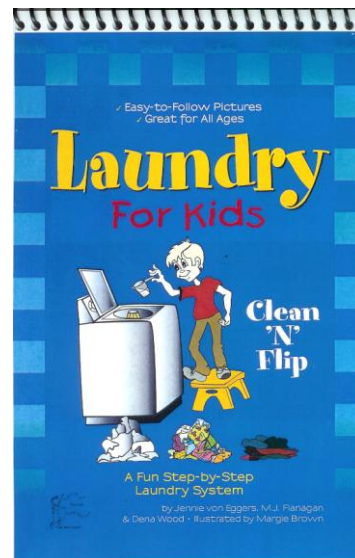
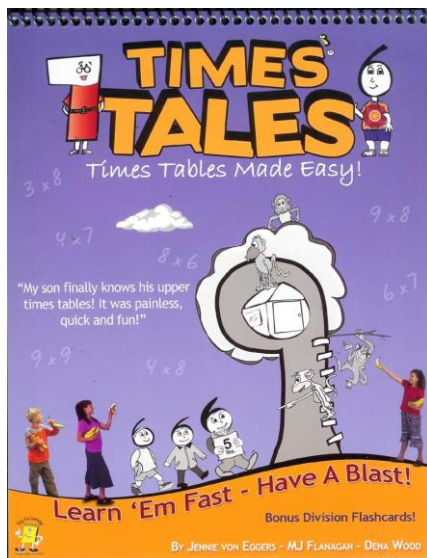


By Jennie von Eggers, Marillee Flanagan & Dena Wood

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*Memory Triggers - Elementary Math Terms* covers 16 commonly used math terms that students tend to struggle with, even though they may be capable of solving the problems. Often, the student simply can't recall the meaning of the term to determine what they need to do.

For example, a child may know how to add but becomes confused upon seeing the word "sum" in a problem.

*Memory Triggers* gives a mnemonic picture and visual to troublesome math terms, helping the child quickly and easily recall what the term means and what to do when they encounter it.

Memory Triggers - Elementary Math Terms

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**Important! *Memory Triggers*** is a memorization tool and DOES NOT TEACH THE CONCEPT of the math terms covered in this booklet. The student needs to have a basic understanding of the terms before using this guide.

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# Instructions

1. Read the math term along with the brief definition and example which are located at the top of each page.

2. Read the mnemonic Memory Story and discuss the corresponding picture. The discussion will help increase the student's retention of the Memory Story.



3. A **Memory Trigger** is located at the bottom of each page. This shows the connection between the mnemonic Memory Story and how it relates to remembering the math term's definition.

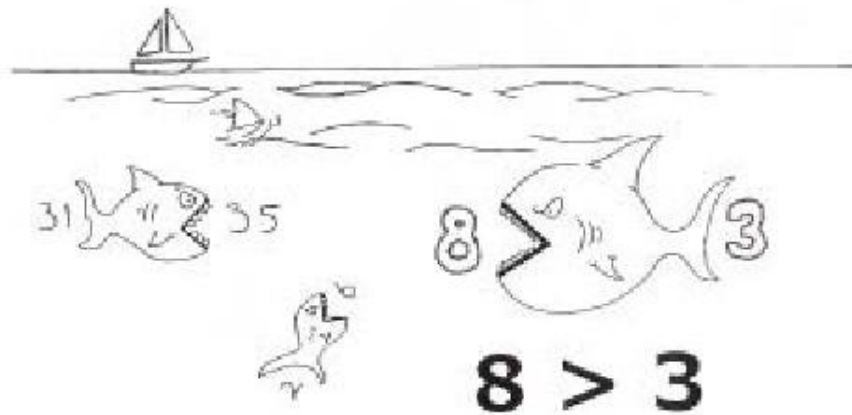
4. Once the student feels confident they can recall all the Memory Stories, have them take the **Memory Trigger Quiz** in the back of the booklet. (Answer Key located on page 24).

# Greater Than & Less Than

Greater than  $>$  and less than  $<$  symbols are a way to show what number has more value (or is larger) and which is of less value (or is smaller).

