Welcome to

TOUCHMATH®

REACHING AND TEACHING ALL LEARNERS

Since 1975

August 13, 2019
TouchMath Training
Chandler Unified School District
Chandler, AZ

Your TouchMath Professional Development Director is:

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- Educator
- Special Education Consultant
- Curriculum Specialist & Creator
- Parent

TouchMath Seminar Resource Set

- Teacher Training Manual & DVD
- Thank You Gift Card
- Memory Cue Poster
- Desktop TouchLines
- TouchPoint Poster Set
- Student Number Card Set
- TouchMath Catalog

TouchMath Seminar Agenda

- The Challenges of Math
- How TouchMath Works
- Learning Styles and Math
- Learning the TouchMath TouchPoints
- Addition and Subtraction
- Skip Counting
- Multiplication and Division
- Time
- Money
- Fractions
- Pre-Algebra
- Questions and Answers

Why Learners Find Math Challenging

Math:

- is a series of abstract ideas (what does 5 mean? What does 9/10 mean?)
- is a completely new symbol system (1, 2, 8, +, , ×)
- has its own rules and procedures (when do you regroup?)
- requires ability to memorize abstract information (380 math facts)
- has its own language (addition, subtraction, decimals, percentages)
- Mixes directionalities (written left to right, worked right to left)

Math Deficit Areas:

- understanding basic number concepts
- recognizing and using symbols
- applying correct rules and procedures
- mastering math facts prior to next skill taught
- comprehending math terms and word problems
- solving double-digit problems

Addressing Student Deficits by:

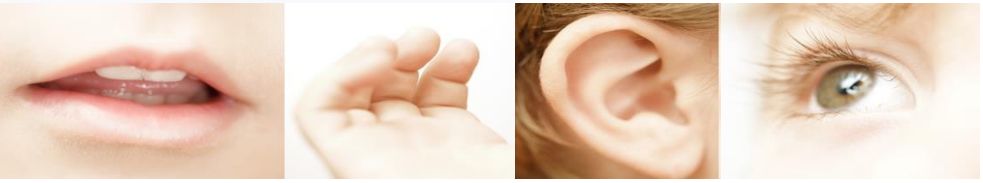
- Using TouchPoints to remove abstraction of basic number concepts so students can understand quantity and numbers (they know what 5 means).
- Providing a scaffolded step-by-step approach that allows students to master one symbol and one topic at a time (1, 2, 8, +, , ×)
- Reinforcing all correct rules and procedures through visual cues until students master them (they know when to regroup).
- Providing a backup system (TouchPoints) for facts they have not yet mastered until they achieve mastery.
- Reiterating math vocabulary by weaving them into computation statements and word problems.
- Using visual cues to reinforce steps in multi-digit problems until the steps become second nature.

What's Your Learning Style?

Please complete the enclosed Learning Styles Inventory. *(Time Permitting)*

Let's talk about your learning styles.

- How many of you prefer a hands-on approach when learning new material?
- How many of you would consider yourselves visual learners?
- How many auditory learners do we have in the group?



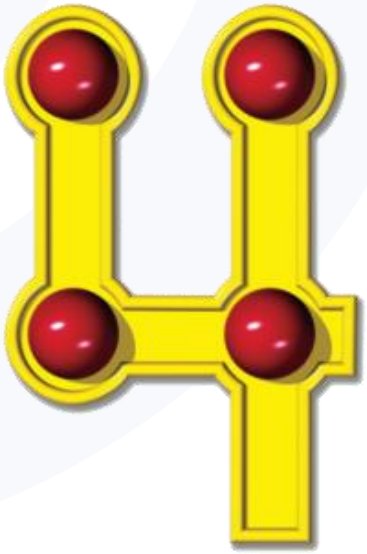
When it comes to learning styles…

- Young children prefer a tactile/kinesthetic approach to learning.
- The second learning style to develop is the visual style.
- The last style to develop is the auditory network, which isn't fully developed until about sixth grade.
- As people age they tend to integrate their learning styles, but will maintain a preferred approach for mastering new material.

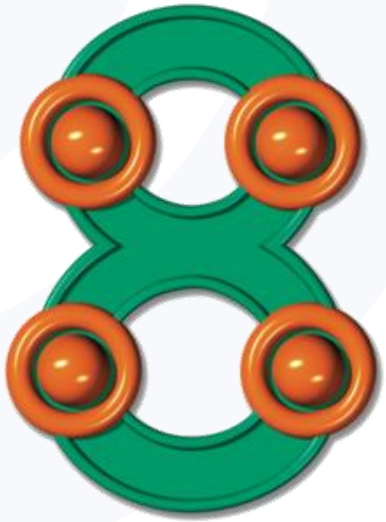
How Can You Appeal to All Student Learning Styles in Your Classroom?

- Use the **See It, Say It, Hear It, Touch It** rule as often as possible.
- Incorporate visuals when presenting new ideas.
- Have students repeat the concepts aloud for better comprehension.
- Get every student involved in as many tactile/kinesthetic activities as possible.
- Utilize individual student learning styles to maximize success.

Converting Abstract Symbols to Concrete Number Concepts



Numerals Are Symbols



八

Arabic & Chinese Numerals/Symbols

١ ٢ ٣ ٤ ٥
٦ ٧ ٨ ٩ ٠

一 二 三 四 五
六 七 八 九 十

Touching/Counting Patterns

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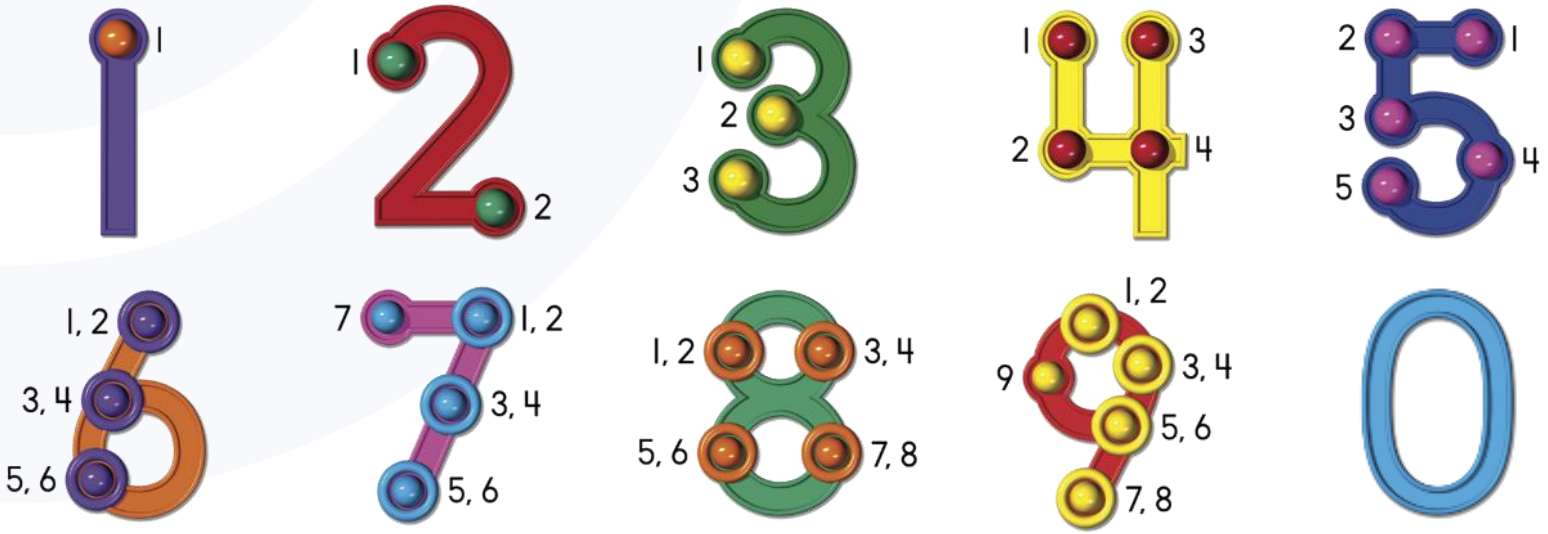
Touching/Counting Patterns

- The patterns are Research-based with students
- Must be consistent in teaching the patterns to eliminate confusion
- During the training, think Adaptations and Best Practices for the classroom!



- Zero has no TouchPoints and no value.
  Never touch and count the zero.
  The zero is also used as a placeholder in place value.

Touching/Counting Patterns

TouchMath Encourages Movement and Music

- Music and movement are vital to the creative process
- When music is played, research shows the brain is more stimulated and increases the amounts of information that is retained and recalled.
- Excellent Scholarly Article, “Increasing Engagement through Music and Movement” From Arizona State University http://rapidintellect.com/AEQweb/t5363j3.pdf
- Unlocking the Mind Through Music “Alive Inside” Documentary https://www.youtube.com/watch?v=8HLEr-zP3fc

Addition

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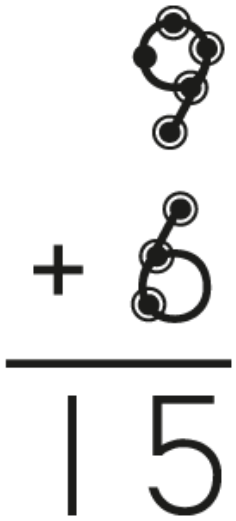
Beginning Addition

I touch and count all the TouchPoints on the numbers.



Addition with Counting On

Addition with Counting On

I touch the greater number, say its name, and continue counting on the TouchPoints of the other number.

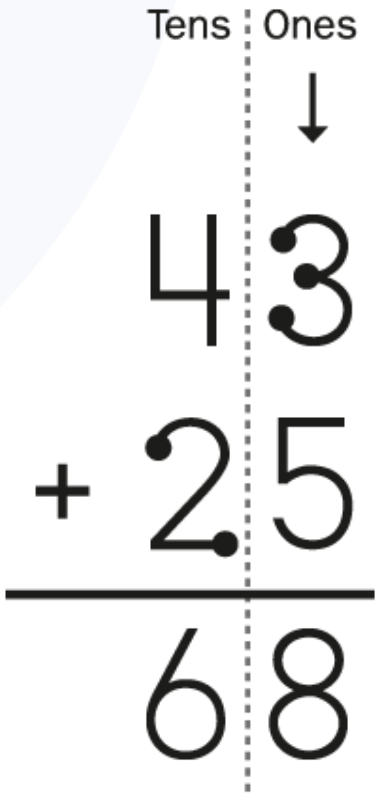
$$\begin{array}{r} 9 \\ +\ 3 \\ \hline 12 \end{array}$$

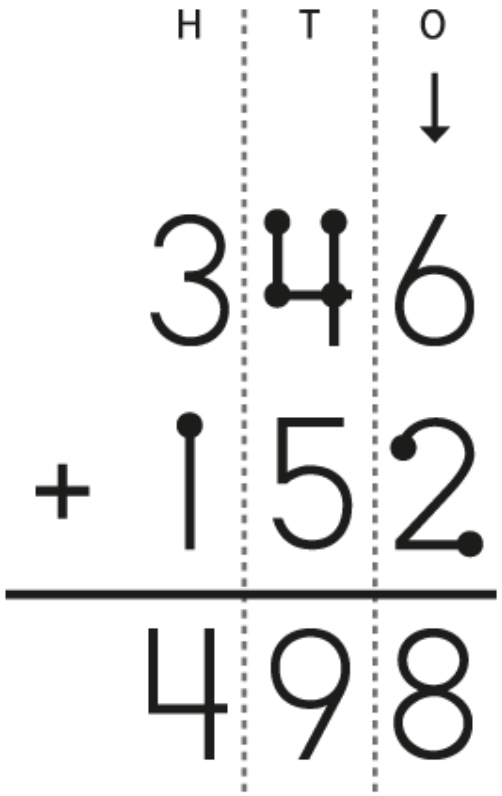
$$5 + 4 + 6 + 2 = 17$$

Addition without Regrouping

Addition without Regrouping

I start on the side with the arrow.
The arrow is in the ones column on the right side.





Addition with Regrouping

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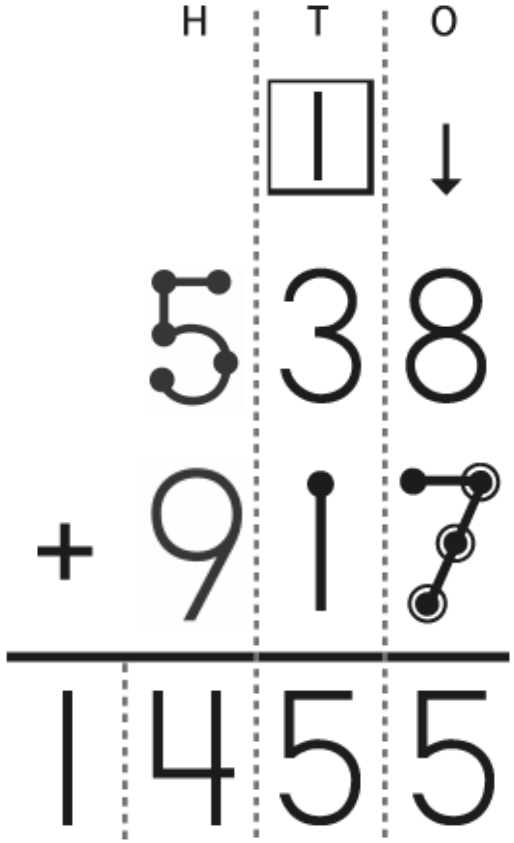
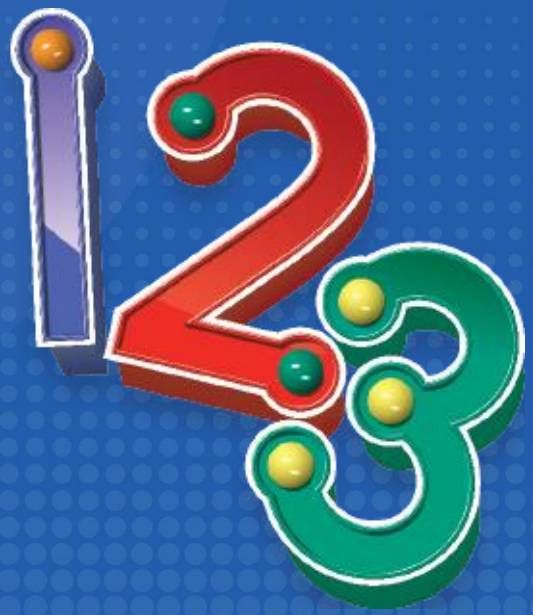
Addition with Regrouping

I must regroup if my answer is greater than 9.



