

Essential Elements Math Pacing Guide



January

Background

The Essential Elements Math Pacing Guide was inspired by realizing that there is a small amount of information found on the internet to help support educators who teach those who follow an alternate curriculum for our amazing 1% of the student population in education. I wanted to create something that could help serve as a guide, a support, an understanding of how to hold our students to high academic achievement, just like their regular education peers.

Regular education materials are abundant and come with pacing guides with how to implement the prescribed curriculum that the school decided to buy into. Within those curriculums, a good majority of publishers incorporated how to differentiate Instruction for struggling learners, for English Language Learners and/or English as a Second Language learners. However, there does not seem to be a supplementary curriculum that aligns to how to modify instruction and materials for those who follow the alternate curriculum so the 1% of students with disabilities aligned to the alternate curriculum could also learn a modified version of the same materials as their non-disabled peers in an inclusive setting.

Your partner in education,

Jeanette Nowak

Updated June 2022

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January Outline

Standards covered during January:

- [M.EE.6.EE.3](#) - Apply the properties of addition to identify equivalent numerical expressions.
- [M.EE.6.EE.5-7](#) - Match an equation to a real-world problem in which variables are used to represent numbers.
- [M.EE.7.EE.1](#) - Use the properties of operations as strategies to demonstrate that expressions are equivalent.
- [M.EE.8.EE.7](#) - Solve simple algebraic equations with one variable using addition and subtraction.

According to the Dynamic Learning Maps (DLM) website, these are the commonly tested standards that are used for the DLM assessment.

How to Access Math Instruction and Materials from Unique

1. <https://www.n2y.com/unique-learning-system/>
2. Log in using the provided username and password you received
3. Click on Unique Learning System
4. Click on the three lines →
5. Select Monthly Lessons/Unit Lessons
6. Select Math
 - a. When selecting materials, select PDF icon to save and print



Understanding Differentiated Levels in Unique

- Level 3 Learners – can read text and can participate more independently in the lesson (Independent)
- Level 2 Learners- require pictorial support and require mild to moderate support to participate in the lesson (Supported)
- Level 1 Learners- require extensive supports to participate in the lesson (Participatory).

Measuring Success by the Essential Elements Standards

Students who take DLM assessments are instructed and assessed on *Essential Elements*. Essential Elements are grade-specific expectations about what students with the most significant cognitive disabilities should know and be able to do. The Essential Elements relate to college and career readiness standards for students in the general population.

January Math Pacing Guide 6th Grade

[M.EE.6.EE.3](#) - Apply the properties of addition to identify equivalent numerical expressions.

Learning Goal:

- Level 2-3 – Evaluate if equations are true or false.
- Level 1 – Students combine and compare sets.

Essential Questions:

- Do the two sides of this problem have equal value?
- Is this expression true (equal) or false (not equal)?

Vocabulary:

- **Expression** – Numbers, symbols and operators (such as + and \times) grouped together that show the value of something.
- **Equal** – Exactly the same amount or value.
- **Commutative** – When adding two numbers, the order in which you add them does not matter as the sum will stay the same.
- **Associative** – When there are only addition operations within a number sentence, the grouping of the numbers will not matter and the sum will stay the same.



Mini-Map for M.EE.6.EE.3

Subject: Mathematics

Expressions and Equations (EE)

Grade: 6

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.6.EE.3 Apply the properties of addition to identify equivalent numerical expressions.	M.6.EE.3 Apply the properties of operations to generate equivalent expressions.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Combine two or more sets of objects to form a new set. Compare two or more sets containing objects to communicate whether a set has the same, different, or an equal number of objects than the other set.	Represent addition or subtraction word problems or models with equations (e.g., 8 marbles + 3 marbles = 11 marbles). Recognize that the unknown quantity in an equation is represented using a symbol or letter (e.g., $5 + b = 8$).	Apply commutative (e.g., $3 + 4 = 4 + 3$) and associative [e.g., $2 + (3 + 5) = (2 + 3) + 5$] properties of addition to add two or more numbers. Evaluate an equation to be true or false by determining whether the numerical value on both sides of an equation is the same or different (e.g., analyze whether $5 + 7 = 8 + 4$).	Create equivalent expressions by applying commutative and associative properties of addition (e.g., the expression $5 + 8$ is equal to $8 + 5$ due to the commutative property of addition).	Recognize or generate an equivalent expression involving addition or subtraction operations using commutative and associative properties of addition and multiplication [e.g., recognize that the expression $(8 + 6) \times 5$ is equivalent to $5 \times (6 + 8)$].

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Understanding how to evaluate equations and using the properties of addition to create equivalent expressions requires a student to be able to recognize that two or more sets or groups of items exist. Work on this skill using a variety of sets. Help students recognize when items are grouped together into a set or separated out. The educator presents a set, labels it (e.g., two balls, one marker, three CDs), counts the items, labels it again, and encourages students to use numbers to label and count the separate sets. Then, combine the sets, give it a new label, and count the set.

NOTE: Educators can work on the Initial Precursor level using the sets of numbers that students working at the Target level are adding and subtracting.

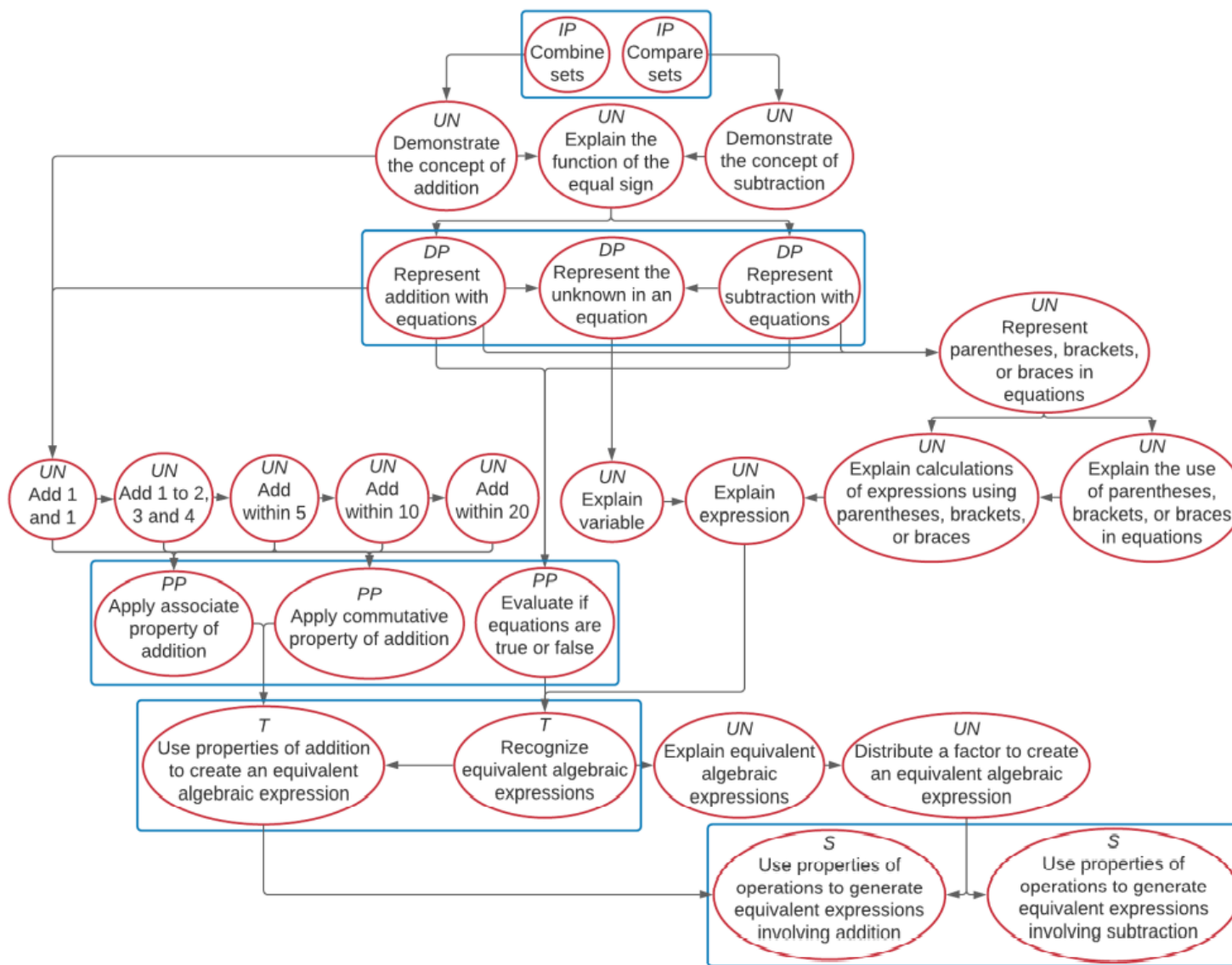
How is the Distal Precursor related to the Target?

As students begin to understand labeling and counting small sets, they begin to use the number sequence and become more adept at tracking individual objects. Work on this skill using a variety of sets, labeling and counting the sets, and moving items in and out of the sets, labeling and counting the set again. Additionally, the educators will pair those sets with the symbolic representations for addition and subtraction (e.g., $3 + 2 = ?$, $3 - 2 = ?$).

NOTE: Educators can work on the Distal Precursor level using the sets of numbers that students working at the Target level are adding and subtracting.

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M.EE.6.EE.3 Apply the properties of addition to identify equivalent numerical expressions.



