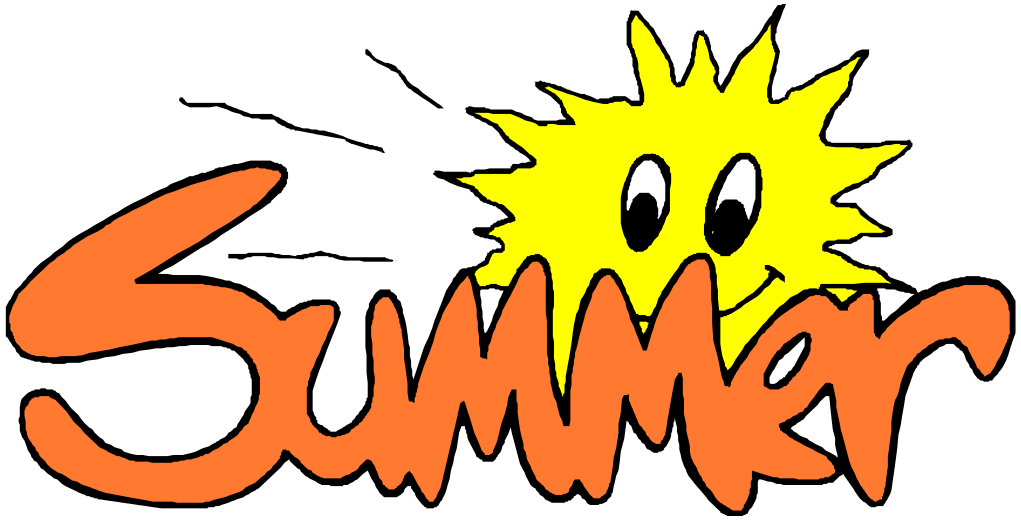


MATH PACKET

for

Students Entering the **Fifth Grade**

Students Name: _____
First <u>and</u> Last

Student's **Fifth** Grade Teacher: _____

Parent's Signature: _____

INTRODUCTION

Welcome to the summer math packet for students completing fourth grade. The design of the activities is meant to support instruction in the new curriculum in both its content and presentation. Therefore, the activities are not to be done as independent problems, but to be worked on with a parent, guardian or older brother or sister. Talking about the problem is an important part of completing each activity.

In Fourth Grade, students explored math concepts based on five standards. The ten activities in this summer math packet reflect the content of those five standards.

EXPECTATION

To receive credit for this packet, students must complete at least eight of the activities with at least one being from each of the five standards.

Summer Packet Content:

Standard 1: Operations and Algebraic Thinking

Activity A: How Does His Garden Grow?

Activity B: Purchasing Popsicles

Standard 2: Number and Operations in Base Ten

Activity A: Bottles on the Beach

Activity B: Nautical Numbers

Activity C: Beach Towel Area Models

Standard 3: Number and Operations—Fractions

Activity A: Campfire Decimals

Activity B: Build a Beach House

Standard 4: Measurement and Data

Activity A: Summer Skate Park

Activity B: Garden Line Plot

Standard 5: Geometry

Activity A: Baseball Symmetry

Activity B: Flower Garden Geoboards

All packets are due on **Friday, September 13, 2019.** There will be a prize and certificate for those students returning to Ritchie Park who complete the required activities. Before returning this packet in the fall, please make sure that the front of the packet is **completed and signed**. We must have the student's **FIRST and LAST** name to ensure that credit will be given to the right child. Thank you!

Sincerely,

Ms. Catherine Long, Principal

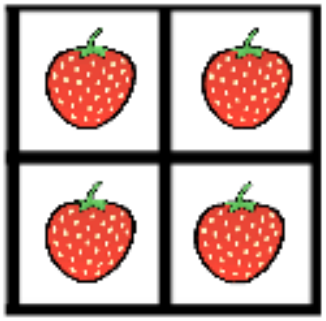
Mrs. Susan DiManna, Staff Development Teacher

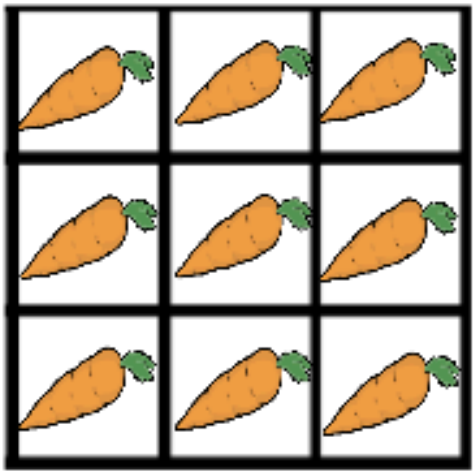
Operations and Algebraic Thinking-Activity A

How Does His Garden Grow?

Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

Farmer Joe loves patterns about as much as he loves gardening. Use the attached grid paper to create <u>3 more</u> garden plots to continue the pattern Farmer Joe started. What do you notice about the pattern? What is the rule? Can you predict what the 10th garden plot will look like if you continue the pattern? Explain.





Operations and Algebraic Thinking-Activity B

Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

Purchasing Popsicles

Some local stores are selling popsicles for the summer. You LOVE popsicles and want to buy enough for the whole year! Answer the questions below using the chart.

Target	Sam's Club
3 popsicles per box	180 popsicles per box
2 popsicles per box	90 popsicles per box
4 popsicles per box	120 popsicles per box

Adapted from: Smith, Margaret Schwan, Victoria Bill, and Elizabeth K. Hughes. "Thinking Through a Lesson Protocol: Successfully Implementing High-Level Tasks." Mathematics Teaching in the Middle School 14 (October 2008): 132-138.

How many different ways can you buy 360 popsicles?

What patterns do you notice? Explain your answer.

Challenge:

If you need half as many popsicles, how many different ways can you buy that many popsicles?

Number Operations in Base Ten-Activity A

Fluently add and subtract multi-digit whole numbers using the standard algorithm. *

Bottles on the Beach

You collected bottles and cans from the beach and brought them to the recycling center. Solve the problems below.

I. A recycling center recycles plastic bottles, aluminum cans, and glass bottles. The table shows the number of each material the center recycled in one day.

Materials Recycled

Material	Number Recycled
Plastic bottles	120,847
Aluminum Cans	90,659
Glass Bottles	30,273

A. Was the combination of aluminum cans and glass bottles that were recycled greater than or less than the number of plastic bottles that were recycled? Show your work.

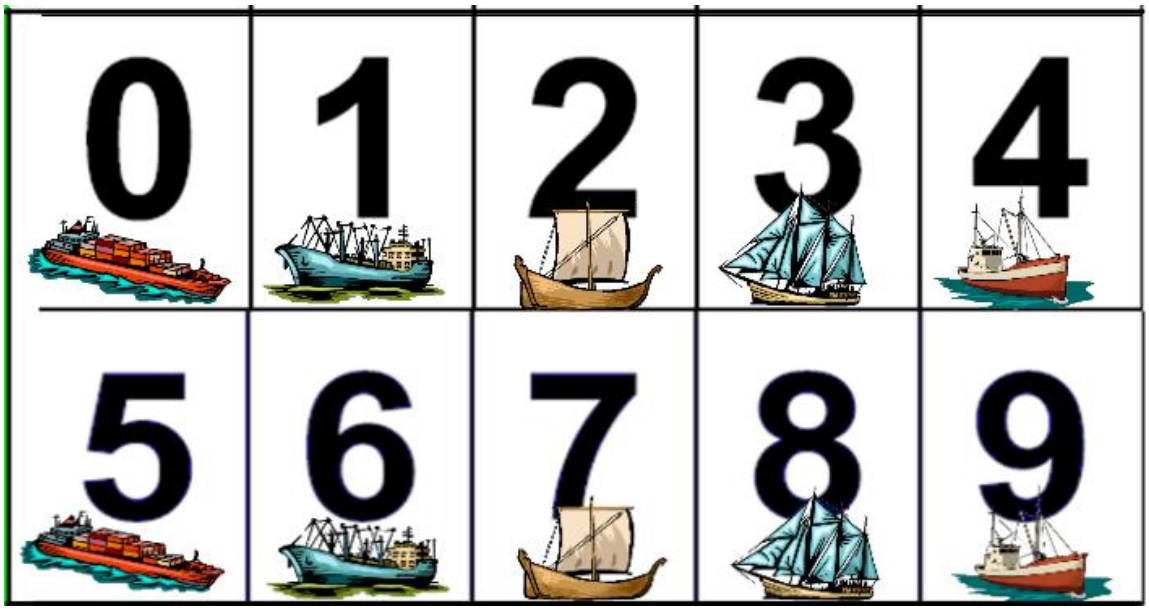
B. What is the total number of bottles and cans recycled at the center? Show your work.