Backward Counting



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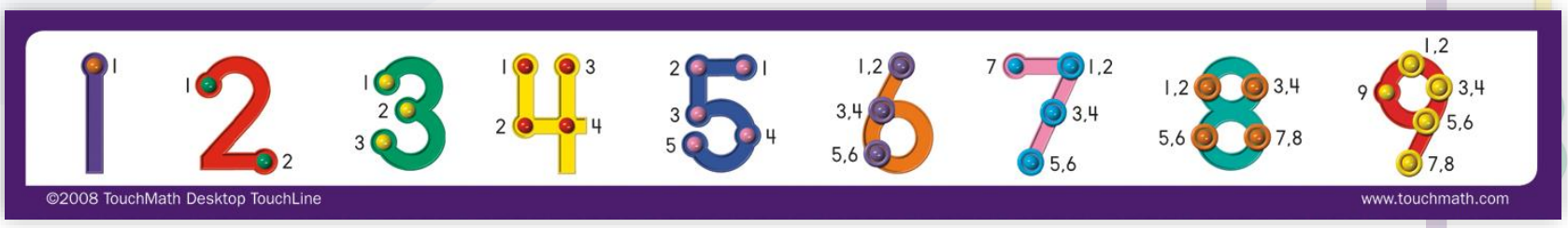
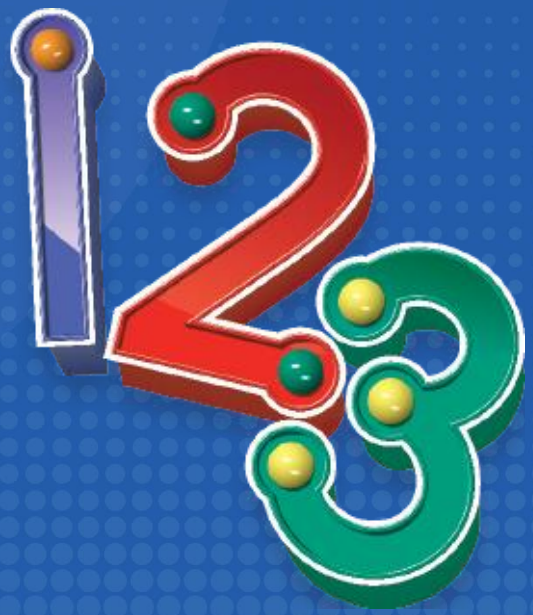
Backward Counting

- Builds familiarity with the entire number system
- Basis for subtraction
- Based on counting — the easiest of math skills
- Builds awareness that addition and subtraction are related
- Only necessary to count backward from 18 and every number below 18
- Practice counting backward from any numbers and stopping at any number. For example, when counting backward from 16, stop at 10, 8, 7, etc.



Subtraction



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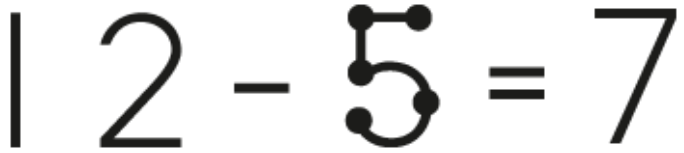
Beginning Subtraction

I touch the first number, say its name, and count backward on the TouchPoints of the other number…

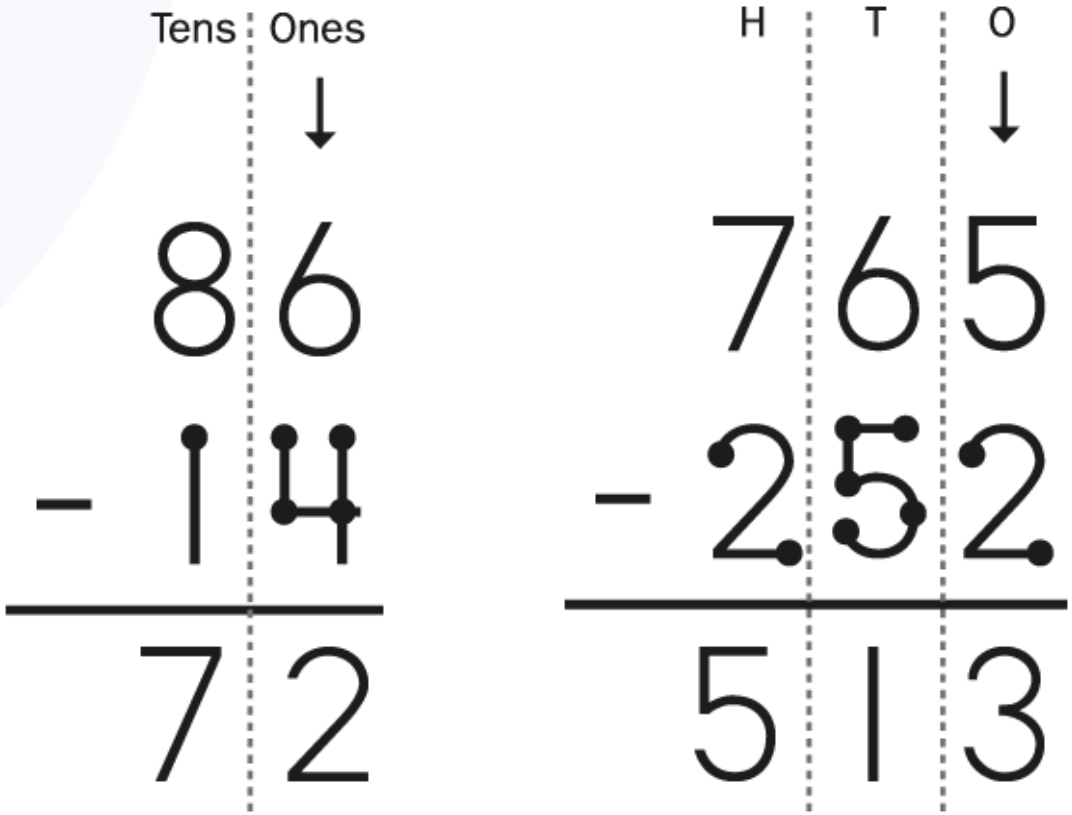
$$\begin{array}{r} 9 \\ -\ 7 \\ \hline 2 \end{array}$$



Subtraction without Regrouping

Subtraction without Regrouping

I start on the side with the arrow.
The arrow is in the ones column on the right side.



Subtraction with Regrouping

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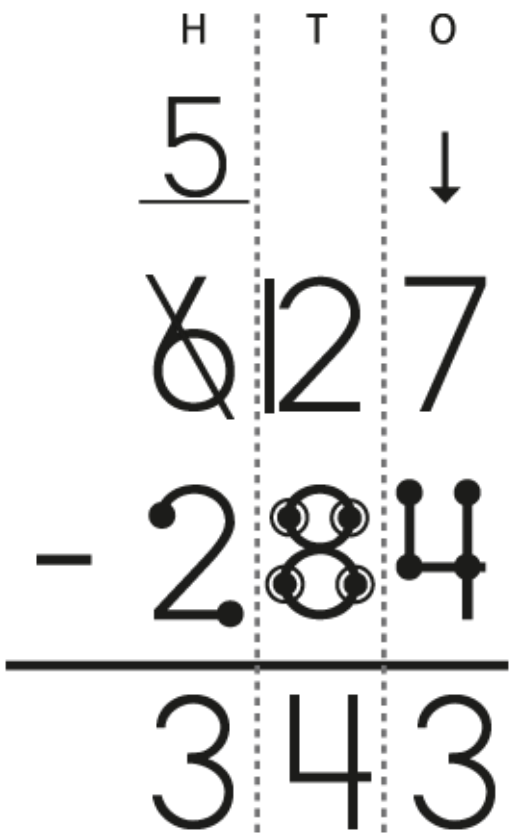
Subtraction with Regrouping

If I cannot count all of the TouchPoints,
I must regroup.



Subtraction with Regrouping Tips

Teacher Suggestion: Need help remembering the Subtraction with Regrouping steps? Here's a helpful hint.

- If there is more on top? There is no need to stop.
- If there is more on the floor? Go next door, get ten more.
- If the numbers are the same? Zero's the name.

Skip Counting

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Skip Counting

- Builds familiarity with the entire number system
- Basis for multiplication
- Basis for division
- Foundation for fractions
- Foundation for algebra
- Only ten numbers in each sequence
- When you count by 2, you are counting every second number
- When you count by 3, you are counting every third number
- When you count by 4, you are counting every fourth number, etc.

Skip Counting

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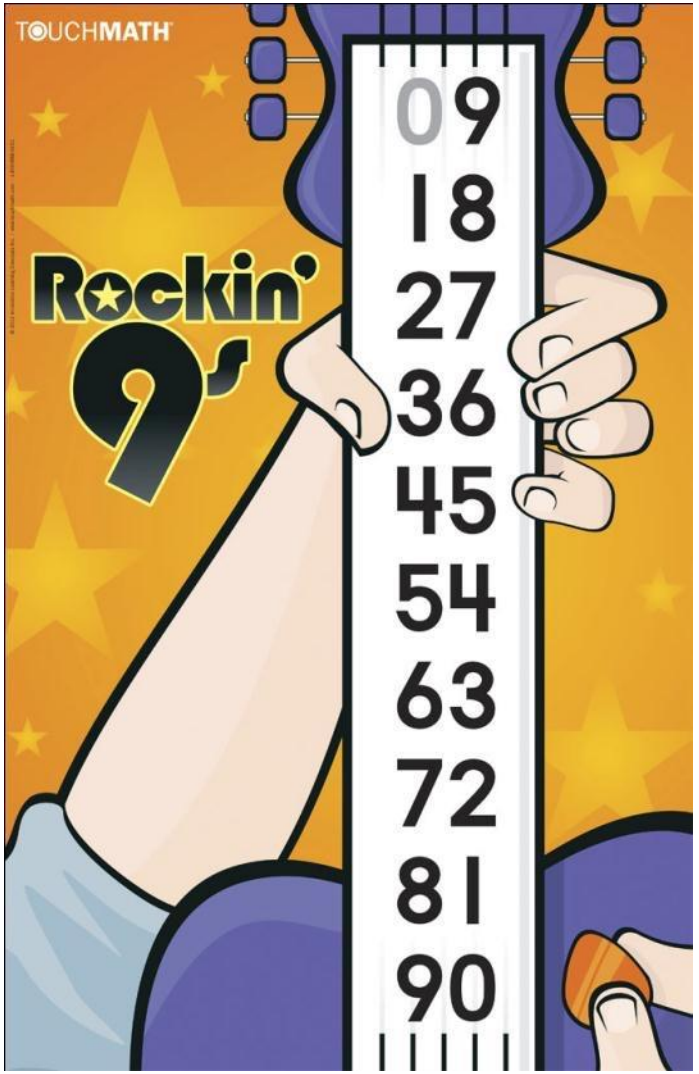
Skip Counting Poster & CD Set