Rubric of Student Success

[M.EE.6.EE.3](#) - Apply the properties of addition to identify equivalent numerical expressions.

Level 3 Students will... Successor and Target Students will...	Level 2 Students will... Proximal Precursor and Distal Precursor Students will...	Level 1 Students will... Initial Precursor Students will...
<p>Level 3</p> <ul style="list-style-type: none"> Evaluate if equations are true or false. 	<p>Level 2</p> <ul style="list-style-type: none"> Evaluate if equations are true or false. 	<p>Level 1</p> <ul style="list-style-type: none"> Students combine and compare sets.
<p>Successor</p> <ul style="list-style-type: none"> Use properties of operations to generate equivalent expressions involving subtraction Use properties of operations to generate equivalent expressions involving addition <p>Target</p> <ul style="list-style-type: none"> Use properties of addition to create an equivalent algebraic expression Recognize equivalent algebraic expressions 	<p>Proximal Precursor</p> <ul style="list-style-type: none"> Apply associate property of addition Apply commutative property of addition Evaluate if equations are true or false <p>Distal Precursor</p> <ul style="list-style-type: none"> Represent addition with equations Represent the unknown in an equation Represent subtraction with equations 	<p>Initial Precursor</p> <ul style="list-style-type: none"> Combine sets Compare sets

Instructional Ideas

[M.EE.6.EE.3](#) - Apply the properties of addition to identify equivalent numerical expressions.

Number sentences and equations show a relationship and can be written in different ways.

The big idea is that a number expression is a math problem that uses numbers and letters to represent variables and an equals sign to show that two quantities have equal value.

- Introduce by asking the essential questions.
- Recognize equivalent algebraic expressions.
- Represent the unknown in the equation.
- Use properties of operation to generate equivalent expressions involving addition, subtraction, multiplication, or division.
- Identify equivalent number sentences.
- Use symbols for equal and not equal.
- Might have to make up your own worksheets but can use the ones provided as inspiration.
- Use manipulatives as needed.
- Students may use a calculator if needed.
- Provide students with their own number line and anchor chart.
- Included worksheets are examples of what to look for when finding additional materials that best fits your student's needs.

Additional Instructional Ideas

- Go to website for additional instructional resources, materials, and activities for lessons:
 - <https://www.msnowakhomeroom.com/3b-equations.html>

+ Basic Properties of Numbers		
Property	Explanation	Addition
Commutative	Order doesn't matter	$a + b = b + a$ ex: $1 + 2 = 2 + 1$ $3 = 3$
Associative	Grouping doesn't matter	$(a + b) + c = a + (b + c)$ ex: $(2 + 3) + 4 = 2 + (3 + 4)$ $5 + 4 = 2 + 7$ $9 = 9$

Jeanette Now

+	Basic Properties of Numbers			
Commutative Property of Addition				
Order doesn't matter		$a + b = b + a$ ex: $1 + 2 = 2 + 1$ $3 = 3$		
a	+	b	=	a
	+		=	
Is the equation true?				
			Yes	No

+	Basic Properties of Numbers			
Associative Property of Addition				
Grouping doesn't matter		$(a + b) + c = a + (b + c)$ ex: $(2 + 3) + 4 = 2 + (3 + 4)$ $5 + 4 = 2 + 7$ $9 = 9$		
(a	+	b)
	+		+	
Is the equation true?				
			Yes	No



Clues Guide 3
Write and Solve Addition Equations 1

+	Write an addition equation when you see these words: How many <i>altogether</i>?		
<p>A and B are known numbers. C is the unknown answer to your problem. Use this model to write your equation.</p>			
A	+	B	= C
<p>Follow these steps to solve the equation for C.</p> <p>1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.</p>			
A	+	B	= C
	+		= C
<p>2. Add the numbers for A and B</p>			
A + B		=	C
		=	C
<p>3. C = how many altogether?</p>			
<p>4. Check your work. Fill in the numbers for A, B and C. Solve.</p>			
A	+	B	= C
	+		=
			=
Is the equation true?			Yes No
<p>5. If the equation is true, then your answer for C is correct.</p>			



Clues Guide 4
Write and Solve Addition Equations 2

+	Write an addition equation when you see these words: How many altogether?				
<p>B and C are known numbers. A is the unknown answer to your problem. Use this model to write your equation.</p>					
A	+	B	=	C	
<p>Follow these steps to solve the equation for A.</p> <p>1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.</p>					
A	+	B	=	C	
A	+		=		
<p>2. Subtract the number for B from both sides of the equal sign.</p>					
A	+	B	-	=	C
A	+		-	=	-
<p>3. Write the difference in each space below.</p>					
A	+		=		
<p>4. B - B = 0. 0 = nothing. Remove it. Rewrite the variable, A and difference for C - B.</p>					
A			=		
<p>5. A = the answer to the problem.</p>					
<p>6. Check your work. Fill in the numbers for A, B and C in the equation. Solve.</p>					
A	+	B	=	C	
	+		=		
			=		
<p>Is the equation true?</p>					
				Yes	No
<p>7. If the equation is true, then your answer for A is correct.</p>					



Name: _____

+		Write an addition equation when you see these words: <i>How many altogether?</i>				
A and C are known numbers. B is the unknown answer to your problem. Use this model to write your equation.		A	+	B	=	C
Follow these steps to solve the equation for B.						
1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.						
A	+	B	=	C		
	+	B	=			
2. Subtract the number for A from both sides of the equal sign.						
A	-	A	+	B	=	C - A
	-		+	B	=	-
3. Write the difference in each space below.						
	+	B	=			
4. A - A = 0 . 0 = nothing. Remove it. Rewrite the variable, B and difference for C - A .						
		B	=			
5. B = the answer to the problem.						
6. Check your work. Fill in the numbers for A , B and C in the equation. Solve.						
A	+	B	=	C		
	+		=			
			=			
Is the equation true?					Yes	No
7. If the equation is true, then your answer for B is correct.						

Name: _____

Addition Properties

Commutative Property of Addition

We can add numbers in any order. Changing the order of the addends doesn't change the sum.

Example: $2 + 3 = 3 + 2 = 5$

Associative Property

We can group numbers in different ways. No matter how you group the addends, the sum stays the same.

Example: $(7 + 6) + 4 = 7 + (6 + 4) = 17$

Identity Property

When we add zero to a number, the sum is the same number.

Example: $8 + 0 = 8$

Inverse Property

When we add a number to its negative, the sum is always zero.

Example: $15 + (-15) = 0$

Name : _____

Commutative Property of Addition

Sheet 1

A) Fill in the missing numbers using the commutative property of addition.

1) $5 + 6 = \underline{\quad} + 5$ 2) $10 + 9 = 9 + \underline{\quad}$

3) $3 + 2 = 2 + \underline{\quad}$ 4) $7 + 1 = \underline{\quad} + 7$

5) $1 + 9 = \underline{\quad} + 1$ 6) $4 + 8 = 8 + \underline{\quad}$

B) 1) Which of the following represents the commutative property of addition?

a) $9 + 7 = 7 + 9$ b) $5 + 1 = 4 + 2$ c) $8 + 3 = 6 + 5$

2) Which of the following does not represent the commutative property of addition?

a) $8 + 6 = 6 + 8$ b) $10 + 2 = 10 + 2$ c) $4 + 5 = 5 + 4$

C) 1) If $6 + 4 = 10$, then $4 + 6 = \underline{\quad}$.

2) If $8 + 1 = 9$, then $1 + 8 = \underline{\quad}$.

Associative Property of Addition

A) Fill in the missing numbers using the associative property of addition.

1) $(2 + 8) + 10 = 2 + (\underline{\quad} + 10)$ 2) $3 + (1 + 2) = (\underline{\quad} + 1) + 2$

3) $(1 + 3) + 9 = 1 + (3 + \underline{\quad})$ 4) $(10 + 5) + 1 = \underline{\quad} + (5 + 1)$

5) $2 + (4 + 5) = (2 + \underline{\quad}) + 5$ 6) $7 + (6 + 1) = (7 + 6) + \underline{\quad}$

B) 1) If $6 + (8 + 4) = 18$, then $(6 + 8) + 4 = \underline{\quad}$.

2) If $(10 + 4) + 5 = 19$, then $10 + (4 + 5) = \underline{\quad}$.

C) Complete the addition equation that represent the associative property.

1) $(3 + 4) + 5 = \underline{\quad} + 5 = \underline{\quad}$

$3 + (4 + 5) = 3 + \underline{\quad} = \underline{\quad}$

2) $1 + (2 + 6) = 1 + \underline{\quad} = \underline{\quad}$

$(1 + 2) + 6 = \underline{\quad} + 6 = \underline{\quad}$

Matching Equivalent Addition and Subtraction Number Sentences

I can correctly match equivalent addition and subtraction number sentences. (ACMNA054)



Draw a line to correctly connect the equivalent addition and subtraction number sentences.

$9 - 3$

$10 - 6$

$16 - 6$

$9 - 2$

$7 - 2$

$7 - 1$

$20 - 3$

$15 - 3$

$8 - 2$

$7 - 3$

$3 + 7$

$2 + 4$

$3 + 2$

$12 + 5$

$3 + 3$

$5 + 2$

$2 + 2$

$3 + 1$

$4 + 2$

$1 + 11$

Balancing Equations: Addition to 10

Aim: I can balance equations.

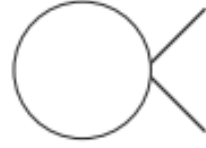
Both sides of an equals sign should make the same total.