For Example: **31**  $<$  **35**

**Memory Story:** See the big shark's mouth (greater than/less than symbol) with lots of teeth! Sharks have big appetites and will always try to gobble up the largest number first. After all, why go for a number 3 when you can eat a number 8!



**Memory Trigger:** When you see the  $<$   $>$  symbols think of the shark's mouth eating the largest number.

# Decade

The word **decade** means 10 years.

**For Example:** It has been a **decade** since we visited Canada.

**Memory Story:** The highest number in the **deck** of cards is **10**.



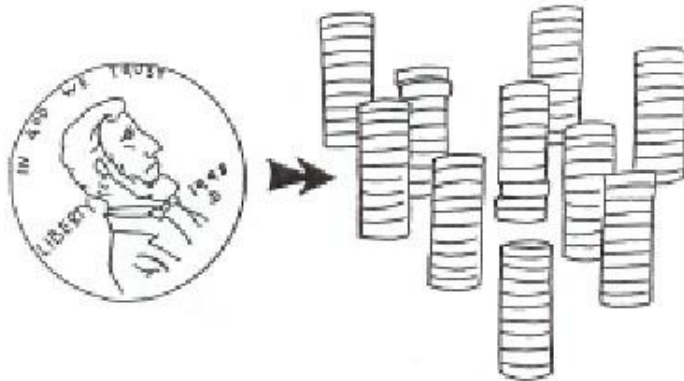
**Memory Trigger:** When you hear the word **decade** think of the highest number in a deck of cards.

# Century

The word **century** means 100 years.

For Example: The house was a **century** old.

**Memory Story:** There are 100 **cents** in a dollar.



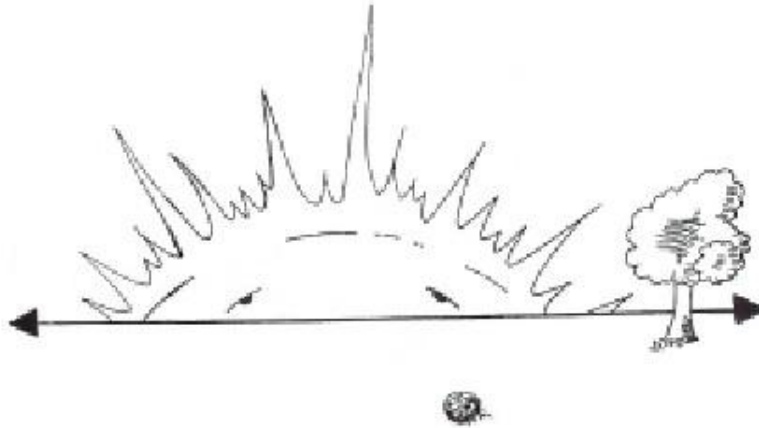
**Memory Trigger:** When you hear **century** think of 100 **cents** in a dollar.

# Horizontal Lines

A **horizontal** line is a level line that goes much like east to west.

**For Example:** 

**Memory Story:** The **horizon** is where the sky and land meet. The sun sets in the **horizon** (horizontal) which is a level line across the sky.



**Memory Trigger:** When you hear **horizontal** think of where the sky and land meet to make a level line in the horizon.

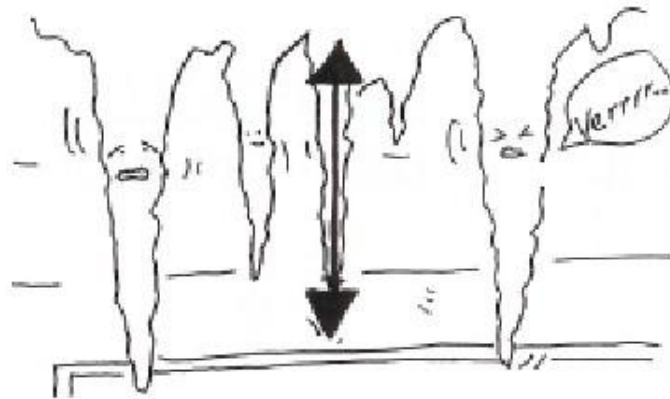
# Vertical Lines

A **vertical** line is line that is straight up and down much like north to south.