C. How many more aluminum cans were recycled than glass bottles? Show your work.

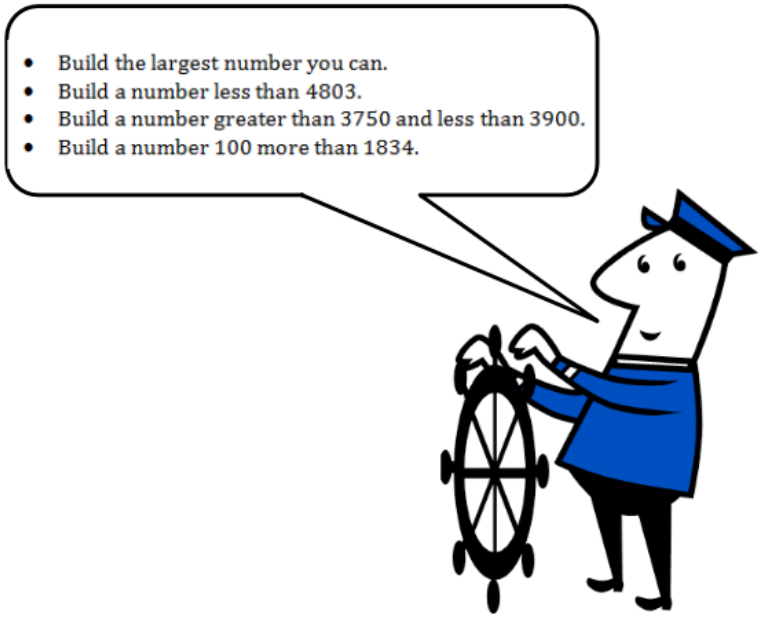
Number Operations in Base Ten-Activity B

Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form.
Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Nautical Numbers



Have your child cut out the number cards above. Ask them to complete tasks like the ones below…



When your child has had sufficient practice, have your child generate a large number. Enter the number on the next page. The number of digits can be based on your child's ability. Write 4 clues for the number (My number is a 5 digit odd number between 70,000 and 60,000). Can a third person guess the secret number? Play the game twice.

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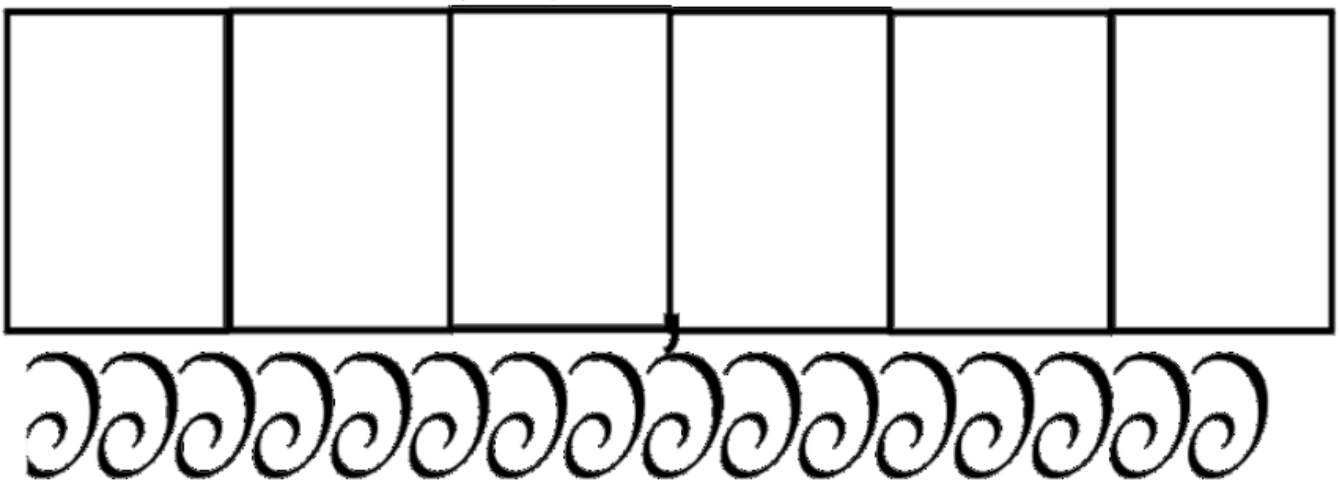
Choose your digits. Place them on the waves



Game 1 Clues

1.