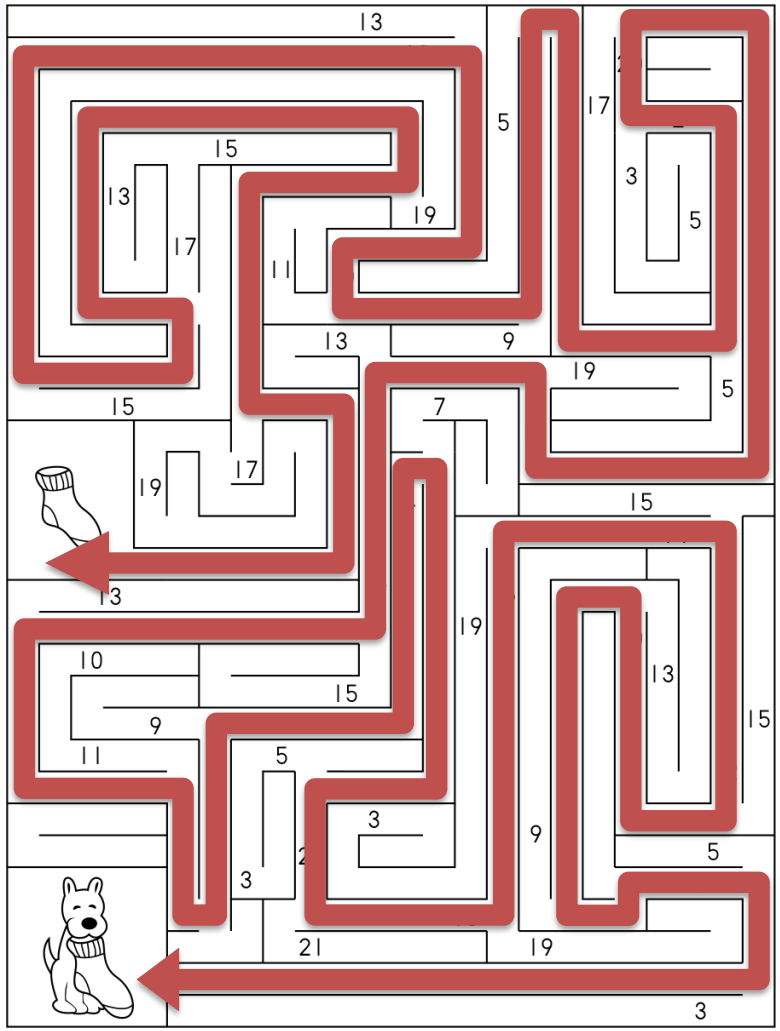
Skip Counting Poster & CD Set

Skip Counting Poster & CD Set

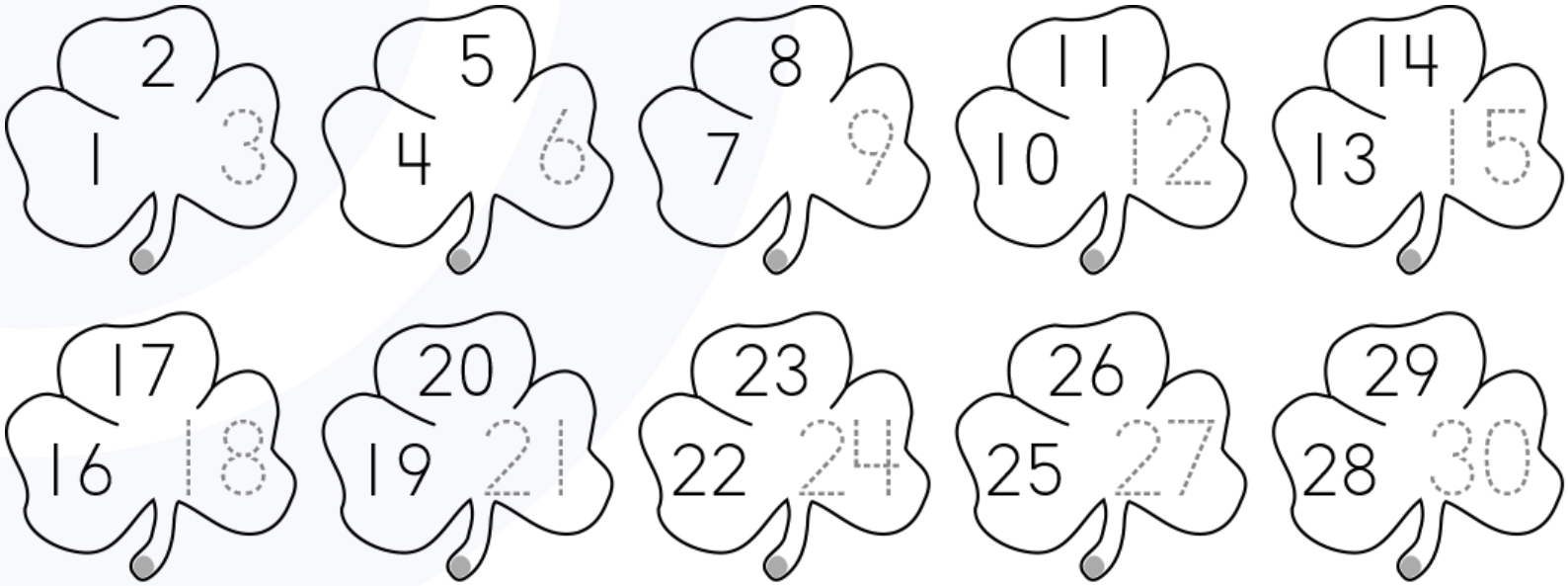


Skip Counting Activities

- Puzzles
- Mazes
- Posters
- Dot-to-Dots
- Hidden Pictures
- Maze Grids
- Design Grids
- Counting Patterns
- Number Lines
- Classroom Routines
- Bean Bag Toss
- Jump Rope



Skip Counting Activity Sample

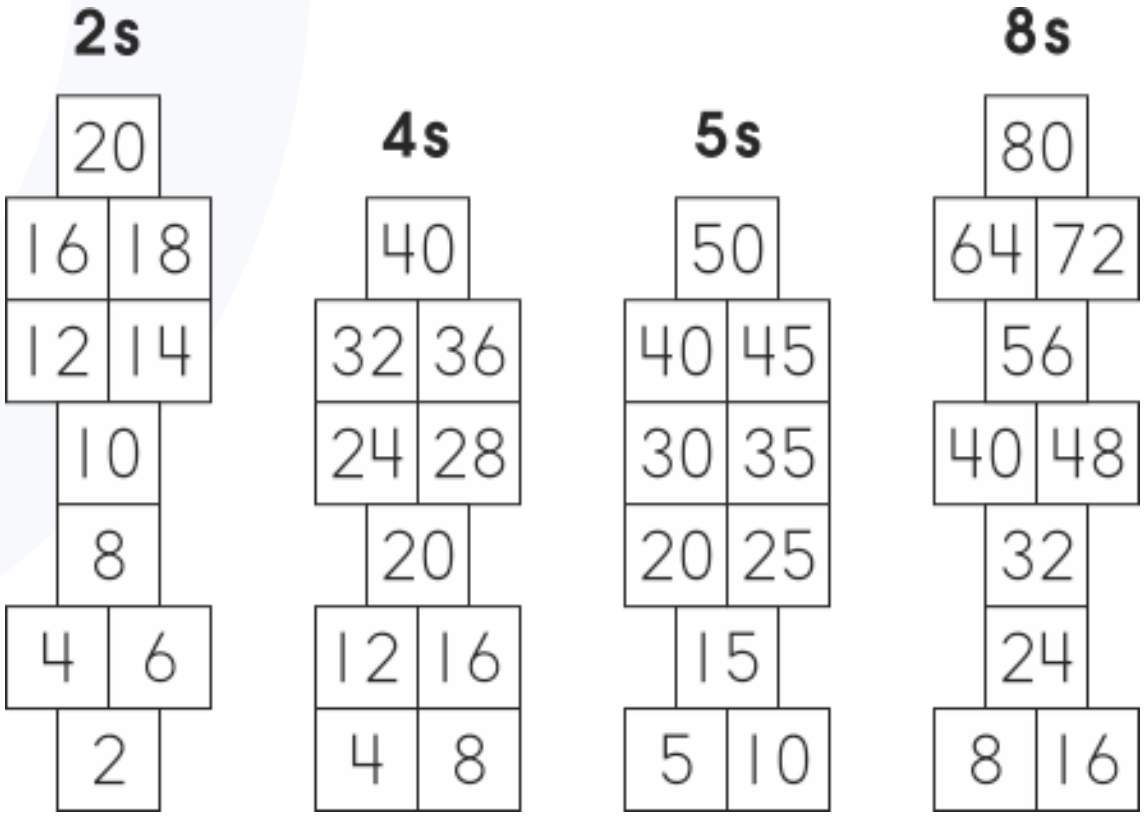


3 ___ ___ ___ ___ ___ ___ ___ ___ 30

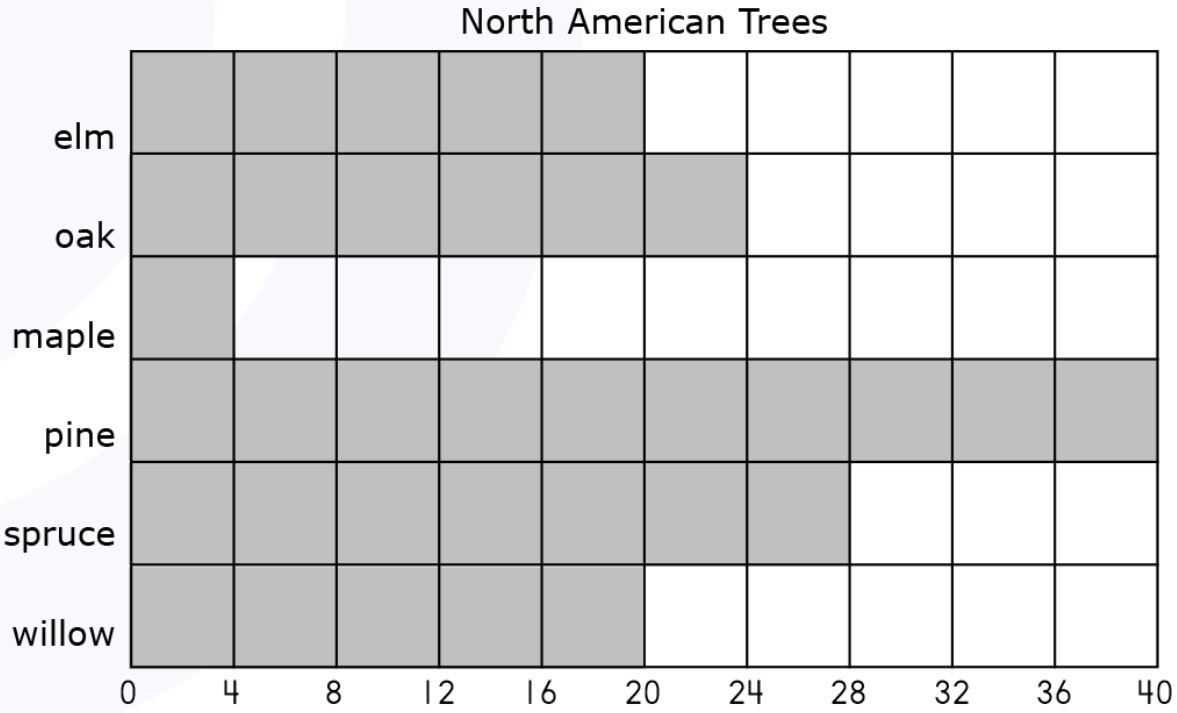
Skip Counting Activity Sample

HopScotch

Draw hopscotch patterns on the sidewalk. Write the number patterns inside. Say the numbers aloud as students hop through the pattern(s).



Skip Counting Activity Sample

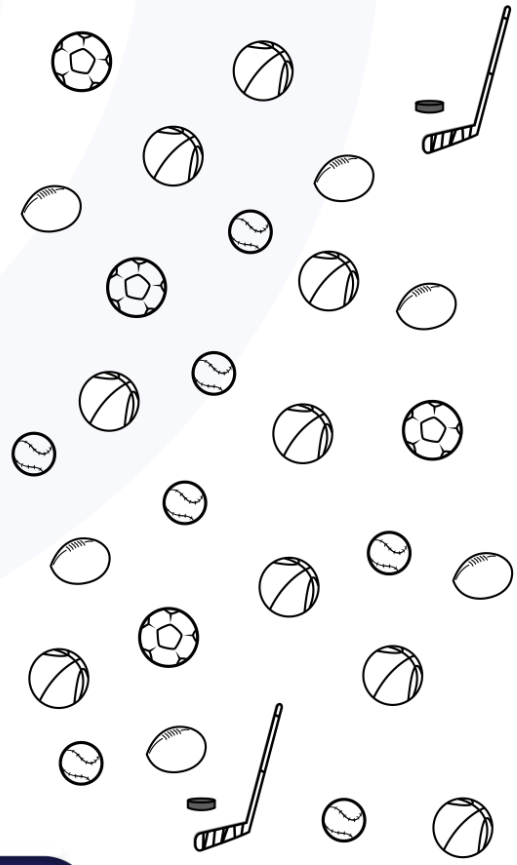


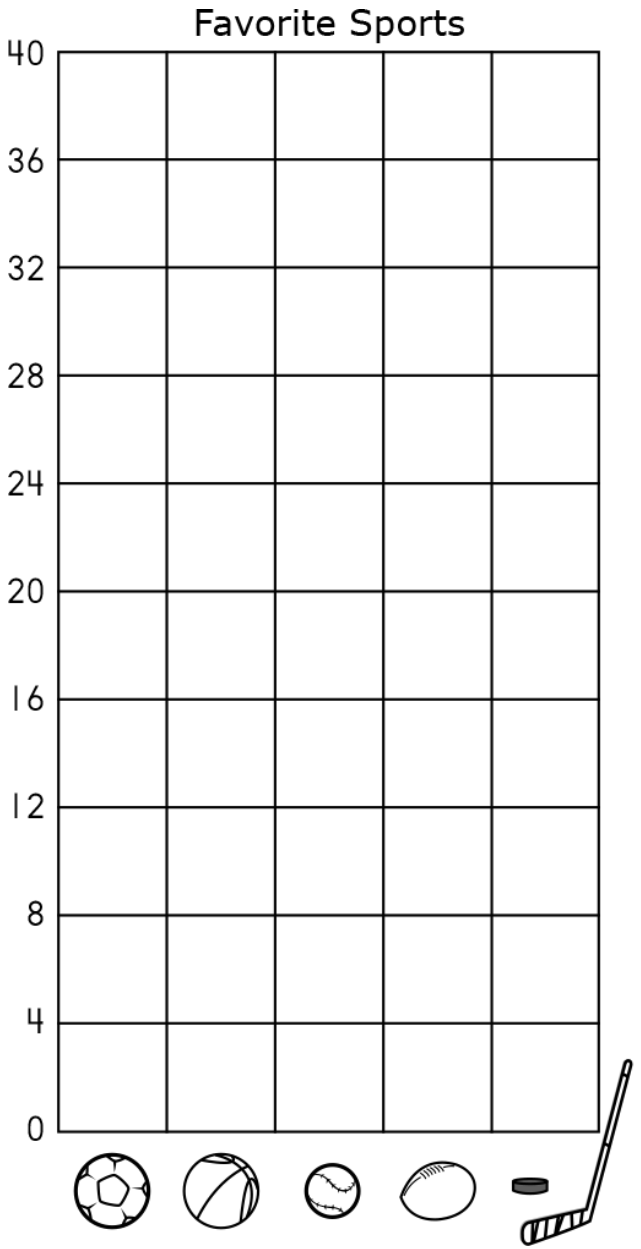
1. elm _____
2. oak _____
3. maple _____
4. pine _____
5. spruce _____
6. willow _____

Skip Counting Activity Sample

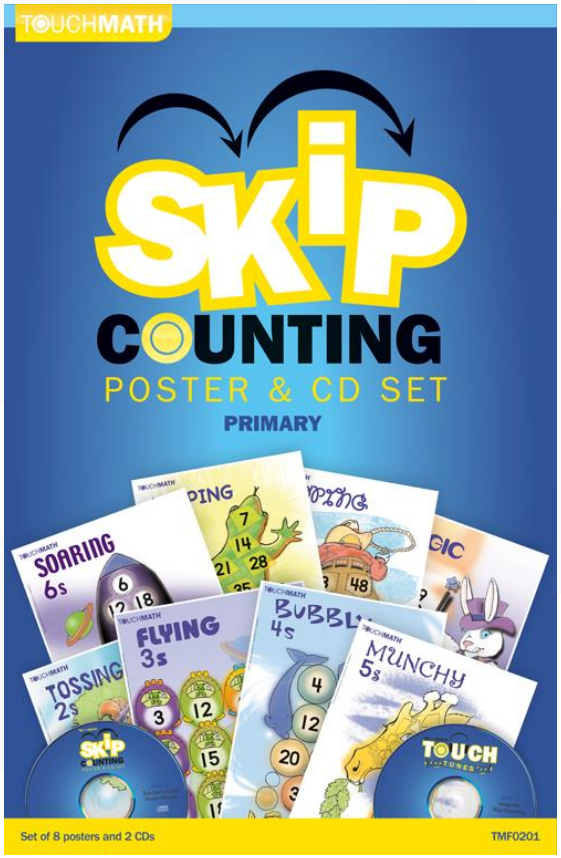
Favorite Sports

Each picture of sporting equipment is equal to 4.