**For Example:**



**Memory Story:** An icicle forms a **vertical**, up and down line. Those icicles are cold....verrrrr (vertical)!



**Memory Trigger:** When you hear **vertical**, think of how icicles are up and down and are very cold....verrrrr!

# Numerator & Denominator

A fraction is a number used to name a part of a group or whole. The number below the bar is called the **denominator** and the number above the bar is called the **numerator**.

**For Example:**      **3 numerator**  
                             **5 denominator**

**Memory Story:** Turn the fraction into North Dakota! Remember to put North (numerator) on top just like on a compass.

**North = numerator**  
**Dakotadenominator**

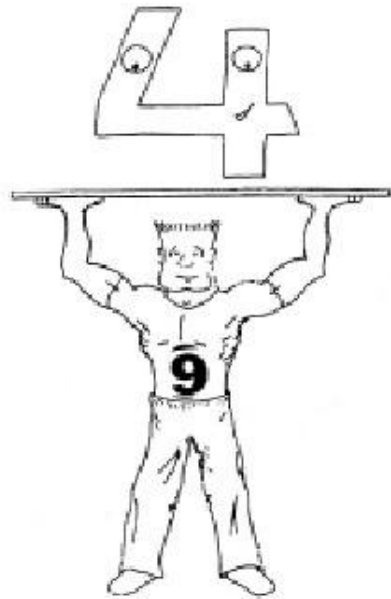
**Memory Trigger:** To remember the correct placement of the **numerator** and **denominator** of a fraction, think of **North** Dakota....remember the **numerator** goes north!

# Proper Fraction

A **proper fraction** is a fraction in which the numerator (top number) is smaller than the denominator (bottom number).

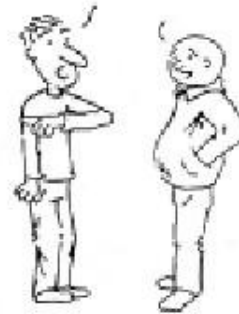
For Example:     **3** proper fraction

**Memory Story:** The denominator is the strong man of fractions. His job is to hold up the weaker, lesser number, the numerator. This is the “proper” way to lift a fraction.



Look! That big denominator is holding up that little numerator!

That's the proper way to hold up a fraction.



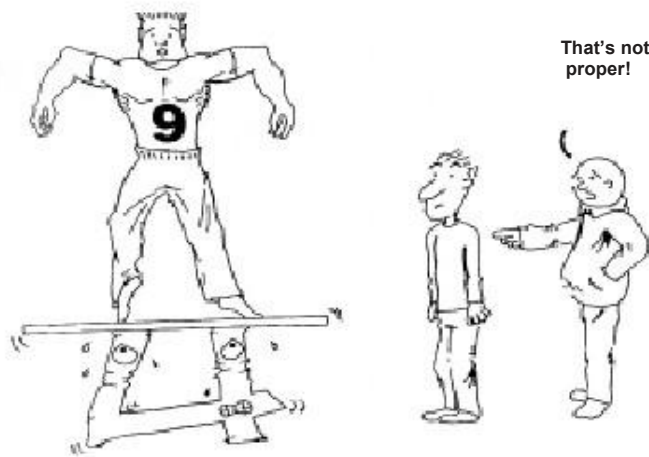
**Memory Trigger:** The “proper way” for a fraction is for the bottom, larger number to hold up the smaller number.

# Improper Fraction

An **improper fraction** is a fraction where the numerator (top number) is larger than the denominator (bottom number).

For Example:  $\frac{8}{4}$  improper fraction

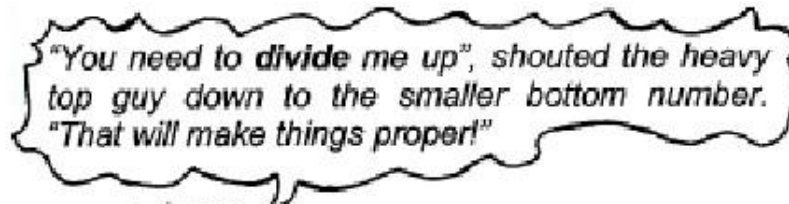
**Memory Story:** Wait a minute....something has gone wrong! That bigger guy is being held up by the smaller guy, “*THAT’S NOT PROPER!*” Something has got to be done about that. The smaller guy is going to collapse; he can’t hold up the bigger guy much longer.



