

DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional
Development



Curricular
Resources



Assessment

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Misconceptions 2

WORKSHEETS 1.4-1.6

DMTI Varied Practice Worksheets

This PowerPoint or PDF displays the worksheets that have varied situations (context, visual, equations, and other mathematical models) for children to work on. By completing these worksheets, children increase their foundational skills in the topic, which will help them with these standards and future mathematical topics.

1. If using a journal, have children present the worksheet and complete all the problems.
2. Or print the 'Varied Practice Worksheet Slides' for them to work on. Then, you can return to the PowerPoint or PDF to look at the keys to check their work.

Grade 6-8: Misconceptions 2

Materials Needed

Printed copies of the Misconception Worksheets

Instructions

Worksheet 1.4– 1.6

Students are presented with a situation that may involve a misconception made by a fictional student. Students should use words, visual models (bar model or number line) and/or equations to demonstrate what is incorrect and how to correctly solve/model the problem.

Press students to use at least one of the words from the word bank in each explanation.

Worksheet 1.4 – Misconceptions

Janice says $3(x+2)$ and $3x+2$ are equivalent expressions. Is she correct? Show how you know with an equation and a bar model.

Word Bank:

Iterate	Unit
Partition	Multiplicative
Compose	Additive
Decompose	

Worksheet 1.5 – Misconceptions

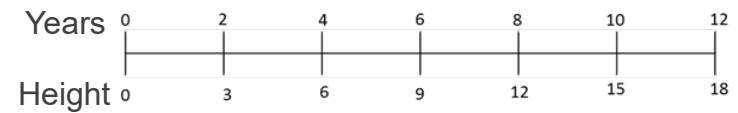
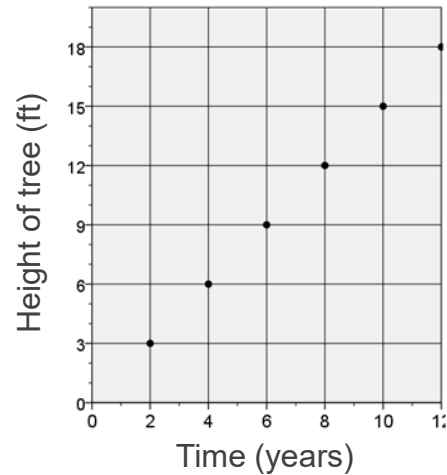
8 year-old Isaiah told his older brother that anytime you add two numbers together the sum will be larger. Is he correct? How would you respond if you were Isaiah's brother? Use an equation and visual model to support your response.

Word Bank:

Iterate	Unit
Partition	Multiplicative
Compose	Additive
Decompose	

Worksheet 1.6 – Misconceptions

Mark created the following double number line based on the graph. Based on examining the relationships, he says the height of the tree (in feet) is always 1.5 times the time in years. Explain mathematically whether he is correct or incorrect.



Word Bank:

Iterate	Unit
Partition	Multiplicative
Compose	Additive
Decompose	



“The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students’ learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments.”

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Janice says $3(x+2)$ and $3x+2$ are equivalent expressions. Is she correct? Show how you know with an equation and a bar model.

Janice is incorrect. She correctly multiplied the unit 'x' by 3, but forgot to multiply the 2 by 3. The expression $3(x+2)$ means we are iterating the unit of $x+2$ three times, so both the x and the 2 need to be multiplied by 3. The bar model below shows the correct equivalent expression of $3x+3(2)$ or $3x+6$.

x	2
x	2
x	2

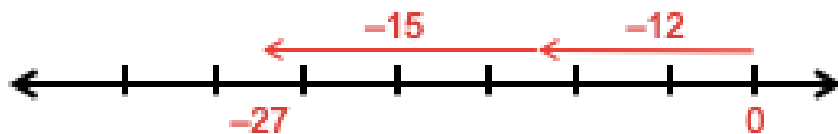
Word Bank:

Iterate	Unit
Partition	Multiplicative
Compose	Additive
Decompose	

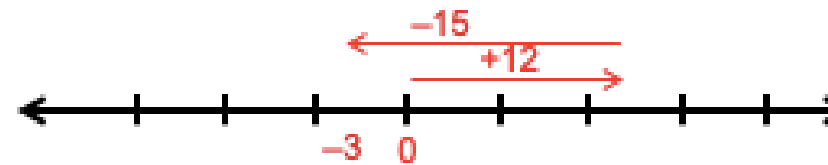
8 year-old Isaiah told his older brother that anytime you add two numbers together the sum will be larger. Is he correct? How would you respond if you were Isaiah's brother? Use an equation and visual model to support your response.

Since Isaiah is only 8 years old he has probably only performed addition with positive whole numbers which does always compose a larger sum. When adding only positive numbers (integers or rational numbers) his statement would be true, but it is not true for all addition situations. When we compose negative numbers we sometimes end up with a smaller value than what we started with. Two examples are included below.

$$-12 + -15 = -27$$

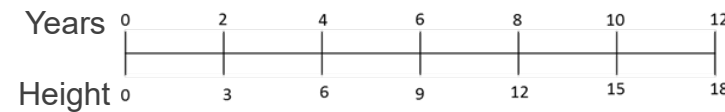
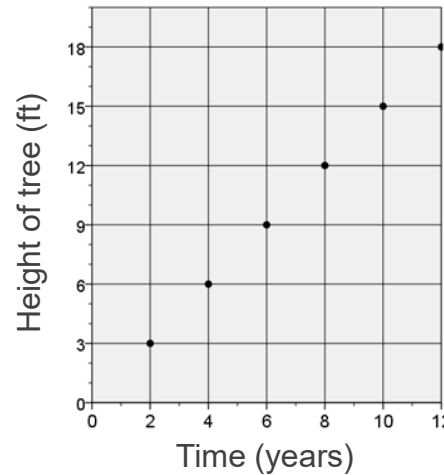


$$12 + -15 = -3$$



Word Bank:	
Iterate	Unit
Partition	Multiplicative
Compose	Additive
Decompose	

Mark created the following double number line based on the graph. Based on examining the relationships, he says the height of the tree (in feet) is always 1.5 times the time in years. Explain mathematically whether he is correct or incorrect.



Mark is correct. If we multiply the value of the time (in years) by 1.5 we would get the height (in feet). The equation would be $H = 1.5(T)$. We can check this by putting values for the time into the equation. For example when the time is 4 years, the equation would be $H = 1.5(4)$. $1.5(4)$ is 6 which is the correct height of the tree. The graph and double number line both show this multiplicative (and proportional) relationship.

Word Bank:

Iterate	Unit
Partition	Multiplicative
Compose	Additive
Decompose	