Skip Counting/TouchMath Research



- Students should count or skip count every day. It is appropriate at every level, even in a more advanced context using negative numbers, fractions and decimals.
- “Traditional approaches to learning multiplication facts (flash cards, drill, and timed testing) are ineffective.” Why Children Have Difficulties Mastering the Basic Number Combinations and How to Help Them. Teaching Children Mathematics 13 (August): 22–31.
- Students make more rapid gains in fact mastery when emphasis is placed on strategic thinking… Through the meaningful practices of skip counting, children begin to learn the first set of (foundational) multiplication facts.” http://www.usd379.org/view/12129.pdf
- The TouchMath TouchPoints and Skip Counting CDs provides a multi sensory approach to learning higher level math concepts.

Multiplication

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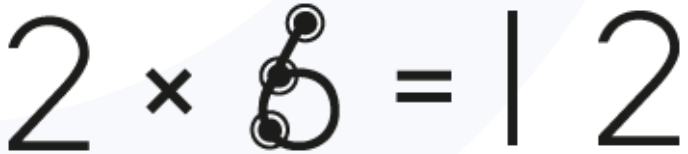
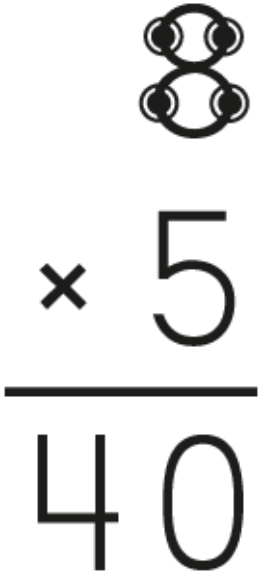
Beginning Multiplication

I skip count by one number while touching the TouchPoints on the other number.

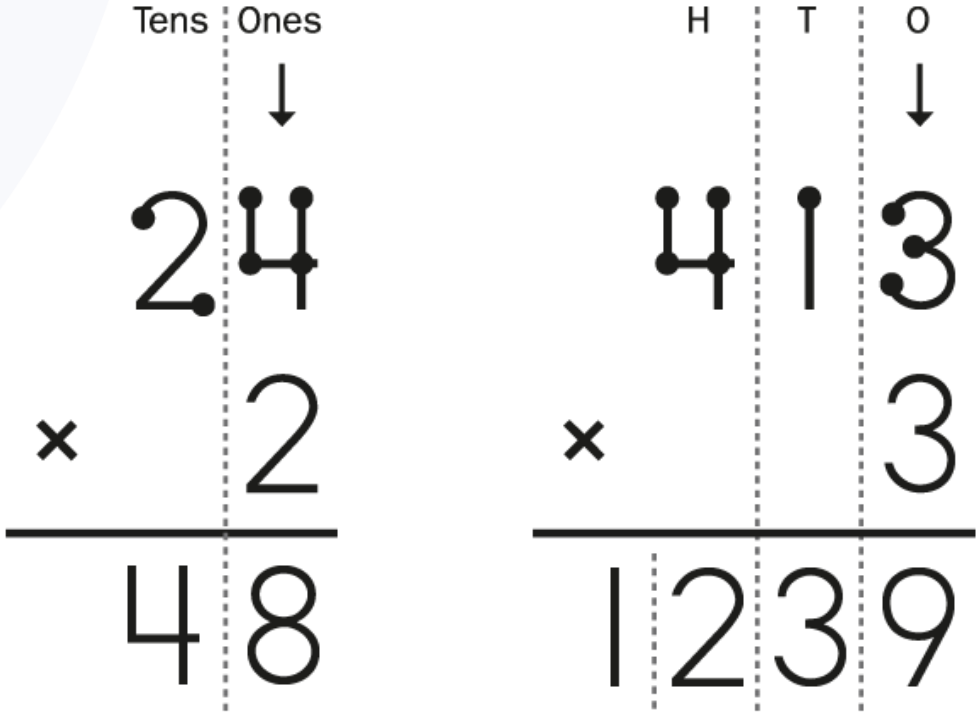




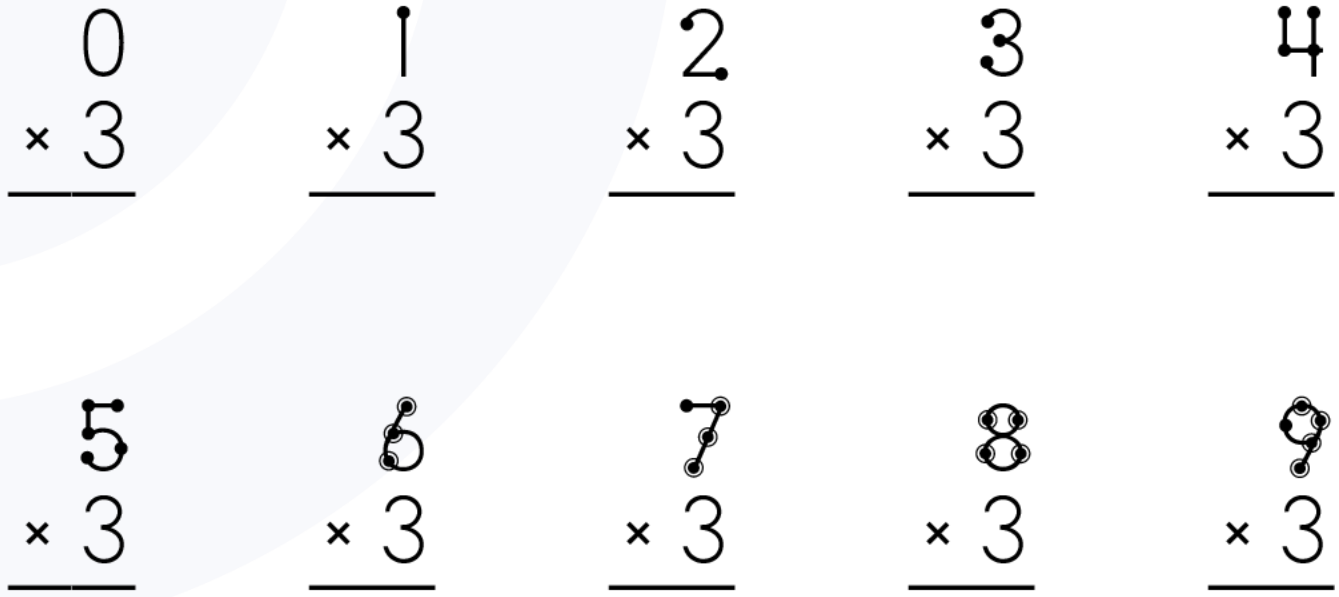
Multiplication without Regrouping

I start on the side with the arrow.

The arrow is in the ones column on the right side.



Multiplication Activity Sample



Multiplication with Regrouping

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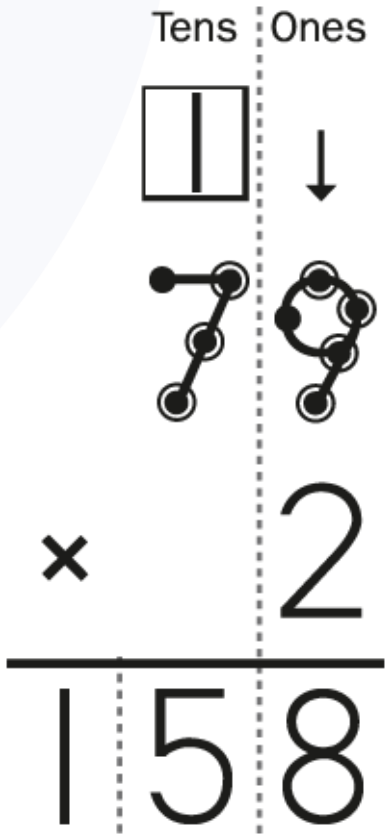
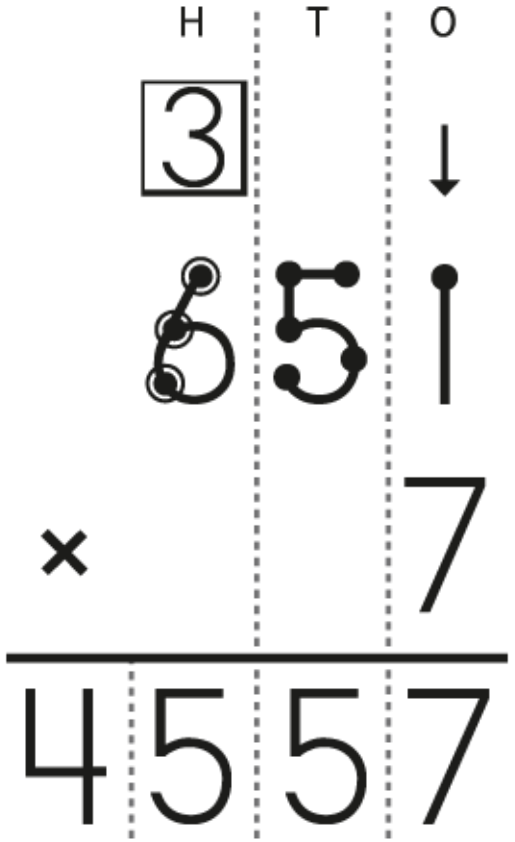
Multiplication with Regrouping

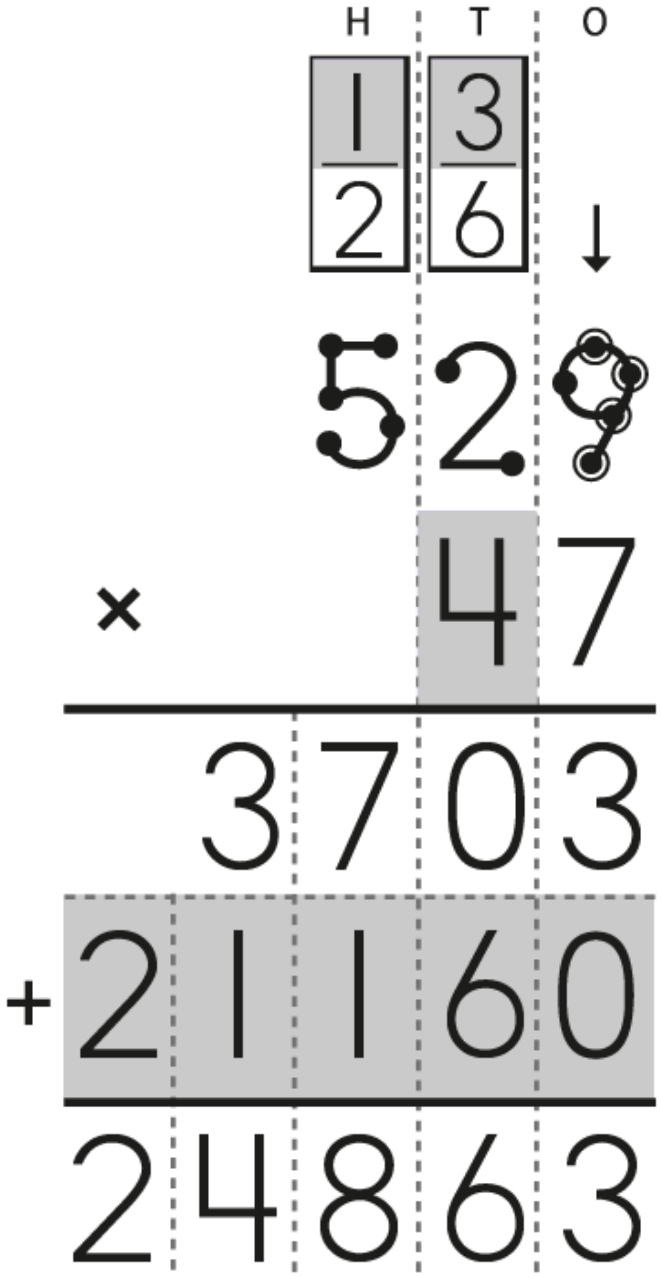
I must regroup if my answer is greater than 9.





Multiplication by Double Digits

I must regroup if my answer is greater than 9.