**Memory Trigger:** It is not “proper” for a small number to hold up a large number.

# Converting an Improper Fraction

**How to change the improper fraction:** The smaller number on the bottom couldn't hold the larger number up much longer. The only way to resolve this situation (improper fraction) is to make the larger number smaller.



So, the smaller bottom number (denominator) divides up the top, larger number (numerator) and then it becomes proper:

$$\begin{array}{r} 2 \frac{1}{4} \\ 4 \overline{)9} \\ \underline{8} \\ 1 \end{array}$$

**Memory Trigger:** When the top number of a fraction is greater than the bottom, think of the smaller guy having difficulty holding up the big guy. That is not the "proper" (improper fraction) way to hold someone up! The only way to make it proper is for the top, heavy guy to be divided up by the lower guy.

# Sum

The word **sum** means that you will need to use addition to find the answer.

**For Example:** Find the **sum** of the numbers 12 and 10. To find the **sum** you will need to **add** 12 and 10 together.

$$12 + 10 = 22$$

**Memory Story:** A chef creates delicious food by adding many things together. He adds **sum** of this and **sum** of that together to make a delicious treat to eat!



**Memory Trigger:** When you hear the word **sum** think of the chef adding **sum** of this and **sum** of that together to create a tasty dish.

# Difference

The word **difference** means that you will need to use **subtraction** to solve the problem.

**For Example:** Find the difference between 10 and 40.  
This means that you will need to **subtract** 10 from 40 to get the correct answer.

$$40 - 10 = 30$$

**Memory Story:** The inspector watches the conveyor belt to ensure that all the toy cats are identical. Any that come out **different** (difference) must be **taken away** (subtracted).



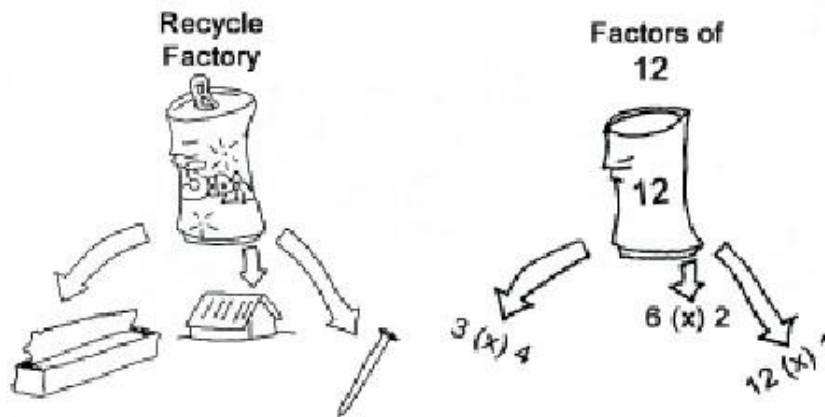
**Memory Trigger:** When you hear the word **difference** think “take away” (or subtract). The toys that were **different** had to be **taken away** (subtracted).

# Factors

The **factors** of a number are the numbers that can be broken down in multiples of that number or the numbers that can be multiplied together to make the number.

**For Example:** Find the **factors** of 12. The answer would be 3, 4, 6, 2, 12 & 1 which are all numbers that can be multiplied to make 12. ( $3 \times 4 = 12$ ;  $6 \times 2 = 12$ ;  $12 \times 1 = 12$ )

**Memory Story:** When a soda can is recycled, it is broken down into smaller units. For example, an old soda can might be broken down into aluminum foil, a tin roof and a nail.



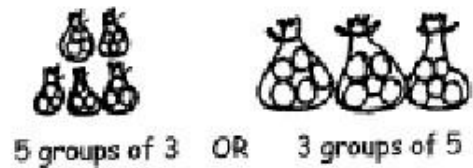
**Memory Trigger:** In the same way a recycling factory breaks down an item into smaller units, so do the **factors** of a number.