2.

3.

4.

Game 2 Clues

1.

2.

3.

4.

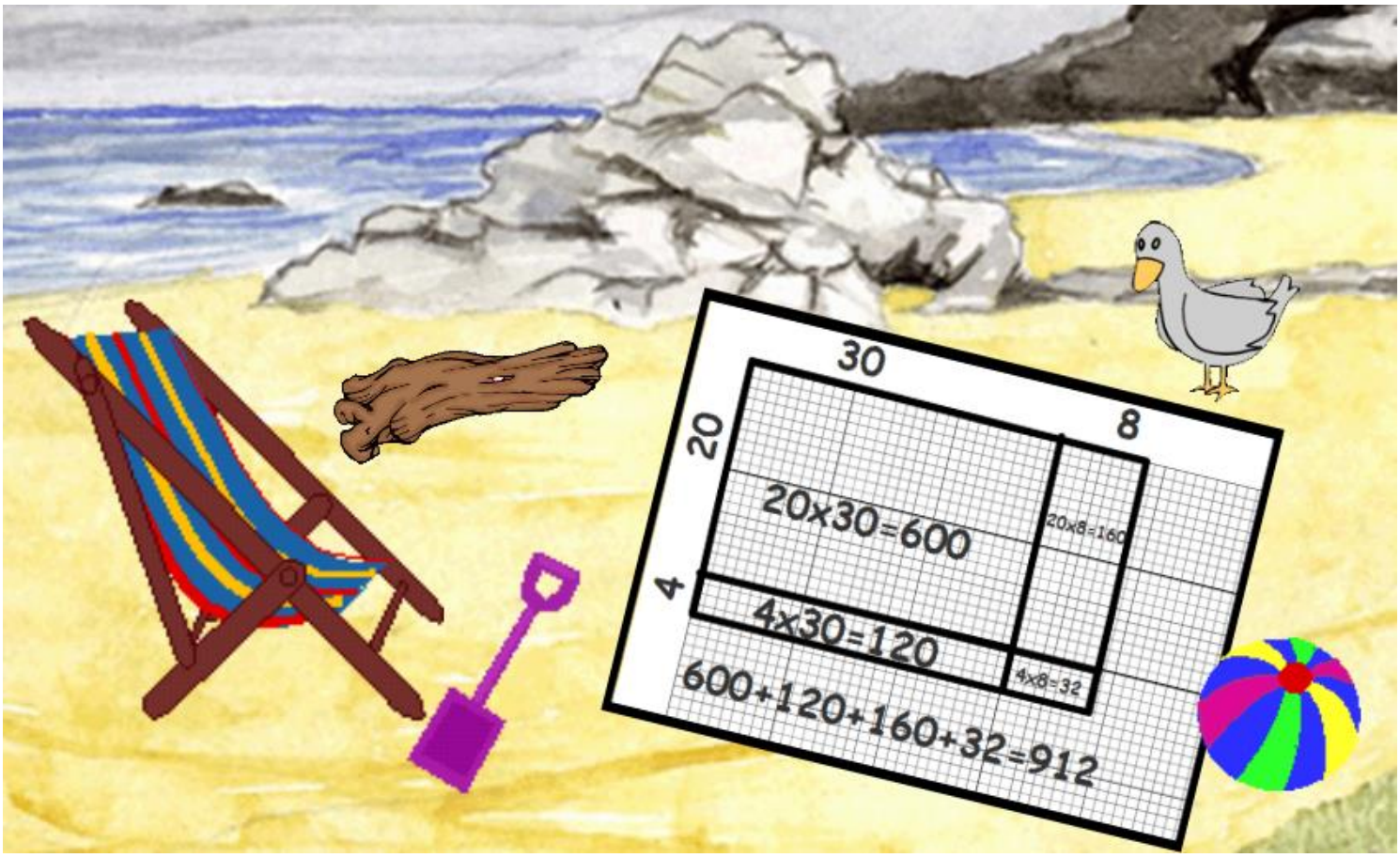
Number Operations in Base Ten-Activity C