Work out the answer to the calculation on the left-hand side and write this in both circles.

Find the missing number on the right, so the calculation makes the number in the circle.



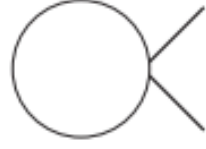
1. $4 + 6 = 7 + \underline{\quad}$



2. $9 + \underline{\quad} = 1 + 9$



3. $1 + 4 = \underline{\quad} + 2$



4. $\underline{\quad} + 7 = 2 + 8$

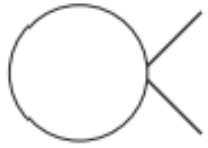


5. $10 + \underline{\quad} = 3 + 7$



6. $7 + 2 = \underline{\quad} + 9$

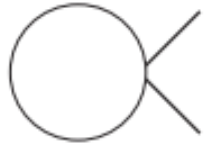
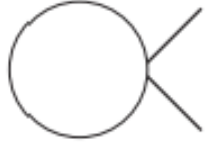
Balancing Equations: Addition to 10



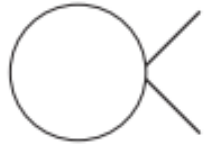
7. $4 + 3 = 6 + \underline{\quad}$



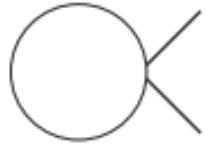
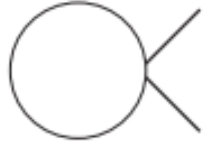
8. $\underline{\quad} + 5 = 0 + 7$



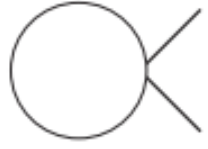
9. $6 + 2 = 4 + \underline{\quad}$



10. $9 + 1 = \underline{\quad} + 2$



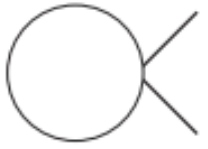
11. $3 + 6 = 2 + \underline{\quad}$



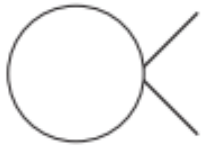
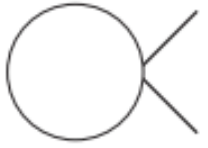
12. $1 + \underline{\quad} = 2 + 2$



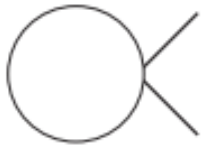
13. $3 + 4 = \underline{\quad} + 0$



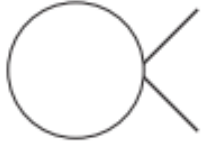
14. $\underline{\quad} + 8 = 6 + 4$



15. $6 + \underline{\quad} = 5 + 1$



16. $6 + 4 = \underline{\quad} + 7$



Balancing Equations: Addition to 20

Aim: I can balance equations.

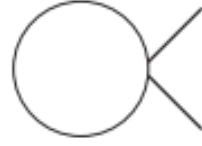
Both sides of an equals sign should make the same total.

Work out the answer to the calculation on the left-hand side and write this in both circles.

Find the missing number on the right, so the calculation makes the number in the circle.



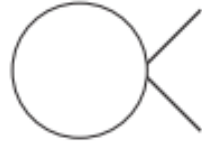
1. $18 + 2 = 19 + \underline{\quad}$



2. $8 + \underline{\quad} = 6 + 6$



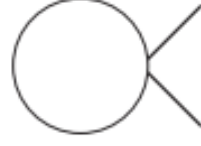
3. $17 + 1 = \underline{\quad} + 15$



4. $\underline{\quad} + 6 = 1 + 9$



5. $14 + \underline{\quad} = 7 + 10$



6. $7 + 6 = \underline{\quad} + 5$

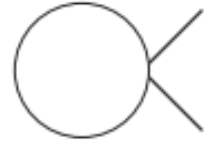
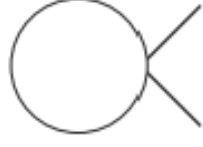
Balancing Equations: Addition to 20



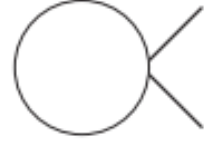
7. $13 + 6 = 17 + \underline{\quad}$



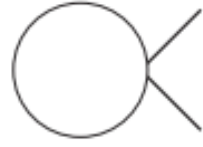
8. $\underline{\quad} + 6 = 2 + 5$



9. $9 + 5 = 6 + \underline{\quad}$



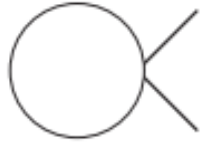
10. $5 + 15 = \underline{\quad} + 8$



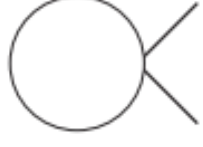
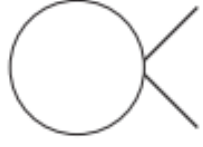
11. $11 + 9 = 10 + \underline{\quad}$



12. $9 + \underline{\quad} = 7 + 11$



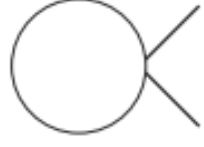
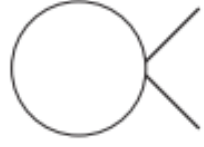
13. $12 + 6 = \underline{\quad} + 17$



14. $\underline{\quad} + 3 = 7 + 9$

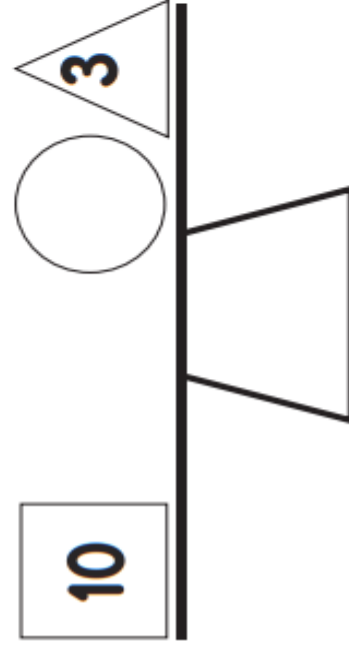
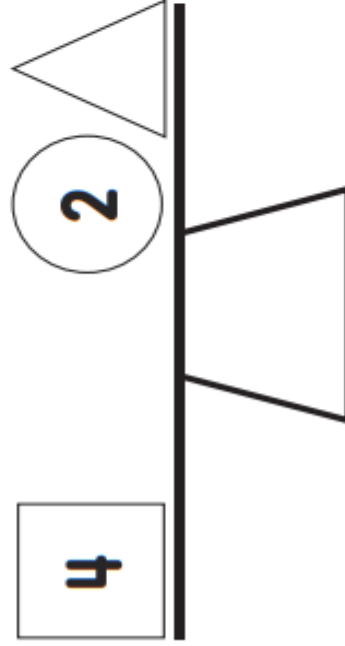
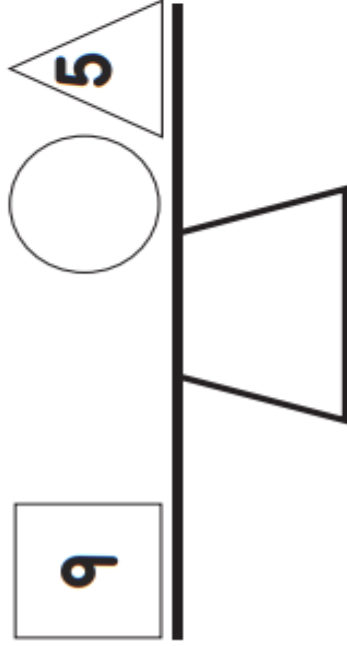
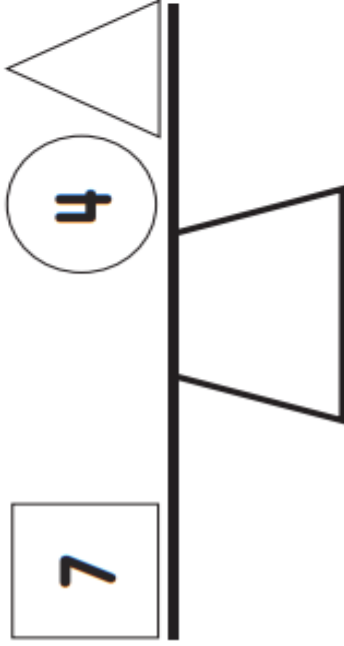