Division

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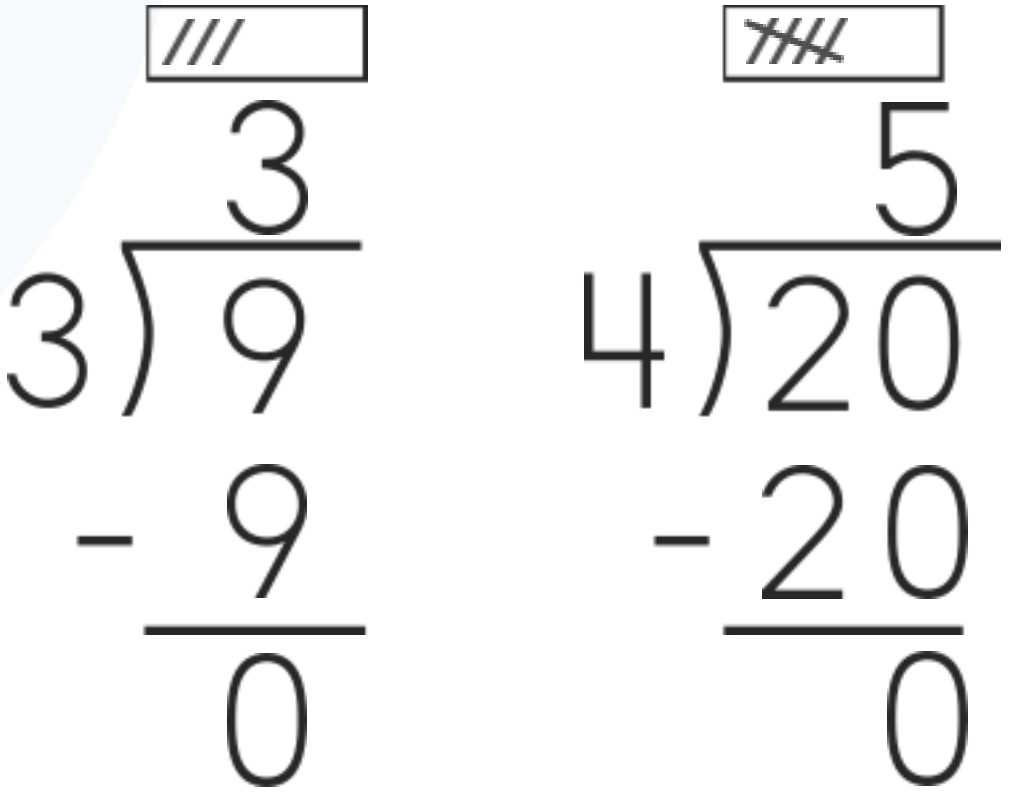
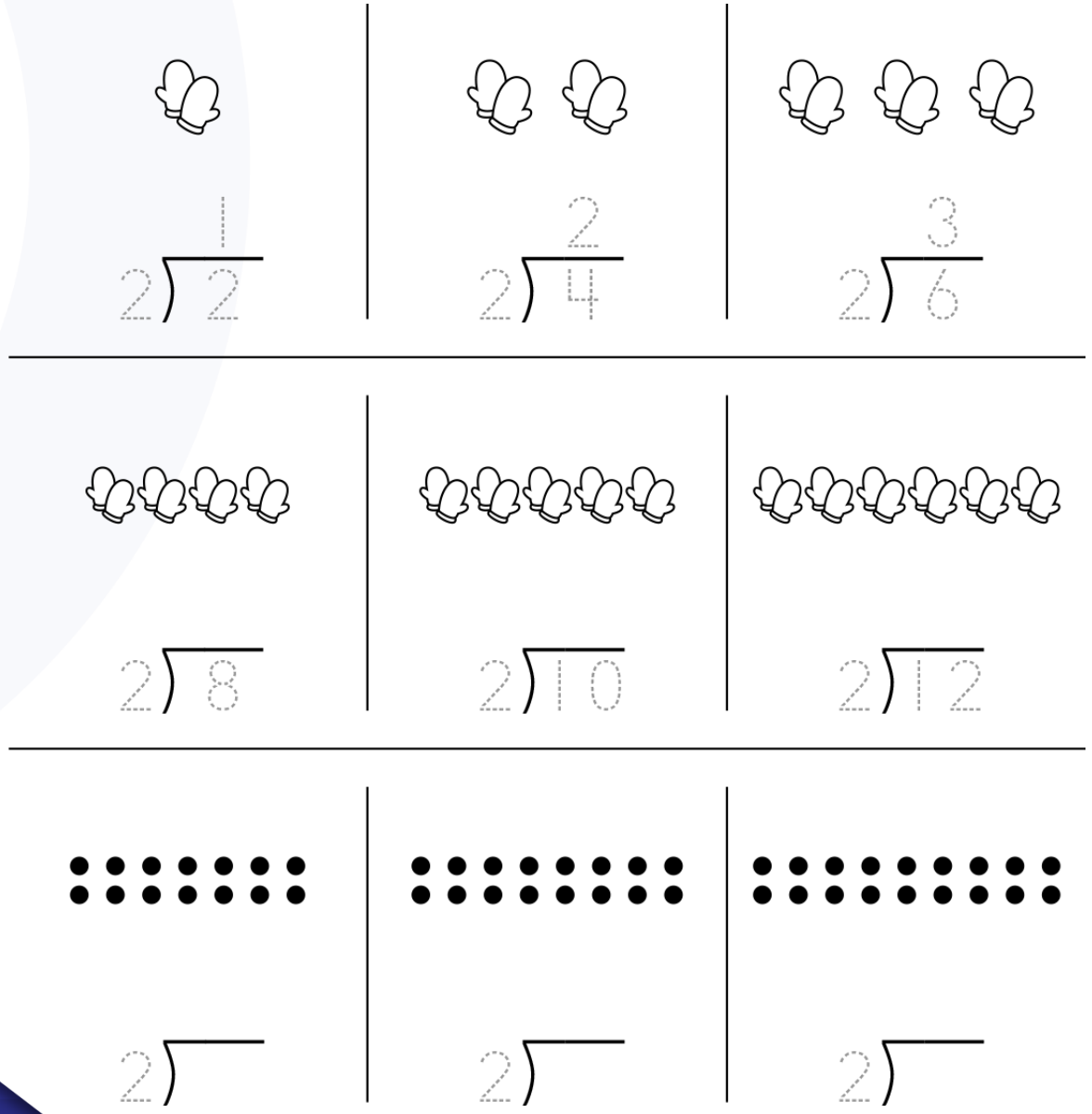
Beginning Division

I skip count by the divisor and get as close to the dividend as possible without going over the dividend.



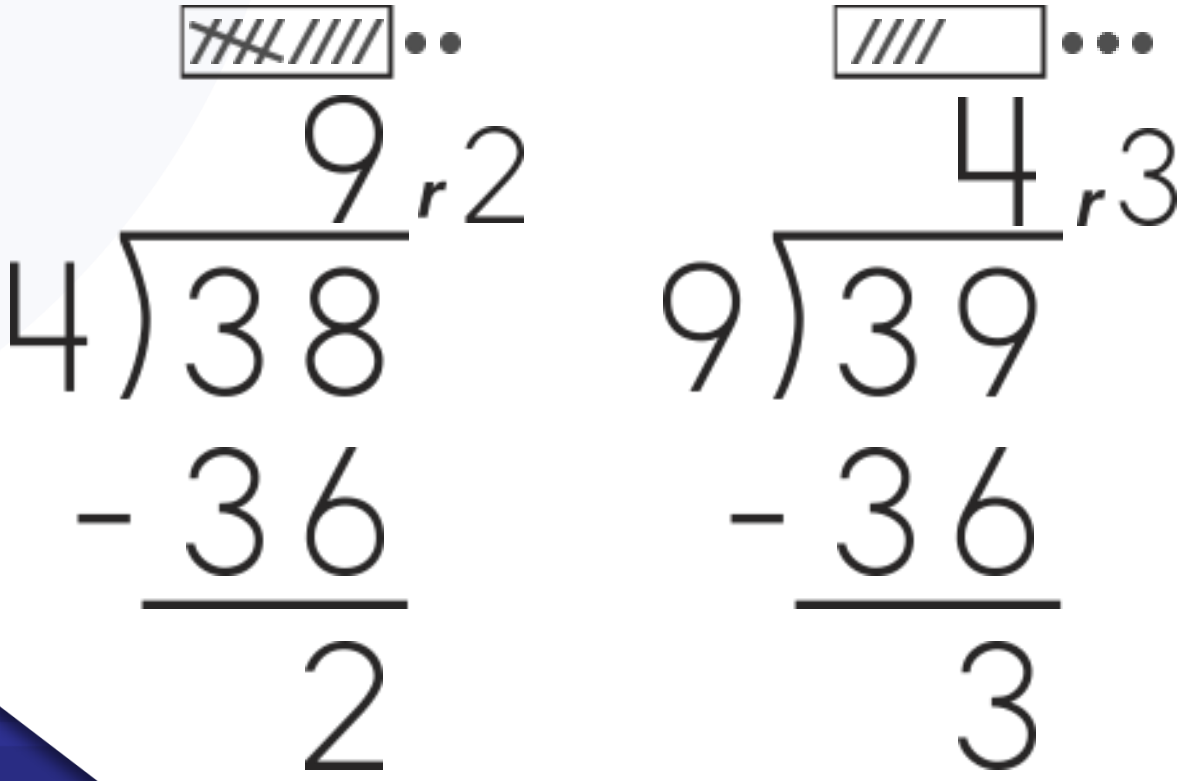
Beginning Division Activity Sample



Division with Remainders

Division with Remainders

I skip count by the divisor and get as close to the dividend as possible without going over the dividend.
Then I continue counting by one up to the dividend.



Long Division

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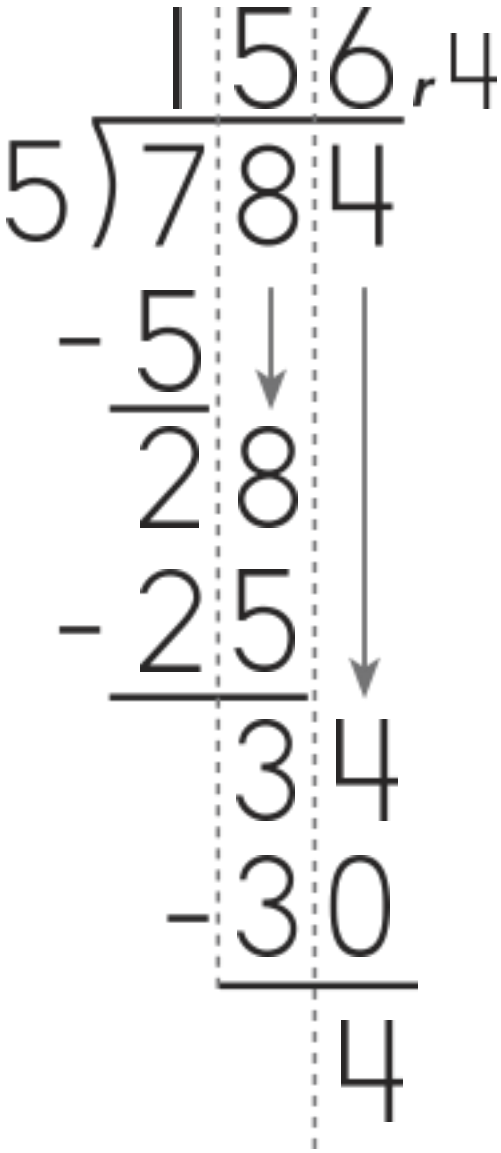
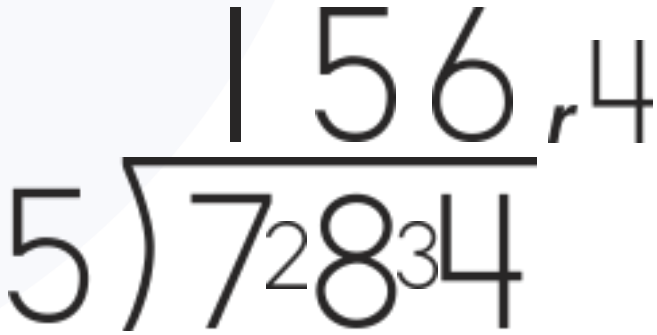
Long Division

I estimate, divide, multiply, subtract, compare, bring down.



Short Division

I estimate, divide, multiply, subtract, compare, bring down.



Mixed Operations with Whole Numbers

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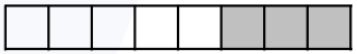
Mixed Operations Activity Sample

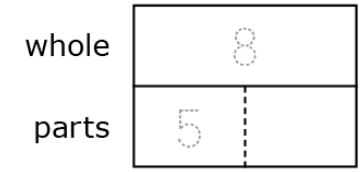
When **adding**, combine parts to make a whole.

5 + 3 = 8

When **subtracting**, take a part from the whole to find the other part.



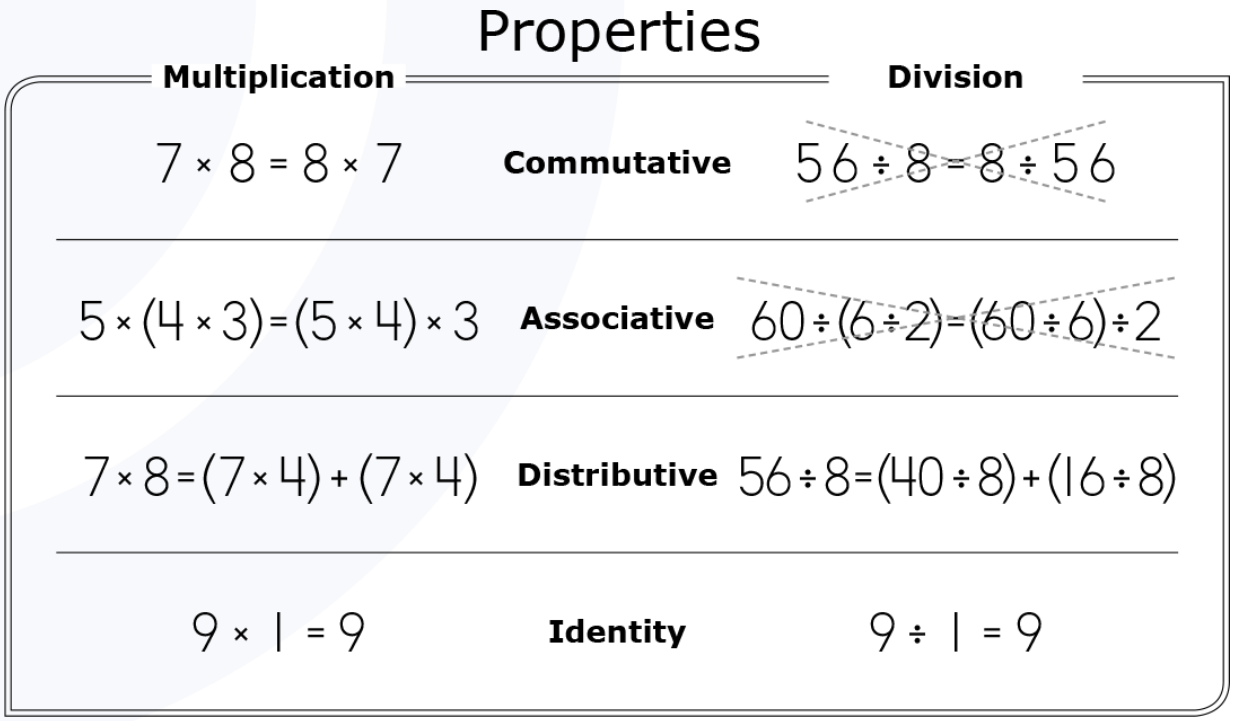
8 – 3 = 5



6 part
+ 7 part
whole

13 whole
- 7 part
part

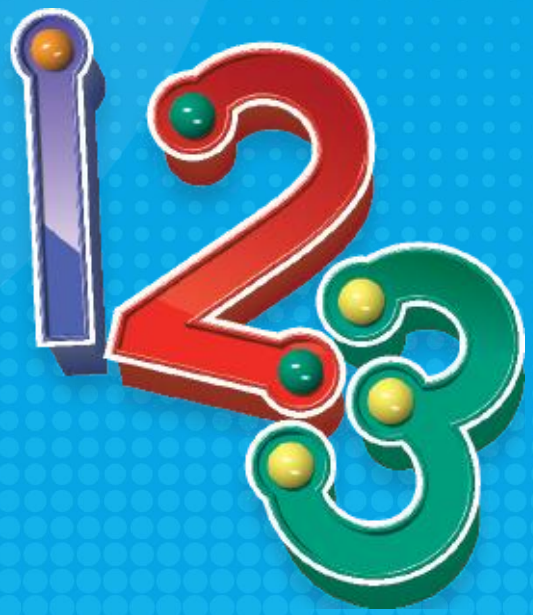
Mixed Operations Activity Sample



Directions:

- Under **Commutative**, write **ORDER**
- Under **Associative**, write **GROUPING**
- Under **Identity**, write **SAME**
- **Distributive** uses two operations

Fractions, Decimals, and Percents



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Converting Fractions

Problem: $3\frac{1}{4} =$

Step I: $3\frac{1}{4} =$

Solve: $3\frac{1}{4} = \frac{13}{4}$

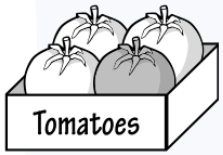
Converting an Improper Fraction to a Mixed Number

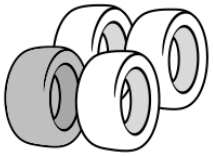
Problem: $\frac{11}{2} =$

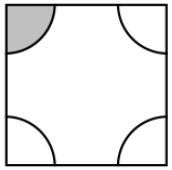
Step I:

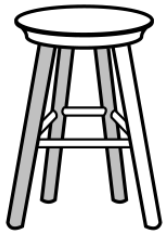
Solve: $\frac{11}{2} = 5\frac{1}{2}$

Fractions Activity Sample

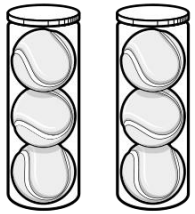


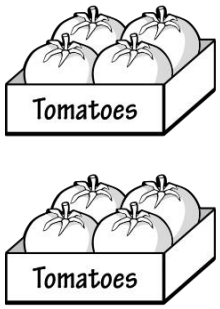


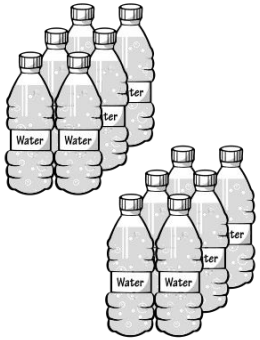


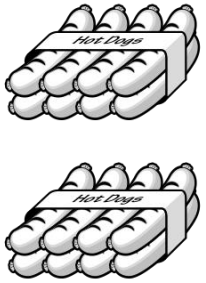


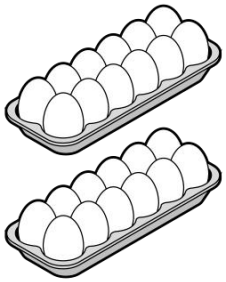
Fractions Activity Sample

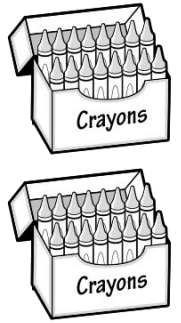










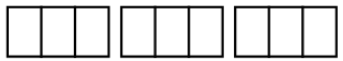


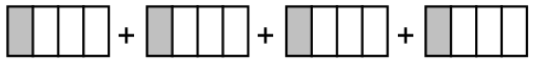
Fractions/Decimals Activity Sample

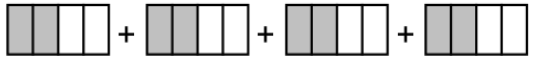
Fractions Activity Sample

1. $\frac{1}{3} \times 3 =$ $= \frac{1}{3} + \frac{1}{3} + \frac{1}{3} =$ $= \frac{3}{3} = 1$

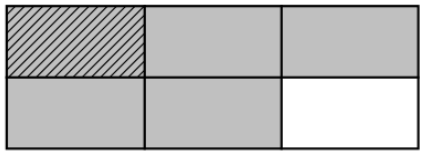
2. $\frac{2}{3} \times 3 =$ $= __ + __ + __ =$ $=$ _____

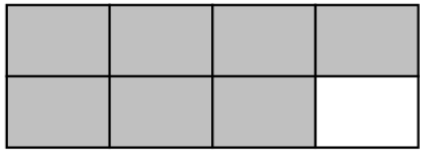
3. $\frac{3}{3} \times 3 =$ $= __ + __ + __ =$  $=$ _____

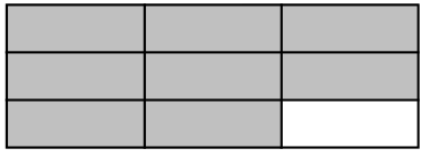
4. $\frac{1}{4} \times 4 =$  $= __ + __ + __ + __ =$ $=$ _____

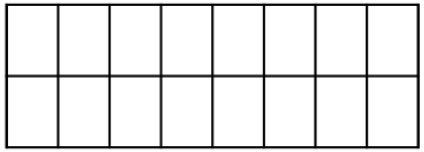
5. $\frac{2}{4} \times 4 =$  $= __ + __ + __ + __ =$ $=$ _____

Fractions Activity Sample

1. $\frac{5}{6} \div 5 =$  $= \frac{5}{6} \div \frac{5}{1} = \frac{1}{6}$

2. $\frac{7}{8} \div 7 =$  $= \frac{7}{8} \div __ = __$

3. $\frac{8}{9} \div 2 =$  $= __ \div __ = __$

4. $\frac{9}{16} \div 3 =$  $= __ \div __ = __$

Percents Activity Sample

Land Area of Continents

1. The land area in the world is made up of 7 continents. Find the percent of land area of each continent.

Asia = _____%

Europe = _____%

North America = _____%

Africa = _____%

South America = _____%

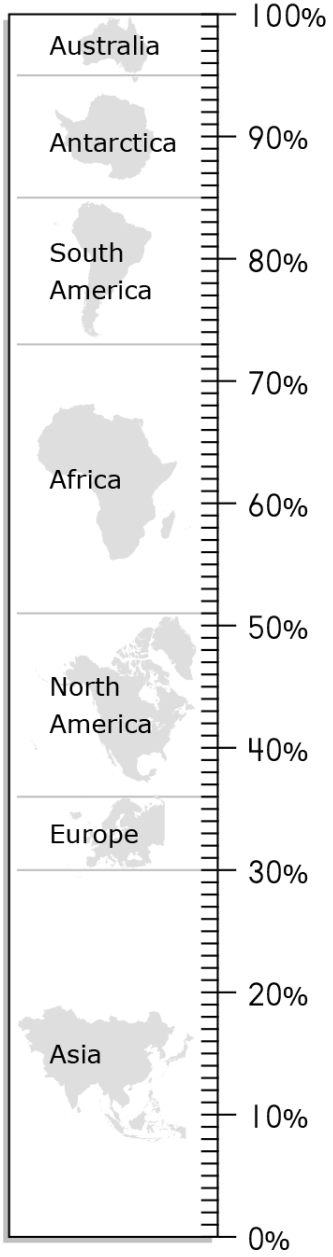
Antarctica = _____%

Australia = _____%

---

2. The percent of what two continents equals the percent of North America?

_____ and _____



Pre-Algebra

TOUCHMATH®

Pre-Algebra Activity Sample

The letter “x” can stand for any number.
When a numeral and an “x” are written next to each other, it means multiply.

In the equations below, the letter “x” is equal to 5.
To find the answer you multiply 4x5.
Skip count by 4 on the 5: 4, 8, 12, 16, 20. The answer is 20.

If $x = 5$
Then $4x = \underline{20}$
(Think: 4×5)

If $x = 5$
Then $5x = \underline{\quad}$
(Think: 5×5)

Pre-Algebra Activity Sample

The letter “x” can stand for any number. When a numeral and an “x” are written next to each other, it means multiply.

In the equations below, the letter “x” is unknown. To find the answer you must divide 8 by 2. Skip count by 2 up to 8 making a tally mark as you say each number – 2, 4, 6, 8. Then count the tally marks and write the answer: 4. Chack you answer by multiplying 2x4. Skip count by 2 on the 4: 2, 4, 6, 8.

If $2x = 8$
Then $x =$ 4 ////
(Think: $8 \div 2$)
Check: 2 × 4 = 8

If $2x = 4$
Then $x =$ ____
(Think: $4 \div 2$)
Check: __ × __ = 8

Pre-Algebra Activity Sample

The ratio of buses to cars is 1:4.

Buses	1	2	3	4	5	6
Cars	4	8				

The ratio of feet to yards is 3:1.

Feet	3					
Yards	1	2	3	4	5	

For every box, there are 12 markers.

Boxes	1	2	3	4	5	
Markers						

The ratio of boxes to markers is: _____

Every bus holds 30 students.

Students						
Buses						

The ratio of students to buses is: _____

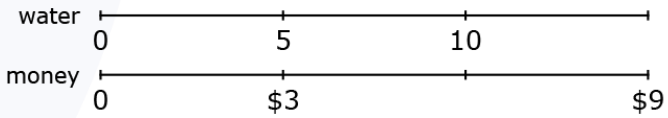
Pre-Algebra Activity Sample

Double Number Lines

Double number lines are used to compare two different types of quantities.

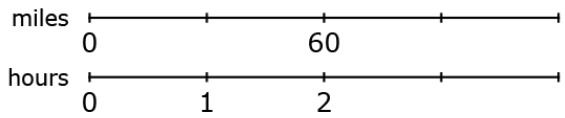
1.

Bottles of water and money 5:$3



2.

Miles and hours 60:2

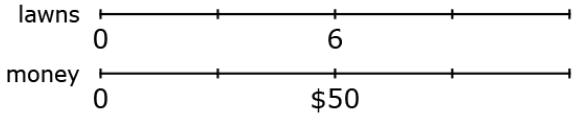


How many miles are traveled in 1 hour? _____

How many miles are traveled in $\frac{1}{2}$ hour? _____

3.

Lawns and money 6:$50

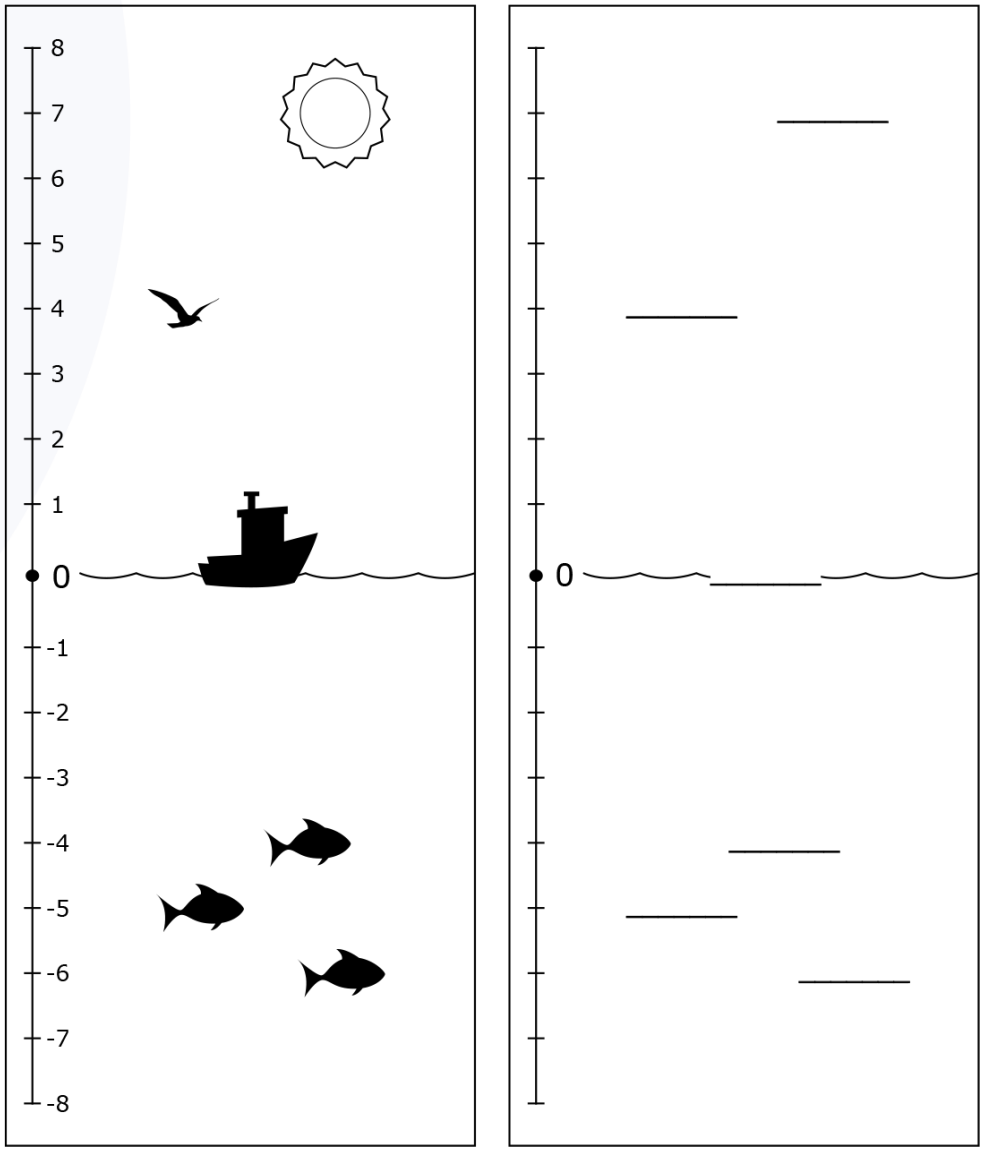


How much money is paid for 3 lawns? _____

How many lawns are mowed for $100? _____

Pre-Algebra Activity Sample

Positive and Negative Numbers



Pre-Algebra Activity Sample

t = Time $60t$ = Distance

t	1 hr.	5 hrs.		10 hrs.	
$60t$	60 mi.	300 mi.	480 mi.		900 mi.