Beach Towel Area Models

Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

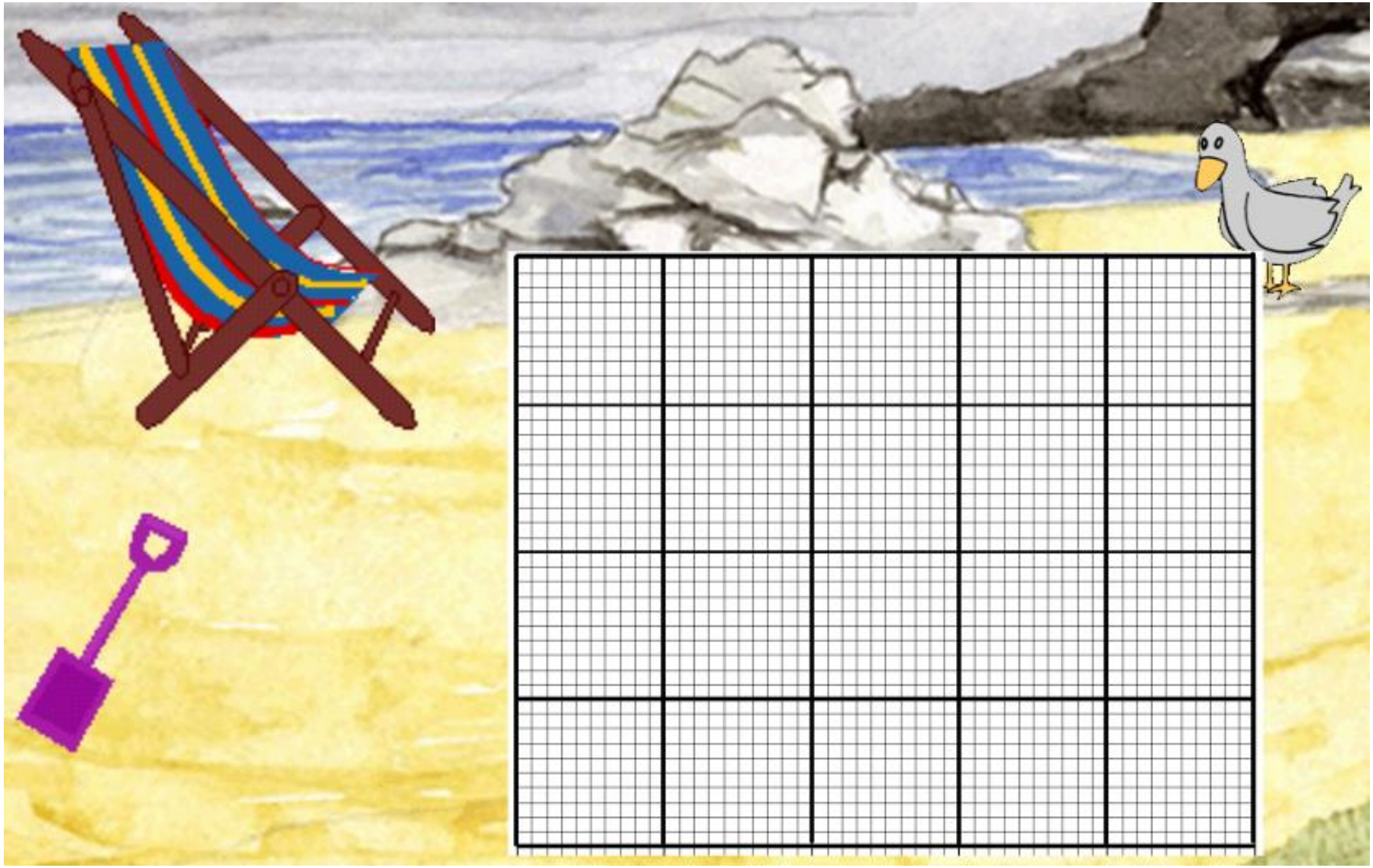
The Ritchie Park PTA is selling beach towels to help students remember their area models for multiplication. They have asked students to design a beach towel similar to the one below.