15. $5 + \underline{\quad} = 2 + 9$



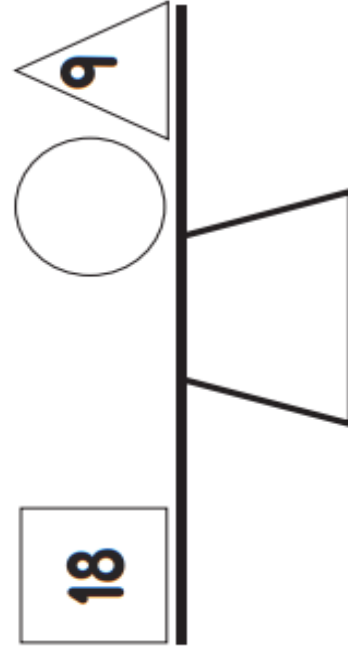
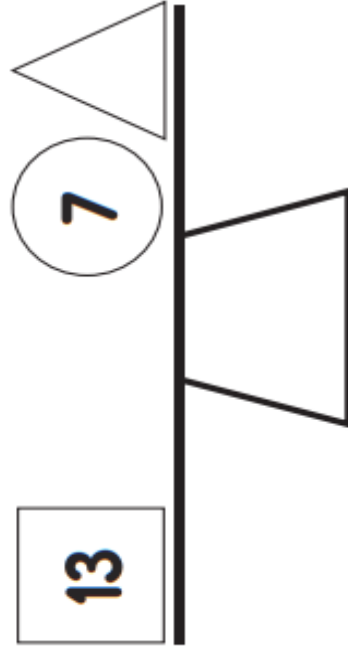
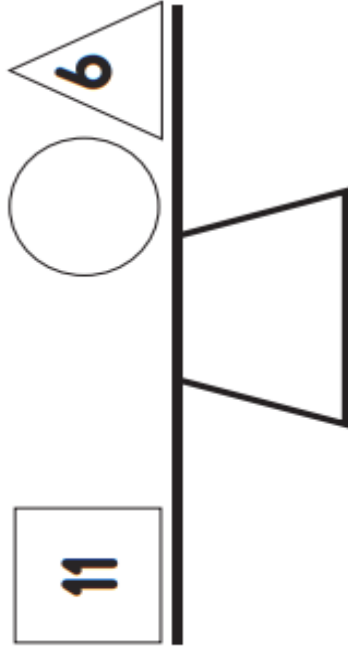
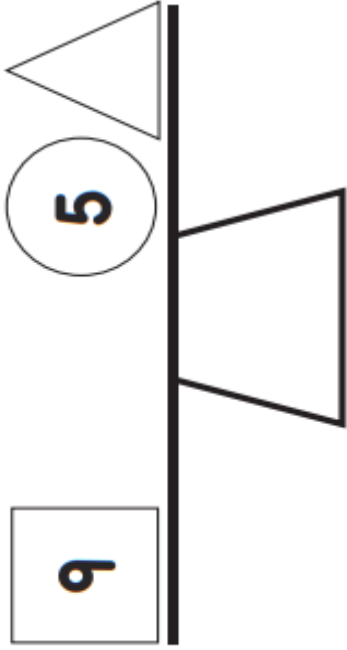
16. $4 + 9 = \underline{\quad} + 12$

Balance the Scales - Up to 10



A large rectangular box containing four simple balance scale diagrams. Each diagram has an equals sign (=) above the beam. The first has a triangle on the left and a blank line on the right. The second has a circle on the left and a blank line on the right. The third has a triangle on the left and a blank line on the right. The fourth has a circle on the left and a blank line on the right.

Balance the Scales - Up to 20



Finding Unknown Quantities in Balanced Number Sentences

1. When a number is added to 10, the answer is the same as 19 minus 6.

10	+	3	=	19	-	6
----	---	---	---	----	---	---

2. When a number is added to 16, the answer is the same as 8 plus 26.

	+		=		+	
--	---	--	---	--	---	--

3. When a number is added to 19, the answer is the same as 82 minus 36.

	+		=		-	
--	---	--	---	--	---	--

4. When a number is subtracted from 91, the answer is the same as 12 plus 6.

	-		=		+	
--	---	--	---	--	---	--

5. When a number is subtracted from 88, the answer is the same as 65 plus 9.

	-		=		+	
--	---	--	---	--	---	--

6. When a number is subtracted from 72, the answer is the same as 59 minus 33.

	-		=		-	
--	---	--	---	--	---	--

7. When a number is added to 61, the answer is the same as 12 plus 74.

	+		=		+	
--	---	--	---	--	---	--



True or False Subtraction Worksheet

Name _____

Look at the equations. Write the answer for each subtraction and find out if the equations are true or false. Check the correct square box for each equation.

$13 - 3 = 18 - 9$

 true false

$15 - 6 = 10 - 1$

 true false

$19 - 4 = 16 - 2$

 true false

$16 - 8 = 12 - 4$

 true false

$12 - 7 = 10 - 5$

 true false

$14 - 3 = 13 - 2$

 true false

$17 - 8 = 11 - 3$

 true false

$18 - 5 = 15 - 2$

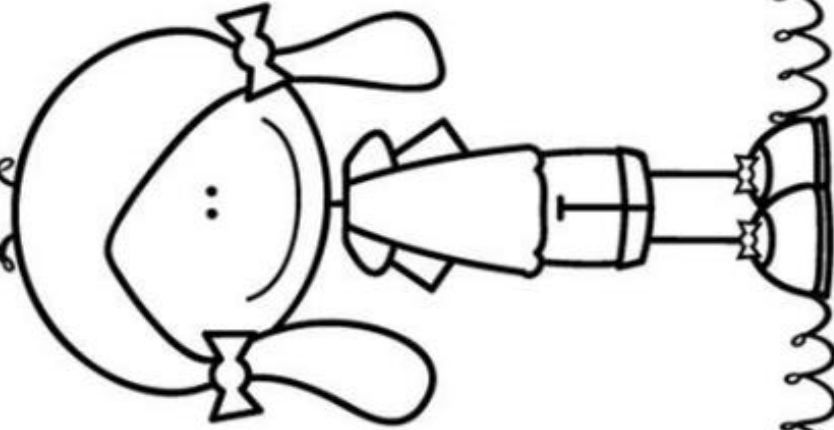
 true false

Name: _____

True/False Subtraction

True

False



© My Teaching Pal



$5-1=3$

$5-3=2$

$4-1=2$

$8-3=4$

$7-6=1$

$6-4=1$

$7-4=4$

$6-3=3$

$4-2=2$

$5-2=3$

Name: _____

True or False Addition

Directions: Read the addition equations below. Are they true? Are both sides of the equal sign the same? Fill in the bubbles that show the true equations.

<p><input checked="" type="radio"/> A $2 + 4 = 4 + 2$</p> <p><input type="radio"/> B $4 + 3 = 4 + 4$</p> <p>Sample</p>	<p><input type="radio"/> A $5 + 3 + 1 = 4 + 5$</p> <p><input type="radio"/> B $4 + 4 + 2 = 8 + 1 + 2$</p> <p>1.</p>
<p><input type="radio"/> A $5 + 5 = 2 + 2 + 3$</p> <p><input type="radio"/> B $3 + 1 = 2 + 2$</p> <p>2.</p>	<p><input type="radio"/> A $2 + 6 = 4 + 5$</p> <p><input type="radio"/> B $6 + 4 + 1 = 7 + 1 + 3$</p> <p>3.</p>
<p><input type="radio"/> A $3 + 3 + 2 = 4 + 4$</p> <p><input type="radio"/> B $3 + 3 + 3 = 4 + 4$</p> <p>4.</p>	<p><input type="radio"/> A $8 + 5 = 10 + 3$</p> <p><input type="radio"/> B $12 + 5 = 10 + 3$</p> <p>5.</p>
<p><input type="radio"/> A $9 + 3 = 3 + 9$</p> <p><input type="radio"/> B $9 + 12 = 8 + 4$</p> <p>6.</p>	<p><input type="radio"/> A $3 + 4 = 5 + 2$</p> <p><input type="radio"/> B $9 + 3 = 11 + 2$</p> <p>7.</p>
<p><input type="radio"/> A $8 + 4 = 2 + 5$</p> <p><input type="radio"/> B $17 + 5 = 5 + 17$</p> <p>8.</p>	<p><input type="radio"/> A $2 + 7 = 8 + 1$</p> <p><input type="radio"/> B $12 + 4 = 2 + 4$</p> <p>9.</p>

January Math Pacing Guide 6th Grade

[M.EE.6.EE.5-7](#) - Match an equation to a real-world problem in which variables are used to represent numbers.

Learning Goal:

- Level 2-3 – Students will represent real-world problems as equations.
- Level 1 – Students will combine and partition sets.

Essential Questions:

- What operation is needed in this problem?
- What are the known quantities and the unknown variable in the problem?
- What does the variable represent?
- Which equations matches this problem?

Vocabulary:

- **Quantity** – How much there is of something.
- **Variable** – A symbol for a value we don't know yet. It is usually a letter like x or y.
- **Operation** – A mathematical process with the most common as add, subtract, multiply, and divide (+, -, x, /).



Mini-Map for M.EE.6.EE.5-7

Subject: Mathematics

Expressions and Equations (EE)

Grade: 6

Learning Outcome

DLM Essential Element	Grade-Level Standard
<p>M.EE.6.EE.5-7 Match an equation to a real-world problem in which variables are used to represent numbers.</p>	<p>M.6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p>M.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p> <p>M.6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.</p>

Linkage Level Description

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Combine two sets of objects to form a new set. Divide objects in a set into two or more subsets.	Represent addition or subtraction word problems or models with equations (e.g., representing 6 marbles plus 2 marbles equal 8 marbles as $6 + 2 = 8$ marbles).	Represent expressions using variables and numbers (e.g., express subtract k from 12 as $12 - k$). Recognize that the unknown quantity in an equation is represented using a symbol or letter (e.g., $5 + b = 8$).	Represent a given real-world problem (e.g., Joe has 6 markers. Joe has some crayons. Joe has a total of 10 art supplies. How many crayons does Joe have?) with a mathematical equation (e.g., $6 + x = 10$).	Solve real-world problems with non-negative rational numbers by representing the situation with a mathematical equation (e.g., Mark has 3.5

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
				inches of string. Mark gets 1 more inch of string. Which equation shows how much string Mark has all together? $3.5 + 1 = x$).