# Product

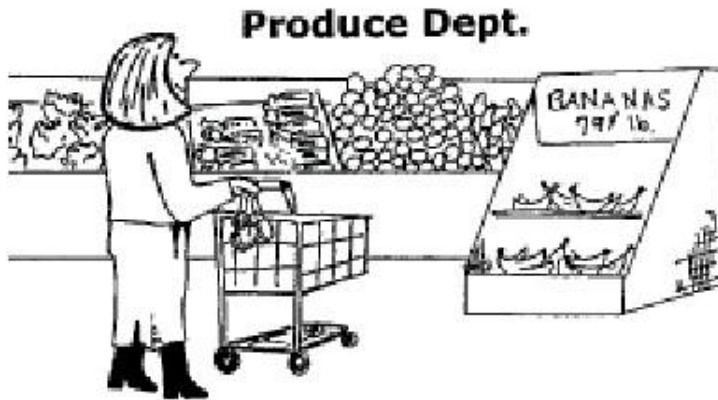
The **product** is the answer to a multiplication problem.

**For Example:** Find the **product** of 5 and 3. To find the **product** you will need to **multiply** 5 and 3 together.

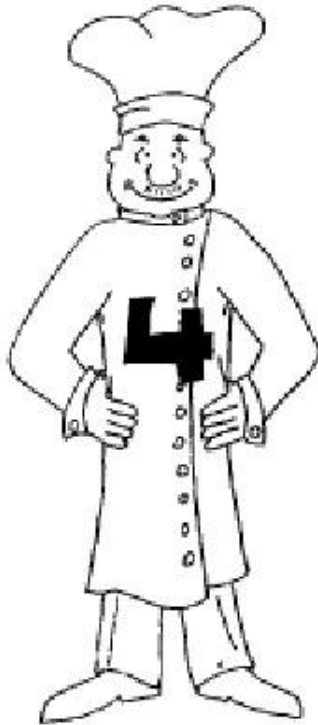
$$5 \times 3 = 15$$



**Memory Story:** The **produce** (product) section of a grocery store is where fruits and vegetables are kept. **Produce** is often bought in groups, not individually.



**Memory Trigger:** When you hear the word **product**, think of the produce section at the grocery store. Produce is bought in groups, the **product** of numbers means to multiply (which is simply grouping numbers).

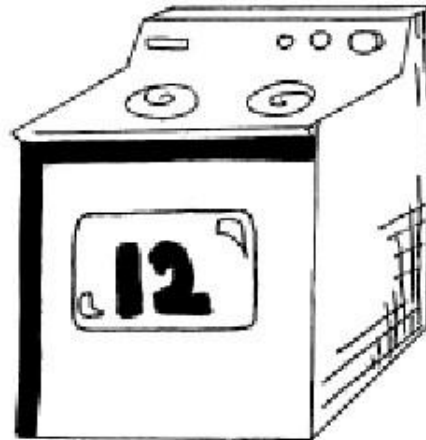


# “Dan Makes Sweets”

## *The Story of Division*

This is “Dan the Divisor.”  
Dan’s job is to make lots  
of yummy sweets.  
Dan Makes Sweets!

This is Dan’s oven.  
The number in the  
oven is the number  
of sweets that Dan  
will **divide** up.





**For example:** In this case there are 12 sweets in the oven. Dan will **divide** the 12 sweets into groups of 4 and put them on top. He can get 3 groups of 4 out of the 12 sweets.

When **Dan Makes Sweets**, he stands next to his oven, takes out the sweets and puts them on top to cool. Before putting them on top, he always **divides** the sweets into groups of his favorite number, which is the number on Dan.

Once Dan has completed the first job of **dividing**, he will continue to **Make** (multiply) **Sweets** (subtract)!

<b>Dan</b>	<b>Makes</b>	<b>Sweets</b>
<u>D</u> ivide	<u>M</u> ultiply	<u>S</u> ubtract
Step 1	Step 2	Step 3
$\begin{array}{r} 3 \\ 4 \overline{)12} \end{array}$	$\begin{array}{r} + 3 \\ 4 \overline{)12} \\ \underline{12} \end{array}$	$\begin{array}{r} 3 \\ 4 \overline{)12} \\ \underline{-12} \\ 0 \end{array}$

**Memory Trigger:** Remember, there are three steps in a division problem; **divide, multiply, subtract** (steps may be repeated several times in a long problem). **Dan** (divide) **Makes** (multiply) **Sweets** (subtract) will help you to remember the 3 steps.