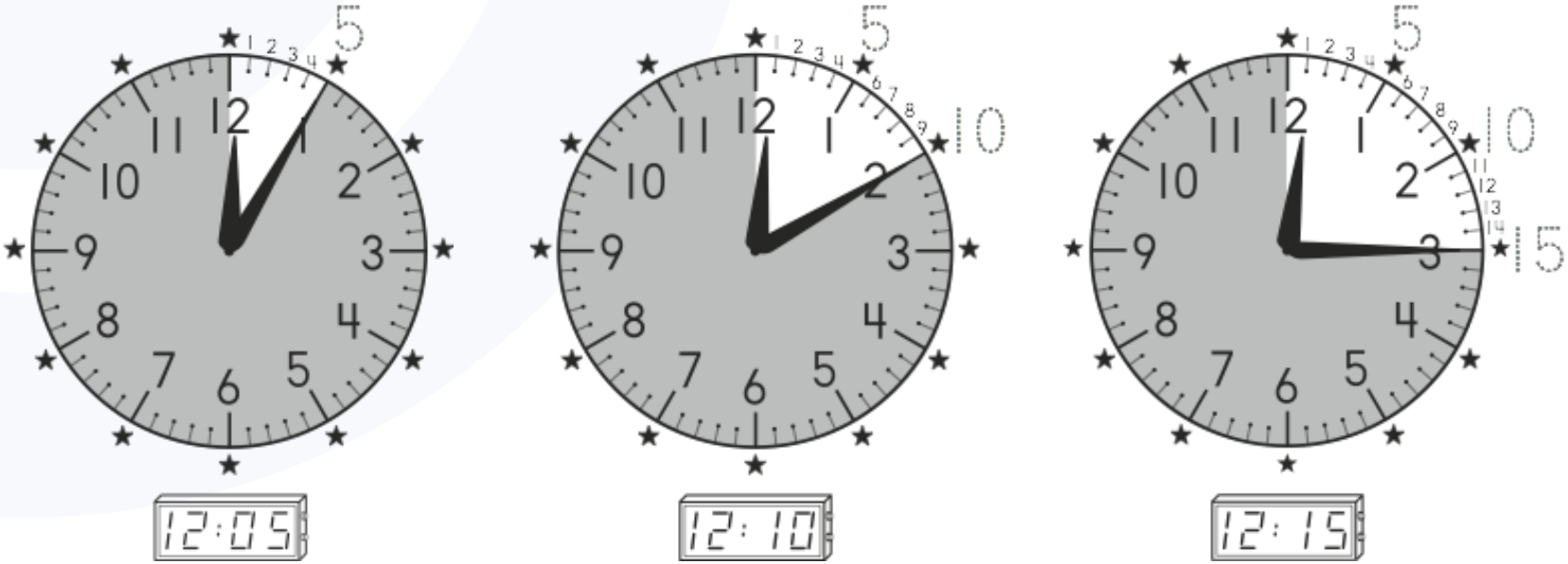
1. Sam traveled at 60 miles per hour for 2 hours.
   How many miles did he travel? _____ miles

2. Mickey traveled at 60 miles per hour for 10 hours.
   How many miles did she travel? _____ miles

Time

Telling Time

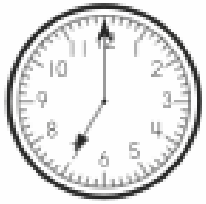
Count by 1's on the TouchPoint minute marks or by 5's on the TouchStars.



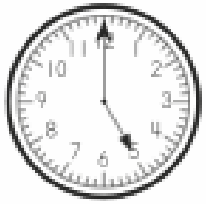
Time Activity Sample

The letters a.m. stand for ante meridiem (think: at morning), and always refer to the times between 12:00 midnight and 12:00 noon. Ring the clock showing the correct answer.

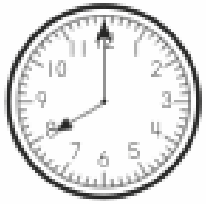
1. If Charlie wakes up at 6:00 a.m. and eats breakfast one hour later, what time will it be when Charlie eats?



7:00 a.m.



5:00 a.m.



8:00 a.m.

Money

TOUCHMATH®

Money

TouchMath Money Program Outcomes

- Identify coins and their values
- Sort, classify, and order coins by size, value, and appearance
- Sort, classify, and order bills by value
- Determine the total amount of coins and bills
- Determine the costs of items and make change
- Develop a variety of problem solving strategies
- Collect, organize, and display data using tables, charts, and graphs
- Using words, students will write money values
- Add, subtract, multiply, and divide using dollar signs and decimal points
- Estimate and round money values
- Do real-life activities with bills, coins, menus, and shopping with coupons

Penny Counting Pattern

Count by 1 on the TouchPoint.

Nickel Counting Pattern

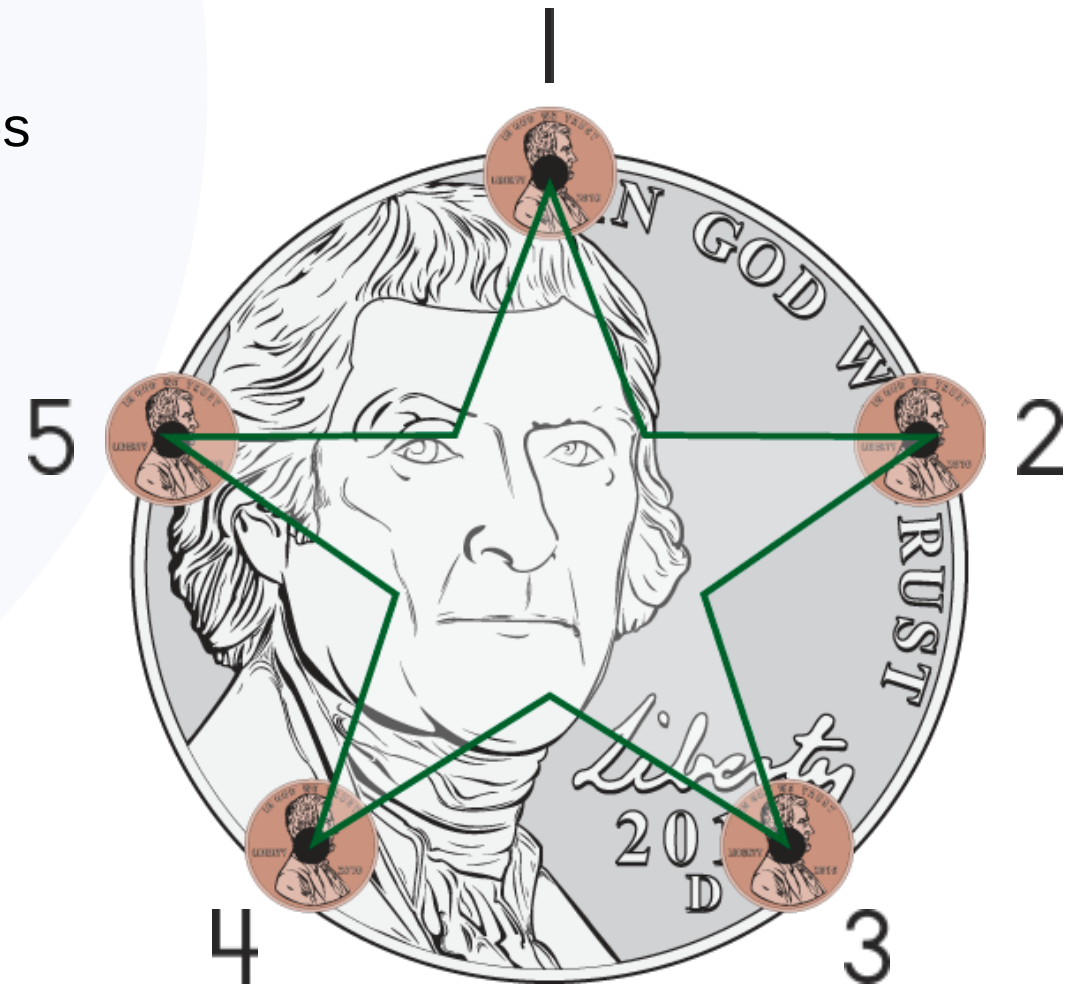
Count by 5 on the TouchStar.

5

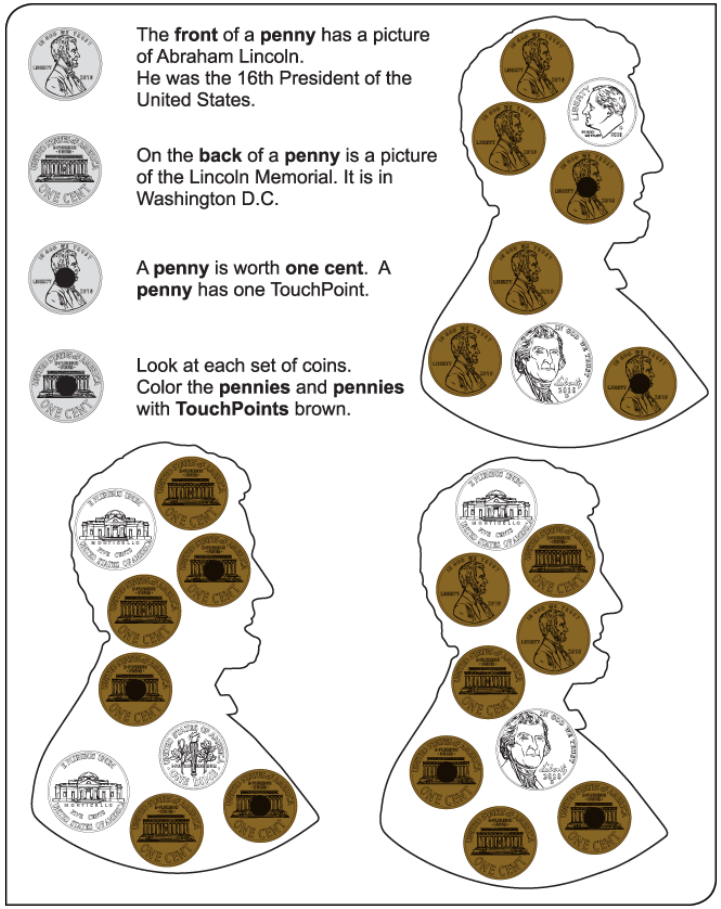
5

Nickel Value

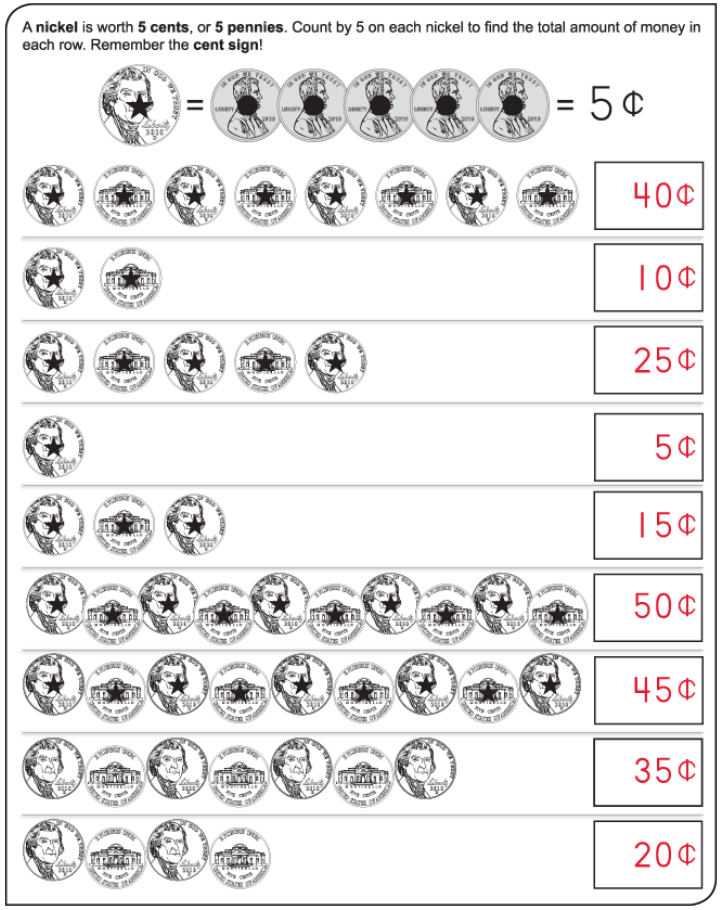
- 1 nickel equals 5 pennies
- 1 nickel equals 5 cents
- A TouchStar equals 5 pennies or 5¢



Penny Identification Activity Sample



Nickel Value Activity Sample



Counting Dimes

2 TouchStars make a double TouchStar.

Dime Counting Pattern

Count by 5 on the TouchStars.