Jeanette Nowak @ msnowakhomes

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

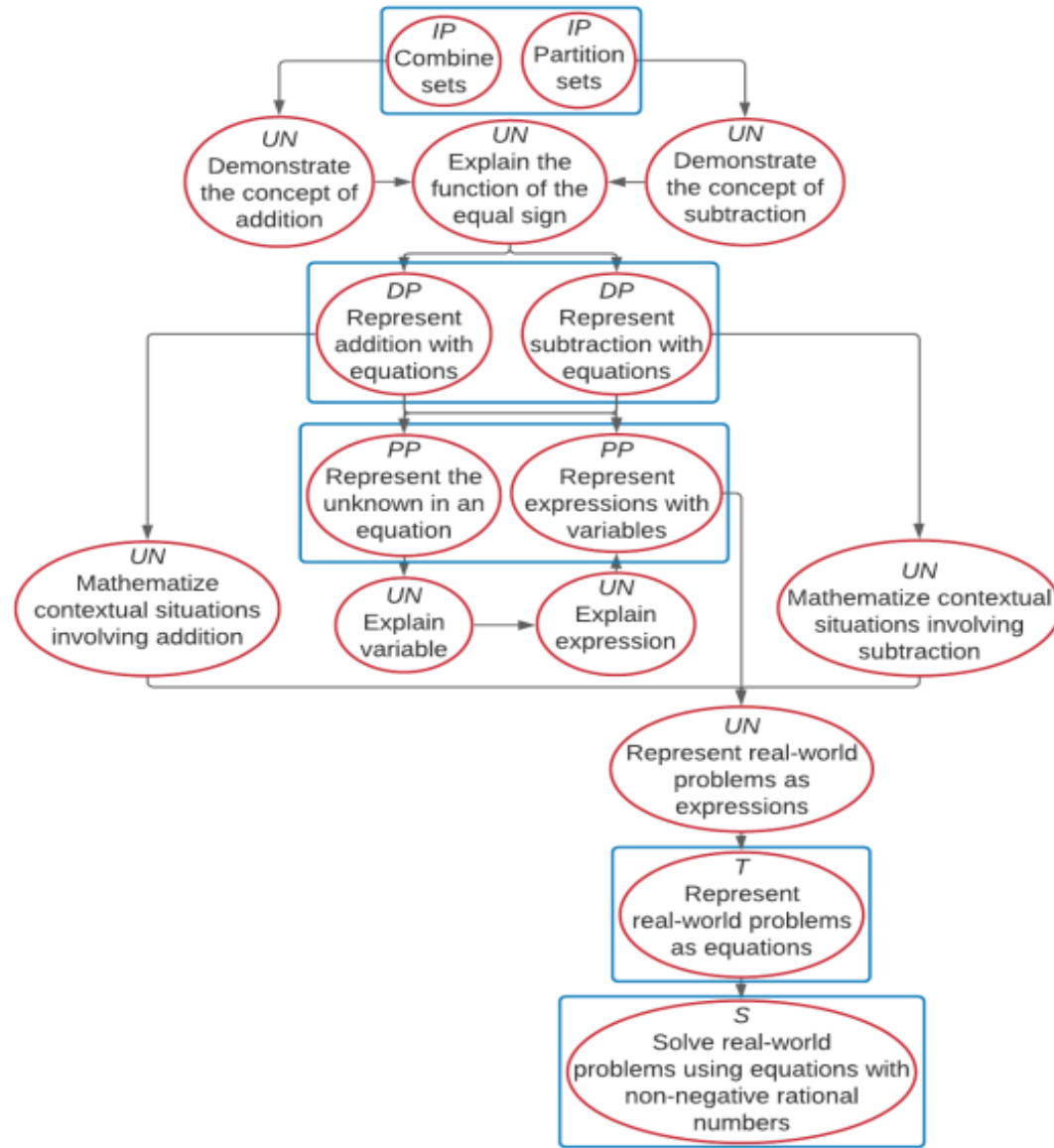
The knowledge needed to solve addition and subtraction real-world problems links back to an understanding of how to create sets, but it also requires learning to manipulate sets (i.e., combining and separating or partitioning). Provide students many opportunities to take a set of objects (e.g., tiles, linking cubes, buttons) and separate them based on a given characteristic (e.g., shape, color, size) into two distinct sets, and separate them again based on another characteristic. Guide students to notice how the set size changes each time the educator combines or partitions the sets.

How is the Distal Precursor related to the Target?

As student understanding of combining and partitioning sets increases, educators should take care to use the words “addition” and “subtraction” while defining and demonstrating their meanings and as students combine and partition sets. While students do not need to say the words, they do need to learn the meanings. Educators provide lessons that help students represent addition and subtraction in multiple ways (e.g., using objects, fingers, drawings, sounds, acting out situations, and writing equations).

Jeanette Nowak @ msnow

M.EE.6.EE.5-7 Match an equation to a real-world problem in which variables are used to represent numbers.



Map Key	
IP	Initial Precursor
DP	Distal Precursor
PP	Proximal Precursor
T	Target
S	Successor
UN	Untested
Boxes indicate tested nodes	

Rubric of Student Success

[M.EE.6.EE.5-7](#) - Match an equation to a real-world problem in which variables are used to represent numbers.

<p>Level 3 Students will...</p> <p>Successor and Target Students will...</p>	<p>Level 2 Students will...</p> <p>Proximal Precursor and Distal Precursor Students will...</p>	<p>Level 1 Students will...</p> <p>Initial Precursor Students will...</p>
<p>Level 3</p> <ul style="list-style-type: none"> Students will represent real-world problems as equations. 	<p>Level 2</p> <ul style="list-style-type: none"> Students will represent real-world problems as equations. 	<p>Level 1</p> <ul style="list-style-type: none"> Students will combine and partition sets.
<p>Successor</p> <ul style="list-style-type: none"> Solve real-world problems using equations with non-negative rational numbers <p>Target</p> <ul style="list-style-type: none"> Represent real-world problems as equations 	<p>Proximal Precursor</p> <ul style="list-style-type: none"> Represent the unknown in an equation Represent expressions with variables <p>Distal Precursor</p> <ul style="list-style-type: none"> Represent addition with equations Represent subtractions with equations 	<p>Initial Precursor</p> <ul style="list-style-type: none"> Combine sets Partition sets

Instructional Ideas

[M.EE.6.EE.5-7](#) - Match an equation to a real-world problem in which variables are used to represent numbers.

Mathematical situations and structures can be translated and represented abstractly using variables, expressions, and equations.

The big idea is that letters are used in mathematics to represent generalized properties, unknowns in equations, and relationships between quantities.

- Introduce by asking the essential questions.
- Identify what operation is needed in the real-world problem.
- Identify the known quantities and the unknown variable.
- Identify the structure of the equation.
- Match an equation to a real-world problem.
- Use manipulatives as needed.
- Students may use a calculator if needed.
- Included worksheets are examples of what to look for when finding additional materials that best fits your student's needs.

Additional Instructional Ideas

- Go to website for additional instructional resources, materials, and activities for lessons:

Solving Linear Equations With an Unknown on One Side

Your goal is to get the variable on one side of the equals sign and the numbers (constants) on the other. You are only able to cancel one term or number at a time and you must use its inverse when canceling.

$$a + 4 = 12$$

Solving Linear Equations With an Unknown on One Side

Your goal is to get the variable on one side of the equals sign and the numbers (constants) on the other. You are only able to cancel one term or number at a time and you must use its inverse when canceling.

$$a + 4 = 12$$

$$- 4 = -4$$

$$a = 8$$

Numerical Expressions Matching Game

Arthur saw three times as many red birds as blue birds (b).

How many red birds did he see?

twinkl.com

Kamal ran half as many miles on Tuesday as Monday (m).

How many miles did he run on Tuesday?

twinkl.com

Salim read 15 pages of a book each day for (p) days.

How many pages did she read in total?

twinkl.com

Javonte and Lola shared (q) candies equally.

How many did they get each?

twinkl.com

Leila painted 6 pictures. Each one took her (t) minutes to paint.

How long did she paint for?

twinkl.com

Min practiced piano for 45 minutes on Monday. She practiced (r) minutes longer on Tuesday.

How many minutes was this?

twinkl.com

Judith baked 4 pies and gave away (p) pies.

How many were left?

twinkl.com

Yasir did his homework yesterday for (y) minutes. It will take him twice as long to finish it tonight.

How long is that?

twinkl.com

Luca had 45 crayons and split them into (n) equal groups.

How many were in each group?

twinkl.com

Rida bought 4 packs of highlighters with (h) highlighters in each pack.

How many altogether?

twinkl.com

Numerical Expressions Matching Game

$$45 + n$$

$$4 \times h$$

$$4 - p$$

$$y \times 2$$

$$45 + r$$

$$6 \times t$$

$$m + 2$$

$$q + 2$$

$$3 \times b$$

$$15 \times p$$

Numerical Expressions Matching Game Answers

1. Arthur saw three times as many red birds as blue birds (b). Hows many red birds did he see?
 $3 \times b$
2. Kamal ran half as many miles on Tuesday as Monday (m). How many miles did he run on Tuesday?
 $m \div 2$
3. Min practiced piano for 45 minutes on Monday. She practiced (r) minutes longer on Tuesday. How many minutes was this?
 $45 + r$
4. Judith baked 4 pies and gave away (p) pies. How many were left?
 $4 - p$
5. Luca had 45 crayons and split them into (n) equal groups. How many were in each group?
 $45 \div n$
6. Rida bought 4 packs of highlighters with (h) highlighters in each pack. How many altogether?
 $4 \times h$
7. Yasir did his homework yesterday for (y) minutes. It will take him twice as long to finish it tonight. How long is that?
 $y \times 2$
8. Leila painted 6 pictures. Each one took her (t) minutes to paint. How long did she paint for?
 $6 \times t$
9. Javonte and Lola shared (q) candies equally. How many did they get each?
 $q \div 2$
10. Salim read 15 pages of a book each day for (p) days. How many pages did she read in total?
 $15 \times p$

One-Step Equations - Integers

Add/Sub: 51

- 1) Natalie buys organic almonds priced at \$77 from the grocery store. How much did she pay the cashier, if she received \$23 in change?

