problems.
* Connect solutions of problems to more complicated large-scale situations.

**Clarifications:**
Teachers who encourage students to use patterns and structure to help understand and connect mathematical concepts:

* Help students recognize the patterns in the world around them and connect these patterns to mathematical concepts.
* Support students to develop generalizations based on the similarities found among problems.
* Provide opportunities for students to create plans and procedures to solve problems.

Develop students’ ability to construct relationships between their current understanding and more sophisticated ways of thinking.

[MA.K12.MTR.6.1:](https://www.cpalms.org//PreviewStandard/Preview/15880) Assess the reasonableness of solutions.

Mathematicians who assess the reasonableness of solutions:

* Estimate to discover possible solutions.
* Use benchmark quantities to determine if a solution makes sense.
* Check calculations when solving problems.
* Verify possible solutions by explaining the methods used.
* Evaluate results based on the given context.

**Clarifications:**
Teachers who encourage students to assess the reasonableness of solutions:

* Have students estimate or predict solutions prior to solving.
* Prompt students to continually ask, “Does this solution make sense? How do you know?”
* Reinforce that students check their work as they progress within and after a task.
* Strengthen students’ ability to verify solutions through justifications.

[MA.K12.MTR.7.1:](https://www.cpalms.org//PreviewStandard/Preview/15881) Apply mathematics to real-world contexts.

Mathematicians who apply mathematics to real-world contexts:

* Connect mathematical concepts to everyday experiences.
* Use models and methods to understand, represent and solve problems.
* Perform investigations to gather data or determine if a method is appropriate. • Redesign models and methods to improve accuracy or efficiency.

**Clarifications:**
Teachers who encourage students to apply mathematics to real-world contexts:

* Provide opportunities for students to create models, both concrete and abstract, and perform investigations.
* Challenge students to question the accuracy of their models and methods.
* Support students as they validate conclusions by comparing them to the given situation.
* Indicate how various concepts can be applied to other disciplines.

[ELA.K12.EE.1.1:](https://www.cpalms.org//PreviewStandard/Preview/15201) Cite evidence to explain and justify reasoning.

**Clarifications:**
K-1 Students include textual evidence in their oral communication with guidance and support from adults. The evidence can consist of details from the text without naming the text. During 1st grade, students learn how to incorporate the evidence in their writing.

2-3 Students include relevant textual evidence in their written and oral communication. Students should name the text when they refer to it. In 3rd grade, students should use a combination of direct and indirect citations.

4-5 Students continue with previous skills and reference comments made by speakers and peers. Students cite texts that they’ve directly quoted, paraphrased, or used for information. When writing, students will use the form of citation dictated by the instructor or the style guide referenced by the instructor.

6-8 Students continue with previous skills and use a style guide to create a proper citation.

9-12 Students continue with previous skills and should be aware of existing style guides and the ways in which they differ.

[ELA.K12.EE.2.1:](https://www.cpalms.org//PreviewStandard/Preview/15202) Read and comprehend grade-level complex texts proficiently.

**Clarifications:**
See [Text Complexity](https://cpalmsmediaprod.blob.core.windows.net/uploads/docs/standards/best/la/appendixb.pdf) for grade-level complexity bands and a text complexity rubric.

[ELA.K12.EE.3.1:](https://www.cpalms.org//PreviewStandard/Preview/15203) Make inferences to support comprehension.

**Clarifications:**
Students will make inferences before the words infer or inference are introduced. Kindergarten students will answer questions like “Why is the girl smiling?” or make predictions about what will happen based on the title page. Students will use the terms and apply them in 2nd grade and beyond.

[ELA.K12.EE.4.1:](https://www.cpalms.org//PreviewStandard/Preview/15204) Use appropriate collaborative techniques and active listening skills when engaging in discussions in a variety of situations.

**Clarifications:**
In kindergarten, students learn to listen to one another respectfully.

In grades 1-2, students build upon these skills by justifying what they are thinking. For example: “I think \_\_\_\_\_\_\_\_ because \_\_\_\_\_\_\_.” The collaborative conversations are becoming academic conversations.

In grades 3-12, students engage in academic conversations discussing claims and justifying their reasoning, refining and applying skills. Students build on ideas, propel the conversation, and support claims and counterclaims with evidence.

[ELA.K12.EE.5.1:](https://www.cpalms.org//PreviewStandard/Preview/15205) Use the accepted rules governing a specific format to create quality work.

**Clarifications:**

Students will incorporate skills learned into work products to produce quality work. For students to incorporate these skills appropriately, they must receive instruction. A 3rd grade student creating a poster board display must have instruction in how to effectively present information to do quality work.

[ELA.K12.EE.6.1:](https://www.cpalms.org//PreviewStandard/Preview/15206) Use appropriate voice and tone when speaking or writing.

**Clarifications:**

In kindergarten and 1st grade, students learn the difference between formal and informal language. For example, the way we talk to our friends differs from the way we speak to adults. In 2nd grade and beyond, students practice appropriate social and academic language to discuss texts.

English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

English language learners communicate for social and instructional purposes within the school setting.

[ELD.K12.ELL.MA.1:](https://www.cpalms.org//PreviewStandard/Preview/8642) English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

[ELD.K12.ELL.SI.1:](https://www.cpalms.org//PreviewStandard/Preview/8640) English language learners communicate for social and instructional purposes within the school setting.