

# DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional  
Development



Curricular  
Resources



Assessment

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# About the DMTI Targeted Activities

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These DMTI Targeted Activities modules are designed to be played or completed with a partner or in small groups. These supplement the Intermediate Math Assessment and DMTI curricular materials.

The activities are intended for teachers or caregivers to play with children to build necessary math skills and math language. Each activity can be played for 10 to 20 minutes. Each additional activity in the module advances in difficulty.

# **IMA – Grade 3 - 6**

## **Place Value**

# Place Value Concepts

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## What's involved:

- Seeing various units within a number
- Flexibly composing and decomposing numbers
- Connecting visual models to arithmetic procedures
- Making sense of problems in contextual situations

## Why it matters:

- Builds understanding of relationships between numbers
- Flexibility with whole numbers supports understanding of fractions and decimals

# Place Value: 10 Rule

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## Materials

- Journal or Paper
- Scissors
- Worksheets, Templates or Blacklines

# Place Value: 10 Rule

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## Introduction

Multiplying and dividing by 10 is an important feature in our base 10 number system. When multiplying by 10 the quantity or number increases by 1 place value and when dividing by 10 the quantity decreases by 1 place value.

For example, if we have the quantity 3 and we multiply by 10 we get 30. The 3 was in the ones place and now is in the tens place. If we multiply by 10 again we get 300. The 3 is now in the hundreds place.

The same is true if we divide by 10. If we divide 300 by 10, we decrease by one place value to get 30. Then if we divide 30 by 10 we get 3. We decrease by another place value and are back in the ones place.

## Example

$$3 \times 10 = 30$$



$$30 \times 10 = 300$$



$$300 \div 10 = 30$$



$$30 \div 10 = 3$$

# Place Value: 10 Rule Strings

**Activity 1:** Complete the following strings like the example on the previous page.

1. $5 \times 10 = \underline{\quad}$ $\underline{\quad} \times 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$	2. $16 \times 10 = \underline{\quad}$ $\underline{\quad} \times 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$	3. $87 \times 10 = \underline{\quad}$ $\underline{\quad} \times 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$	4. $40 \times 10 = \underline{\quad}$ $\underline{\quad} \times 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$ $\underline{\quad} \div 10 = \underline{\quad}$
5. $4 \times 5 = \underline{\quad}$ $4 \times 50 = \underline{\quad}$ $40 \times 50 = \underline{\quad}$	6. $60 \times 30 = \underline{\quad}$ $6 \times 30 = \underline{\quad}$ $6 \times 3 = \underline{\quad}$	7. $13 \times 400 = \underline{\quad}$ $13 \times 40 = \underline{\quad}$ $13 \times 4 = \underline{\quad}$	8. $11 \times 5 = \underline{\quad}$ $110 \times 5 = \underline{\quad}$ $110 \times 50 = \underline{\quad}$

# Place Value: 10 Rule

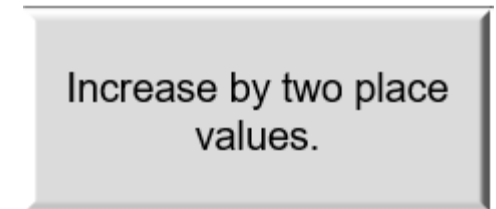
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## Activity 2: 10 Rule Cards

Directions:

- A) Cut the cards out on **Worksheet 2.1**
- B) Shuffle the **increase/decrease cards** and place them upside down in one pile.
- C) Shuffle the **number cards** and place them upside down in a separate pile.
- D) Take turns flipping one increase/decrease card and one number card and then stating the new number.

## Example



“23 increases by two place values.  
So,  $23 \times 10 \times 10 = 2,300.$ ”



## Worksheet 2.1: 10 Rule Cards

Increase by one place value.	Increase by two place values.	Increase by three place values.	120
Increase by one place value.	Increase by two place values.	Increase by three place values.	88
7	23	6	90
10	35	100	39



“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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