- 2) Lara and Mae participated in a quiz contest. They scored 23 points in all. If Lara scored 9 points, how many points did Mae score?

- 3) John was gifted a pack of crayons. He gave 13 crayons to his friend Rhea and was left with 11 crayons. How many crayons did the pack contain?

- 4) Smith and his friends are gaming online on a popular website. An hour later, 6 friends go offline. Five of them continue playing. How many of them were gaming online initially?

- 5) Trevor takes up a test at school and completes it in an hour. The test has two sections. If he takes 35 minutes to complete the first section, how much time does he have left to complete the second section?

One-Step Equations - Integers

Add/Sub: S1

- 1) Natalie buys organic almonds priced at \$77 from the grocery store. How much did she pay the cashier, if she received \$23 in change?

 $x - 77 = 23 ; \$100$

- 2) Lara and Mae participated in a quiz contest. They scored 23 points in all. If Lara scored 9 points, how many points did Mae score?

 $x + 9 = 23 ; 14 \text{ points}$

- 3) John was gifted a pack of crayons. He gave 13 crayons to his friend Rhea and was left with 11 crayons. How many crayons did the pack contain?

 $x - 13 = 11 ; 24 \text{ crayons}$

- 4) Smith and his friends are gaming online on a popular website. An hour later, 6 friends go offline. Five of them continue playing. How many of them were gaming online initially?

 $x - 6 = 5 ; 11 \text{ persons}$

- 5) Trevor takes up a test at school and completes it in an hour. The test has two sections. If he takes 35 minutes to complete the first section, how much time does he have left to complete the second section?

 $x + 35 = 60 ; 25 \text{ minutes}$

n =

5

Keisha fills 5 water bottles.



n

Randy fills n water bottles.

9

They fill 9 water bottles altogether.

Write an equation.

Solve for n to find out how many water bottles Randy fills.

	+	n	=	
<u> </u>	+	<u> </u>	=	<u> </u>
<u> </u>	+	n	=	<u> </u>
<u> </u>	+	<u> </u>	=	<u> </u>
<u> </u>	+	<u> </u>	=	<u> </u>
		n	=	<u> </u>

Since n = , Randy fills water bottles.

n =

4 Raj stacks 4 fishing poles.



n Mary Beth stacks n fishing poles.

12 They stack 12 fishing poles altogether.

Write an equation.

Solve for n to find out how many fishing poles Mary Beth stacks.

	+	n	=	
<u> </u>	+	<u> </u>	=	<u> </u>
<u> </u>	+	n	=	<u> </u>
<u> </u>	+	<u> </u>	=	<u> </u>
<u> </u>	+	<u> </u>	=	<u> </u>
		n	=	<u> </u>

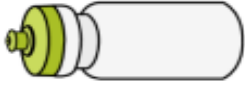
Since $n =$, Mary Beth stacks fishing poles.





use manipulatives
or calculator to solve

$$A + B = C$$

Mario and Raj are filling water bottles for camp.



A  Mario fills A water bottles.

B  Raj fills 9 water bottles.

C  They fill 15 water bottles altogether.
How many water bottles does Mario fill?

Write the equation.

A	+	B	=	C
_____	+	_____	=	_____

Solve the equation for A.

A	+	B	-	B	=	C	-	B
A	+	_____	-	9	=	_____	-	9
A	+	_____		0	=	_____		_____
A		_____			=	_____		_____

Check your work. Fill in the number for A. Solve.

A	+	B	=	C
_____	+	9	=	15
_____		_____	=	_____

Is the equation true?

Yes No

Since A = _____, Mario fills _____ water bottles.


$$A + B = C$$

 use manipulatives
or calculator to solve

Mary Beth and Keisha are hanging up fishing poles at the boathouse.



A  Mary Beth hangs up A fishing poles.

B  Keisha hangs up 23 fishing poles.

C  They hang up 35 fishing poles altogether.
How many fishing poles does Mary Beth hang up?

Write the equation.

A	+	B	=	C
_____	+	_____	=	_____

Solve the equation for A.

A	+	B	-	B	=	C	-	B
_____	+	_____	-	_____	=	_____	-	_____
_____	+	_____		_____	=	_____		_____
_____				_____	=	_____		_____

Check your work. Fill in the numbers for A, B and C. Solve.

A	+	B	=	C
_____	+	_____	=	_____
_____		_____	=	_____

Is the equation true?

Yes No

Since A = _____, Mary Beth hangs up _____ fishing poles.

+	Write an addition equation when you see these words: How many altogether?		
<p>B and C are known numbers. A is the unknown answer to your problem. Use this model to write your equation.</p>			
A	+	B	= C
<p>Follow these steps to solve the equation for A.</p> <p>1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.</p>			
A	+	B	= C
A	+		=
<p>2. Subtract the number for B from both sides of the equal sign.</p>			
A	+	B -	= C - B
A	+	-	=
<p>3. Write the difference in each space below.</p>			
A	+		=
<p>4. B - B = 0. 0 = nothing. Remove it. Rewrite the variable, A and difference for C - B.</p>			
A			=
<p>5. A = the answer to the problem.</p>			
<p>6. Check your work. Fill in the numbers for A, B and C in the equation. Solve.</p>			
A	+	B	= C
	+		=
			=
<p>Is the equation true?</p>			
			Yes
			No
<p>7. If the equation is true, then your answer for A is correct.</p>			

+	Write an addition equation when you see these words: How many altogether?				
A and C are known numbers. B is the unknown answer to your problem. Use this model to write your equation.					
A	+	B	=	C	
Follow these steps to solve the equation for B.					
1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.					
A	+	B	=	C	
	+	B	=		
2. Subtract the number for A from both sides of the equal sign.					
A	-	A	+	B	=
	-		+	B	=
3. Write the difference in each space below.					
	+	B	=		
4. $A - A = 0$. 0 = nothing. Remove it. Rewrite the variable, B and difference for $C - A$.					
		B	=		
5. B = the answer to the problem.					
6. Check your work. Fill in the numbers for A, B and C in the equation. Solve.					
A	+	B	=	C	
	+		=		
			=		
Is the equation true?					
				Yes	No
7. If the equation is true, then your answer for B is correct.					



-	Write a subtraction equation when you see these words: <i>How many are left? How many more than? How many less than?</i>				
B and C are known numbers. A is the unknown answer to your problem. Use this model to write your equation.					
A	-	B	=	C	
Follow these steps to solve the equation for A.					
1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.					
A	-	B	=	C	
A	-		=		
2. Since B is negative, add the number for B to both sides of the equal sign.					
A		+	B	=	C + B
A		+		=	+
3. Write the sum in each space below.					
A				=	
4. -B + B = 0 . 0 = nothing. Remove it. Rewrite only the variable, A and sum for C + B .					
A				=	
5. A = the answer to the problem.					
6. Check your work. Fill in the numbers for A , B and C in the equation. Solve.					
A	-	B	=	C	
	-		=		
			=		
Is the equation true?					
				Yes	No
7. If the equation is true, then your answer for A is correct.					


$$A - B = C$$


use manipulatives or calculator to solve

Mario and Raj are handing out life jackets at camp.



A  Mario hands out A life jackets.

B  Raj hands out 20 life jackets.

C  Mario hands out 12 more life jackets than Raj.
How many life jackets does Mario hand out?

A	-	B	=	C
_____	-	_____	=	_____

Solve the equation for A. Remember that B is negative.

A	-	B	=	C	+	B
A	-	-20	+	=	_____	+ 20
A	-	0	=	_____	_____	_____
A	-	_____	=	_____	_____	_____

Check your work. Fill in the number for A. Solve.

A	-	B	=	C
_____	-	20	=	12
_____	=	_____	=	_____

Is the equation true? Yes No

Since A = _____, Mario hands out _____ life jackets.

A - B = C	use manipulatives or calculator to solve							
Mary Beth and Keisha are looking for fishing poles at camp.								
A Mary Beth finds A fishing poles.								
B Keisha finds 6 fishing poles.								
C Mary Beth finds 3 more fishing poles than Keisha. How many fishing poles does Mary Beth find?								
Write the equation.								
A	B	=	C					
_____	_____	=	_____					
_____	_____	=	_____					
Solve the equation for A. Remember that B is negative.								
A	-B	+	B	=	C	+	B	
_____	=	_____	+	_____	=	_____	+	_____
_____	=	_____	=	_____	=	_____	=	_____
_____	=	_____	=	_____	=	_____	=	_____
Check your work. Fill in the numbers for A, B and C. Solve.								
A	-	B	=	C				
_____	-	_____	=	_____				
_____	-	_____	=	_____				
_____	=	_____	=	_____				
Is the equation true?					Yes	No		
Since A = _____, Mary Beth finds _____ fishing poles.								