# Memory Triggers

**Century** - cents

**Change improper to proper fraction** -  
The heavy top guy yells down to the little  
guy, “divide me up!”

**Decade** - deck of cards

**Difference** - different

**Factor** - factory

**Greater than and less than** - shark’s mouth

**Horizontal Lines** - horizon

**Improper Fraction** - improper way to hold  
up a fraction

## **Continued...**

**Numerator/Denominator** - North Dakota

**Product** - produce

**Proper Fraction** - proper way to hold up a fraction

**Sum** - sum of this and some of that

**Three steps to process division** - Dan (divide) Makes (multiply) Sweets (subtract)!

**Vertical Lines** - “verrrrr!”

## Memory Triggers Quiz

1. What is the name of the top number of a fraction? \_\_\_\_\_

2. What is the name of the bottom number of a fraction? \_\_\_\_\_

3. How many years are in a decade?

1      10      100      1000

4. How many years are in a century?

1      10      100      1000

5. Use the  $<$   $>$  symbols to show the correct value of the following numbers:

32 \_\_\_\_\_ 31    54 \_\_\_\_\_ 64    64 \_\_\_\_\_ 623 \_\_\_\_\_ 45

6. Circle the correct answer:

a. horizontal b. vertical

a. horizontal b. vertical



7. Circle the Proper Fractions and put an “X”  
on the Improper Fractions.

87719343956

35228551425

8. a) Is  $\frac{9}{2}$  an Improper or Proper Fraction?

b) Circle the correct math symbol that you  
will use to change it into a Proper  
Fraction.

\_\_\_ X+ \_\_\_

c) Turn  $\frac{9}{2}$  into a Proper Fraction.

9. To find the sum of 18 and 12, will you need to add, subtract, multiply or divide?

\_\_\_\_\_

10. To find the difference between 18 and 12 will you need to add, subtract, multiply or divide? \_\_\_\_\_

11. To find the product of 18 and 12 will you need to add, subtract, multiply or divide? \_\_\_\_\_

12. Name the factors of 18:

\_\_\_\_\_

13. There is a three-step process to long division. Name the 3 steps:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

## Connect the items that go together:

Proper Fraction	Divide, multiply, subtract
Numerator	3, 4, 6, 2, 12, 1
3-step division process	top number of a fraction
The factors of 12	$10 - 3 = 7$
Improper Fraction	$\frac{1}{2}$
Horizontal	10 years
Difference between 10 & 3	bottom number of a fraction
<	$10 \times 3 = 30$
Decade	32 _____ 76
Sum of 10 and 3	_____
>	$10 + 3 = 13$
Product of 10 and 3	50 _____ 12
Denominator	$\frac{10}{9}$

# Quiz Answers

1. Numerator
2. Denominator
3. 10
4. 100
5. >><<
6. b. a.
7. 87719343  
35228551
8. a) Improper b) ---- c) 4 1/2
9. add
10. subtract
11. multiply
12. 6, 3, 9, 2, 18, 1
13. divide, multiply, subtract

9	5	6
4	2	5

Proper Fraction  
 Numerator  
 3-step division process  
 The factors of 12  
 Improper Fraction

Horizontal  
 Difference between 10 & 3  
 <  
 Decade  
 Sum of 10 and 3  
 >  
 Product of 10 and 3  
 Sum of 10 and 3  
 Denominator

Divide, multiply, subtract  
 3, 4, 6, 2, 12, 1  
 top number of a fraction  
 $10 - 3 = 7$   
 1  
 2  
 10 years  
 bottom number of a fraction  
 $10 \times 3 = 30$   
 $32 \underline{\hspace{2em}} 76$   


---

 $10 + 3 = 13$   
 $50 \underline{\hspace{2em}} 12$   
 10  
 9

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