Double TouchStars are touched and counted twice.

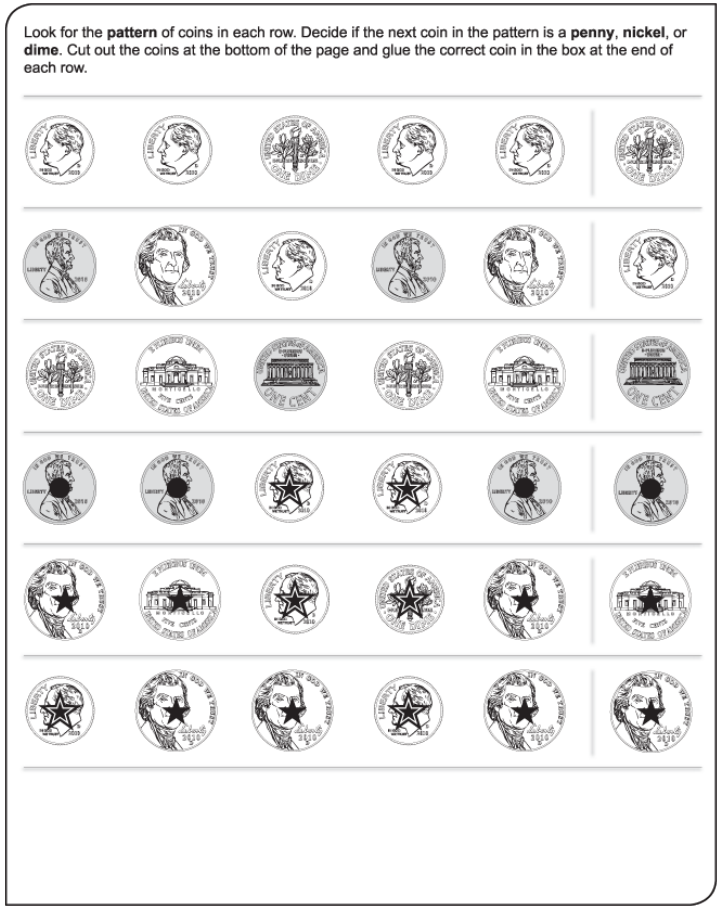
5, 10

5, 10

Dime Value Pattern

- 1 dime equals 2 nickels
- 1 dime equals 10 cents
- 2 TouchStars equals 10 pennies or 10¢

Dime Patterning Activity Sample



Look for the **pattern** of coins in each row. Decide if the next coin in the pattern is a **penny**, **nickel**, or **dime**. Cut out the coins at the bottom of the page and glue the correct coin in the box at the end of each row.

Counting Quarters

2 TouchStars make a double TouchStar.

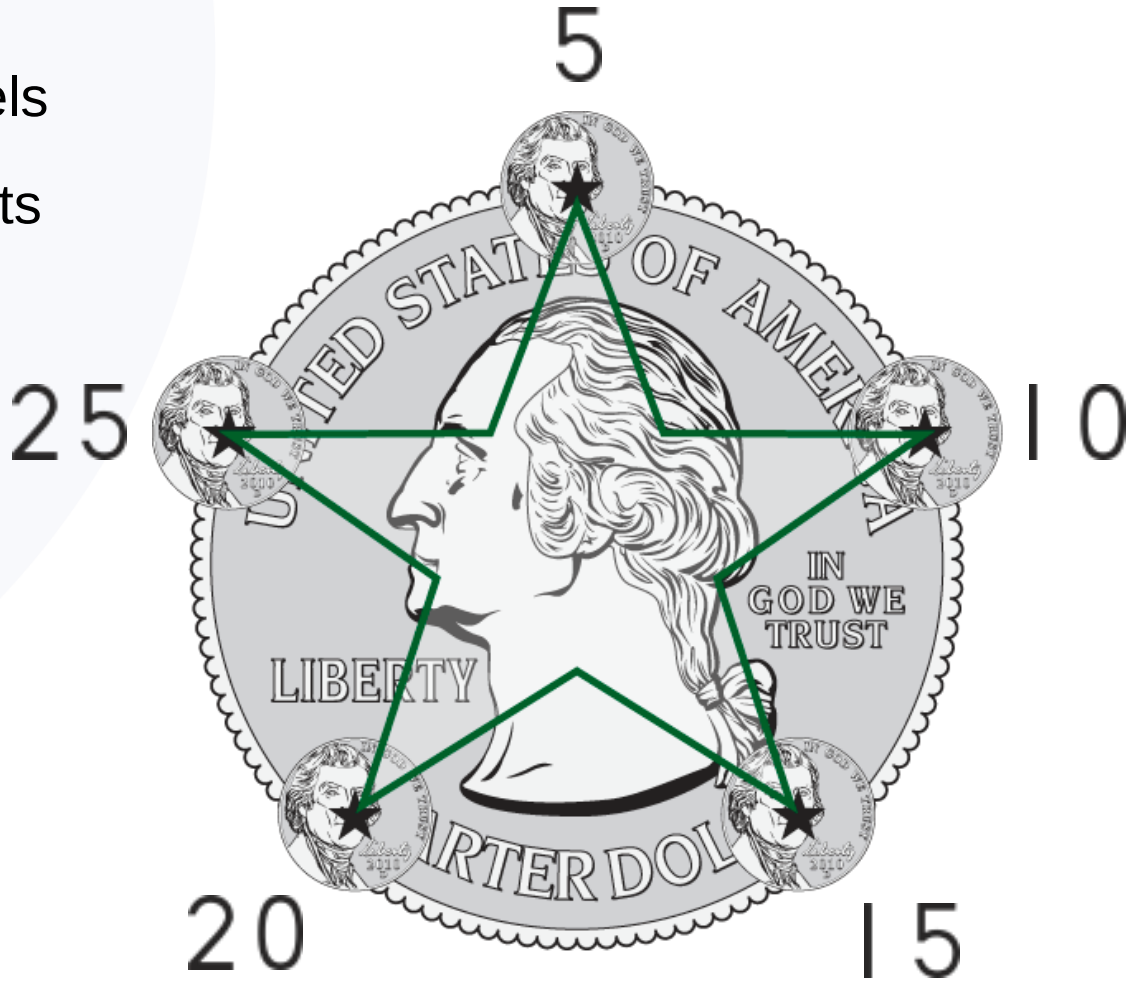
5, 10, 15, 20, 25

=

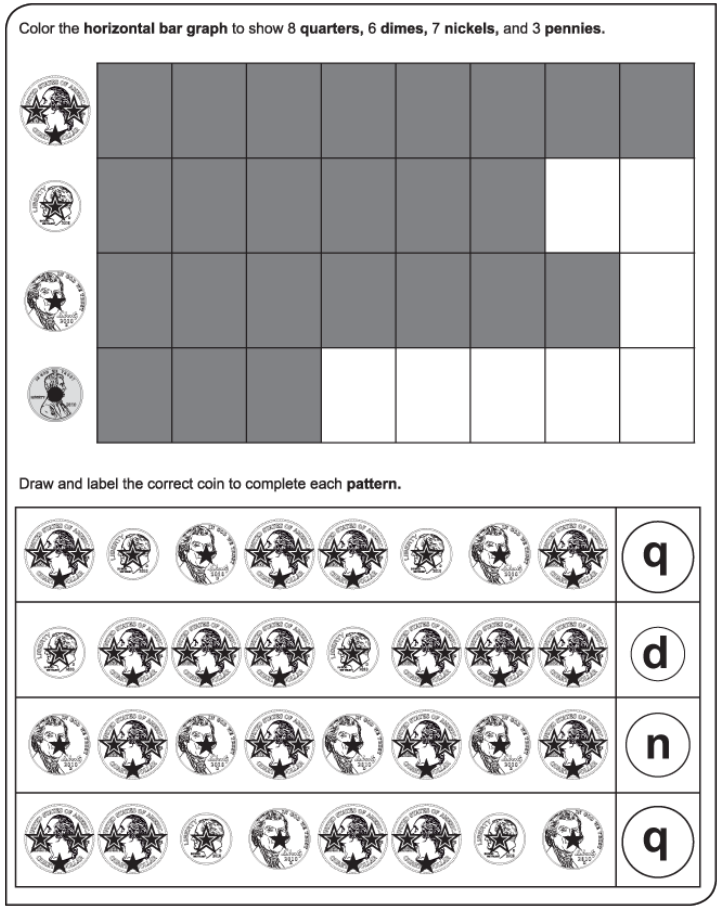
5, 10, 15, 20, 25

Quarter Value

- 1 quarter equals 5 nickels
- 1 quarter equals 25 cents
- 5 TouchStars equals 25 pennies or 25¢

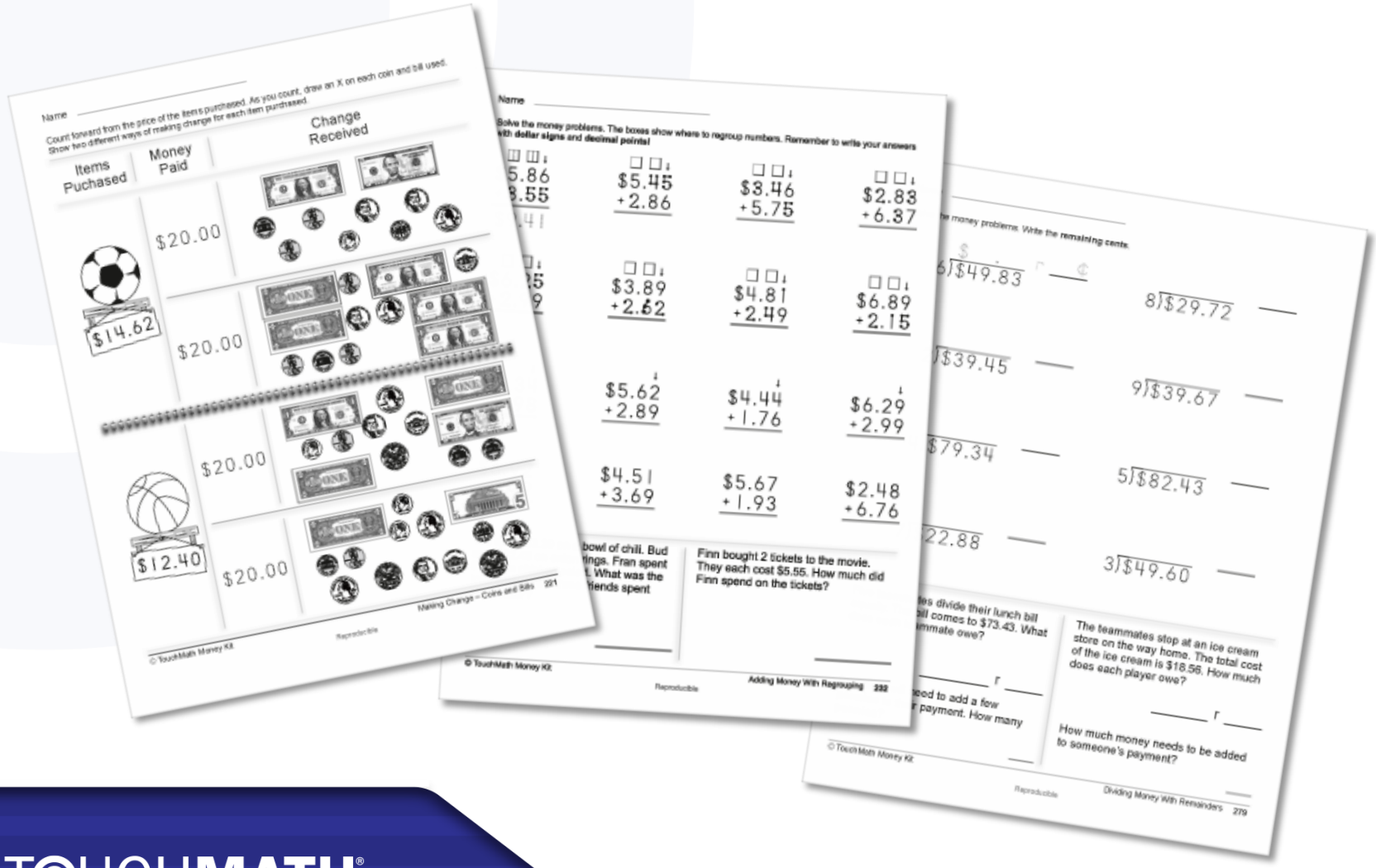


Quarter Graphing Activity Sample



Money Kit Activity Samples

Money Kit Activity Samples



TOUCHMATH®

Summary

Research Proves it...

TouchMath Increases Math Comprehension and Raises Test Scores in Districts Worldwide.

Over forty years of primary and secondary research conducted by experts in the fields of education and child development share a resounding conclusion: TouchMath accelerates learning for students of all ability levels and learning styles in general education, intervention, and special education classrooms.

- After the TouchMath strategy was introduced, a significant increase was seen in test scores, as well as an extremely positive increase in students' behavior, work completion, and self concept.

— From the study *The Effectiveness of the TouchMath Program with Fourth and Fifth Grade Special Education Students*

- Significant gains in acquisition of the targeted skills, the ability to generalize TouchMath strategies and apply them to novel math problems, and a significant interest in using the TouchMath Program, particularly in mainstream classes were seen.

— From the study *Multisensory Mathematics for Children with Mild Disabilities*

- TouchMath students achieved greater gains than the control group, were able to solve problems faster and more accurately, and demonstrated a more confident demeanor.

— From the study *TouchMath Intervention vs. Traditional Intervention*

TouchMath will...

- Maximize Student Achievement
- Build Self Confidence
- Raise Test Scores
- Reduce Re-Teaching Time
- Improve Math Retention
- Make Math Easier to Understand and More Fun!

"With TouchMath… my students outperform their peers EVERY SINGLE TIME!"

— Hollee Terry, Second Grade Teacher

TOUCHMATH®

Your Evaluation

- Please print clearly
- Complete entire form
- Use your regular school address
- Consent box

Your presenter today

Michael Soria

Executive Director of Education
Innovative Learning Concepts
Creators of TouchMath

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