January Math Pacing Guide
7th Grade

[M.EE.7.EE.1](#) - Use the properties of operations as strategies to demonstrate that expressions are equivalent.

*** Please refer to the December pacing guide as it has the standard and additional materials.

Jeanette Nowak @msnowakhomeschool.com

January Math Pacing Guide 8th Grade

[M.EE.8.EE.7](#) - Solve simple algebraic equations with one variable using addition and subtraction.

Learning Goal:

- Level 2-3 – Solve linear equations in one variable.
- Level 1 – Combine and partition sets.

Essential Questions:

- What am I trying to figure out in this equation?
- What do I know about the properties of addition and subtraction that can help me solve this problem?

Vocabulary:

- **Variable** – A symbol for a value we don't know yet. It is usually a letter x or y.



Mini-Map for M.EE.8.EE.7
 Subject: Mathematics
 Expressions and Equations (EE)
 Grade: 8

Learning Outcome

DLM Essential Element	Grade-Level Standard
M.EE.8.EE.7 Solve simple algebraic equations with one variable using addition and subtraction.	M.8.EE.7 Solve linear equations in one variable.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target	Successor
Combine two or more sets of objects or numbers to form a new set. Split one set into multiple sets grouped together by similar characteristics.	Demonstrate understanding of addition by combining the objects of two or more sets and demonstrate understanding of subtraction by removing some objects from a larger set.	Determine the unknown/missing addend (e.g., $8 + x = 12$) or sum (e.g., $4 + 6 = x$) when given an equation with addition operation and determine the unknown/missing minuend or subtrahend (e.g., $9 - x = 16$) or the difference (e.g., $13 - 5 = x$) when given an equation with subtraction operation.	Solve linear equations involving addition, subtraction, multiplication, or division operations in one variable (e.g., $8.4 + x = 17.56$).	Solve linear inequalities in one variable (e.g., $6 < 8 + x$).

Initial Precursor and Distal Precursor Linkage Level Relationships to the Target

How is the Initial Precursor related to the Target?

Solving linear equations requires a student to count small units, recognizing that two or more sets or groups of items exist. Work on this skill using a variety of sets. Help students recognize when items are grouped together into a set or separated out. The educator presents a set, labels it (e.g., two balls, one marker, three CDs), counts the items, labels it again, and encourages students to use numbers to label and count the separate sets. The general goal is to explore how the set changes when items are separated out (partitioned) or combined.

How is the Distal Precursor related to the Target?

As students begin to understand labeling and counting small sets, they begin to use the number sequence and become more adept at tracking individual objects. They can recognize when items are added to a set or when items are taken away. Work on this skill using a variety of sets, labeling and counting the set, and moving items in and out of the set, labeling and counting the set again.

NOTE: Educators can work on the Distal Precursor level using the sets of numbers that students working at the Target level are working with.

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M.EE.8.EE.7 Solve simple algebraic equations with one variable using addition and subtraction.



Map Key	
IP	Initial Precursor
DP	Distal Precursor
PP	Proximal Precursor
T	Target
S	Successor
UN	Untested
Boxes indicate tested nodes	

Rubric of Student Success

[M.EE.8.EE.7](#) - Solve simple algebraic equations with one variable using addition and subtraction.

Level 3 Students will... Successor and Target Students will...	Level 2 Students will... Proximal Precursor and Distal Precursor Students will...	Level 1 Students will... Initial Precursor Students will...
<p>Level 3</p> <ul style="list-style-type: none"> Solve linear equations in one variable. 	<p>Level 2</p> <ul style="list-style-type: none"> Solve linear equations in one variable. 	<p>Level 1</p> <ul style="list-style-type: none"> Combine and partition sets.
<p>Successor</p> <ul style="list-style-type: none"> Solve linear inequalities in 1 variable <p>Target</p> <ul style="list-style-type: none"> Solve linear equations in one variable 	<p>Proximal Precursor</p> <ul style="list-style-type: none"> Determine the unknown in an addition equation Determine the unknown in a subtraction problem <p>Distal Precursor</p> <ul style="list-style-type: none"> Demonstrate the concept of addition Demonstrate the concept of subtraction 	<p>Initial Precursor</p> <ul style="list-style-type: none"> Combine sets Partition sets

Instructional Ideas

[M.EE.8.EE.7](#) - Solve simple algebraic equations with one variable using addition and subtraction.

Equations express a relationship that can be used to solve an unknown.

The big idea is that variables represent the unknown in an equation.

- Introduce by asking the essential questions.
- Determine the unknown in an equation.
- Use property of inverse operation (addition/subtraction) to complete the inverse to each side of the equation.
- Isolate the variable to solve.
- Solve algebraic expressions using addition or subtraction.
- Use manipulatives as needed.
- Students may use a calculator if needed.
- Included worksheets are examples of what to look for when finding additional materials that best fits your student's needs.

Additional Instructional Ideas

- Go to website for additional instructional resources, materials, and activities for lessons:



Clues Guide 4
Write and Solve Addition Equations 2

+	Write an addition equation when you see these words: How many altogether?				
B and C are known numbers. A is the unknown answer to your problem. Use this model to write your equation.					
A	+	B	=	C	
Follow these steps to solve the equation for A.					
1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.					
A	+	B	=	C	
A	+		=		
2. Subtract the number for B from both sides of the equal sign.					
A	+	B	-	B	=
A	+		-		=
3. Write the difference in each space below.					
A	+				=
4. B - B = 0 . 0 = nothing. Remove it. Rewrite the variable, A and difference for C - B .					
A					=
5. A = the answer to the problem.					
6. Check your work. Fill in the numbers for A , B and C in the equation. Solve.					
A	+	B	=	C	
	+		=		
			=		
Is the equation true?					
				Yes	No
7. If the equation is true, then your answer for A is correct.					



Name: _____

+	Write an addition equation when you see these words: <i>How many altogether?</i>		
<p>A and C are known numbers. B is the unknown answer to your problem. Use this model to write your equation.</p>			
A	+	B	= C
<p>Follow these steps to solve the equation for B.</p> <p>1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.</p>			
A	+	B	= C
	+	B	=
<p>2. Subtract the number for A from both sides of the equal sign.</p>			
A	-	A	= C - A
	-	B	=
<p>3. Write the difference in each space below.</p>			
	+	B	=
<p>4. A - A = 0. 0 = nothing. Remove it. Rewrite the variable, B and difference for C - A.</p>			
		B	=
<p>5. B = the answer to the problem.</p>			
<p>6. Check your work. Fill in the numbers for A, B and C in the equation. Solve.</p>			
A	+	B	= C
	+		=
			=
Is the equation true?			Yes No
<p>7. If the equation is true, then your answer for B is correct.</p>			



Clues Guide 7
Write and Solve Subtraction Equations 2

-	Write a subtraction equation when you see these words: <i>How many are left? How many more than? How many less than?</i>			
B and C are known numbers. A is the unknown answer to your problem. Use this model to write your equation.				
A	-	B	=	C
Follow these steps to solve the equation for A.				
1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.				
A	-	B	=	C
A	-		=	
2. Since B is negative, add the number for B to both sides of the equal sign.				
A	-	B	+	C
A	-		+	B
A	-		+	B
3. Write the sum in each space below.				
A	-		=	
4. -B + B = 0 . 0 = nothing. Remove it. Rewrite only the variable, A and sum for C + B .				
A	-		=	
5. A = the answer to the problem.				
6. Check your work. Fill in the numbers for A , B and C in the equation. Solve.				
A	-	B	=	C
A	-		=	
A	-		=	
Is the equation true?				
			Yes	No
7. If the equation is true, then your answer for A is correct.				



Clues Guide 8
Write and Solve Subtraction Equations 3

-	Write a subtraction equation when you see these words: <i>How many are left? How many more than? How many less than?</i>			
A and C are known numbers. B is the unknown answer to your problem. Use this model to write your equation.				
A	-	B	=	C
Follow these steps to solve the equation for B.				
1. Fill in the empty spaces with the known numbers. Write the variable for the unknown number.				
A	-	B	=	C
	-		=	
2. Subtract the number for A from both sides of the equal sign.				
A	-	A	=	C
-	-	-	=	-
3. Write the difference in each space below.				
	-		=	
4. $A - A = 0$. 0 = nothing. Remove it. Rewrite the variable, B and difference of C - A . Notice that B is now a negative B .				
	-	-	=	
5. Multiply -1 to each side of the equal sign to make it a positive B .				
	-	-1	x	-B
	=	=	=	-1
	x	x	x	(C - A)
	=	=	=	
6. B = the answer to the problem.				
7. Check your work. Fill in the numbers for A , B and C in the equation. Solve.				
A	-	B	=	C
	-		=	
	-		=	
Is the equation true?				
			Yes	No
8. If the equation is true, then your answer for B is correct.				

Name: _____

One-Step Equations: Integers

Add/Sub Level 1: S1

Solve each equation.

1) $x + 9 = 12$

2) $s - 1 = 10$

3) $3 = z - 11$

4) $5 + y = 7$

5) $8 = 2 + q$

6) $6 = n - 4$

7) $r - 2 = 5$

8) $6 = m + 6$

9) $p + 7 = 8$

10) $4 + a = 13$

Name _____ Date _____

Solve One-Step Addition and Subtraction Equations

You can solve one-step equations using **inverse operations**. For example, addition and subtraction are inverse operations. To solve a one-step addition or subtraction equation, apply the inverse operation to both sides of the equation to get the variable alone.

Let's try it! Solve each equation.

$$n + 5 = 16$$

$$n + 5 - 5 = 16 - 5$$

$$n = 11$$

Subtract 5 from both sides of the equation.

$$b - 4 = 13$$

$$b - 4 + 4 = 13 + 4$$

$$b = 17$$

Add 4 to both sides of the equation.

Try it yourself! Solve each equation.

1. $h + 3 = 14$	2. $p - 12 = 6$	3. $v + 9 = 23$
4. $r - 6 = 19$	5. $7 + c = 22$	6. $q - 21 = 16$
7. $11 + x = 35$	8. $k - 15 = 28$	9. $z + 14 = 27$
10. $f - 17 = 24$	11. $26 + m = 32$	12. $d - 25 = 39$
13. $28 + s = 37$	14. $u - 21 = 29$	15. $y + 33 = 76$



Helping With Math

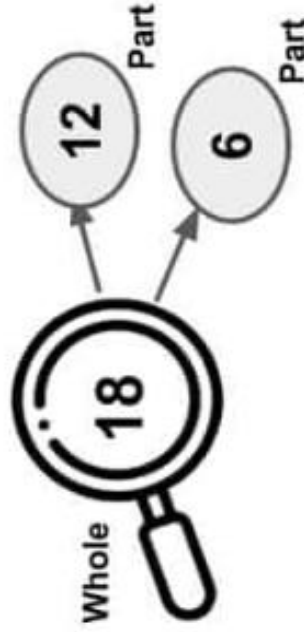
Determining the Unknown Whole Number in an Addition or Subtraction Equation



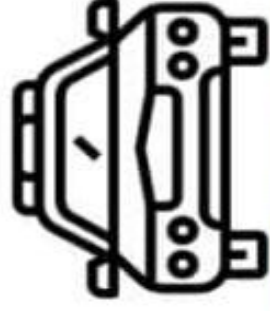
GRADE 1



In determining the unknown whole number in an addition and subtraction equation, we must understand the correlation of addition and subtraction as part of a whole.



- The biggest number is called the **whole**.
- The other two numbers are its **parts**.



- **Adding the parts** gives the whole.
 $12 + 6 = 18$
 $6 + 12 = 18$
- **Subtracting one part** from the whole gives the other part.
 $18 - 6 = 12$
 $18 - 12 = 6$

Determining the Unknown Whole Number in an Addition or Subtraction Equation

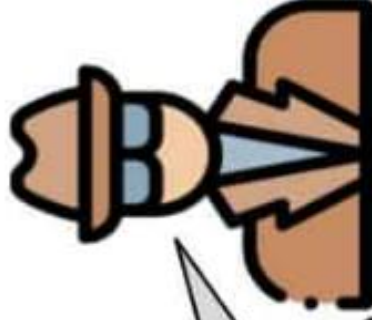


Finding the Missing Whole or Missing Part

Sometimes, we may have problems like these:

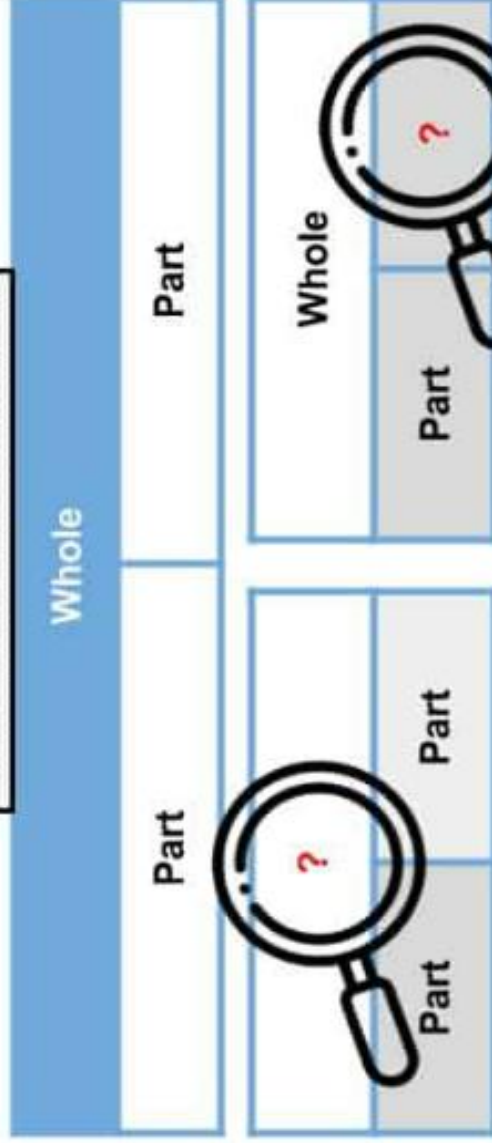
$$15 - \text{?} = 11$$

$$\text{?} - 5 = 8$$



How can we find these missing numbers? We can find these missing numbers in the equations using whole and parts.

Part-Part-Whole Model



Missing **Whole**: Add
Whole = Part + Part

Missing **Part**: Subtract
Part = Whole - Part

Determining the Unknown Whole Number in an Addition or Subtraction Equation



Finding the Missing Minuends and Subtrahends

If the unknown number is the **subtrahend**, subtract the **difference** from the **minuend** (number before the minus sign).

$$15 - 11 = 4$$

Therefore, the unknown number is **4**.

$$15 - 4 = 11$$

$$15 - ? = 11$$

If the unknown number is the **minuend**, simply add the two known numbers.

$$5 + 8 = 13$$

Therefore, the unknown number is **13**.

$$13 - 5 = 8$$

$$? - 5 = 8$$



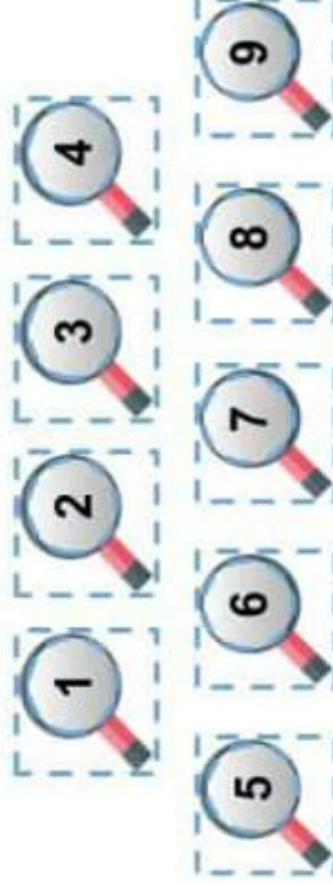
Determining the Unknown Whole Number in an Addition or Subtraction Equation



THE CLUES

Cut out the clues below and fill in the missing addends to complete each equation.

$1 + \underline{\quad} = 7$	$9 + \underline{\quad} = 14$
$8 + \underline{\quad} = 16$	$\underline{\quad} + 6 = 8$
$5 + \underline{\quad} = 14$	$\underline{\quad} + 7 = 11$
$7 + \underline{\quad} = 10$	$\underline{\quad} + 9 = 16$
$9 + \underline{\quad} = 10$	



Determining the Unknown Whole Number in an Addition or Subtraction Equation



MASTER TRAINING

linear equations

addition

solve.

1. $-18 = x + 3$ $x = \underline{-21}$ 2. $-7 = x + 9$ $x = \underline{\hspace{1cm}}$

$$\begin{array}{r} -18 = x + 3 \\ -3 \quad -3 \\ \hline -21 = x \end{array}$$

3. $-23 = x + 17$ $x = \underline{\hspace{1cm}}$ 4. $-22 + x = -4$ $x = \underline{\hspace{1cm}}$

5. $-15 + x = 24$ $x = \underline{\hspace{1cm}}$ 6. $x + 5 = -15$ $x = \underline{\hspace{1cm}}$

7. $14 = -8 + x$ $x = \underline{\hspace{1cm}}$ 8. $x + 10 = -1$ $x = \underline{\hspace{1cm}}$

9. $-7 + x = -12$ $x = \underline{\hspace{1cm}}$ 10. $-9 = x + 6$ $x = \underline{\hspace{1cm}}$

TRAINING COMPLETE



Pre-Algebra Practice Equations

Complete the following algebra equations.

Remember: what you do to one side of the equation, you have to do to the other side.

ex.

$$1. x + 10 = 32$$

$$x + 10 - 10 = 32 - 10$$

$$x = 22$$

$$2. 8 + x = 19$$

$$3. x - 7 = 20$$

$$4. x - 9 = 17$$

$$5. 19 + x = 27$$

$$6. x + 7 = 44$$

$$7. 2x + 5 = 15$$



Credits

Websites Used for Worksheets and Lesson Ideas:

- <https://www.education.com>
- <https://www.twinkl.com>
- <https://www.superteacherworksheets.com>
- <https://www.easyteacherworksheets.com>
- <https://www.mathworksheets4kids.com>
- <https://www.math-salamanders.com>
- <https://www.math-drills.com>
- <https://www.mathsisfun.com/definitions/index.html>

Resources Used to Help Create the Pacing Guide:

DLM Essential Elements Unpacking

- <https://www.dlmpd.com/dlm-essential-elements-unpacking>

Instructional Resources for YE Model States

- <https://dynamiclearningmaps.org/instructional-resources-ye/mathematics>

Dynamic Learning Maps

- <https://dynamiclearningmaps.org>

Unique Learning System

- <https://www.n2y.com/unique-learning-system>

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