38 x 42



Use the following page to design a beach towel of an area model to represent 42 x 36. Be sure to include partial products and their equations.

42 x 36



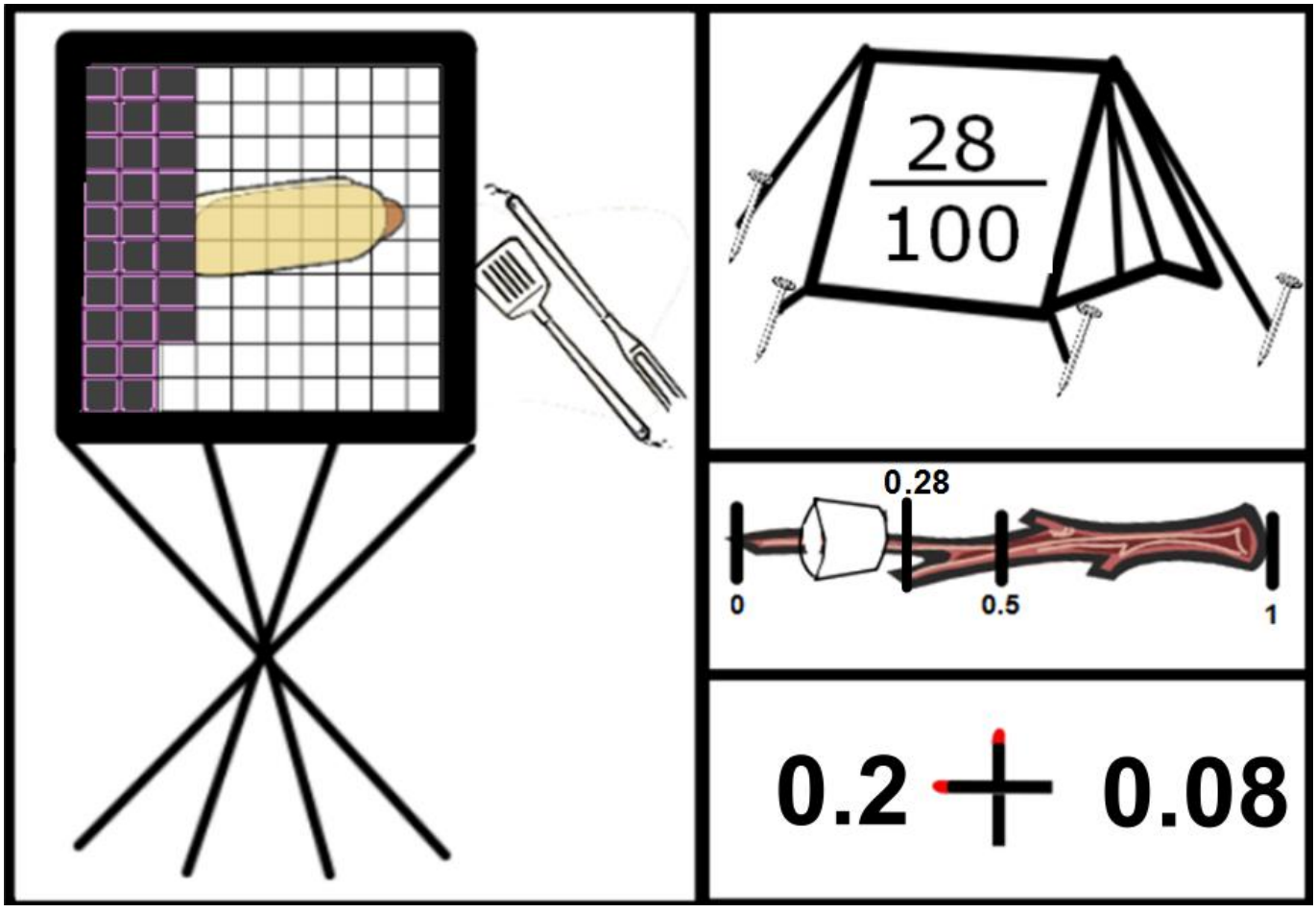
NUMBER & OPERATIONS/FRACTIONS-Activity A

Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*

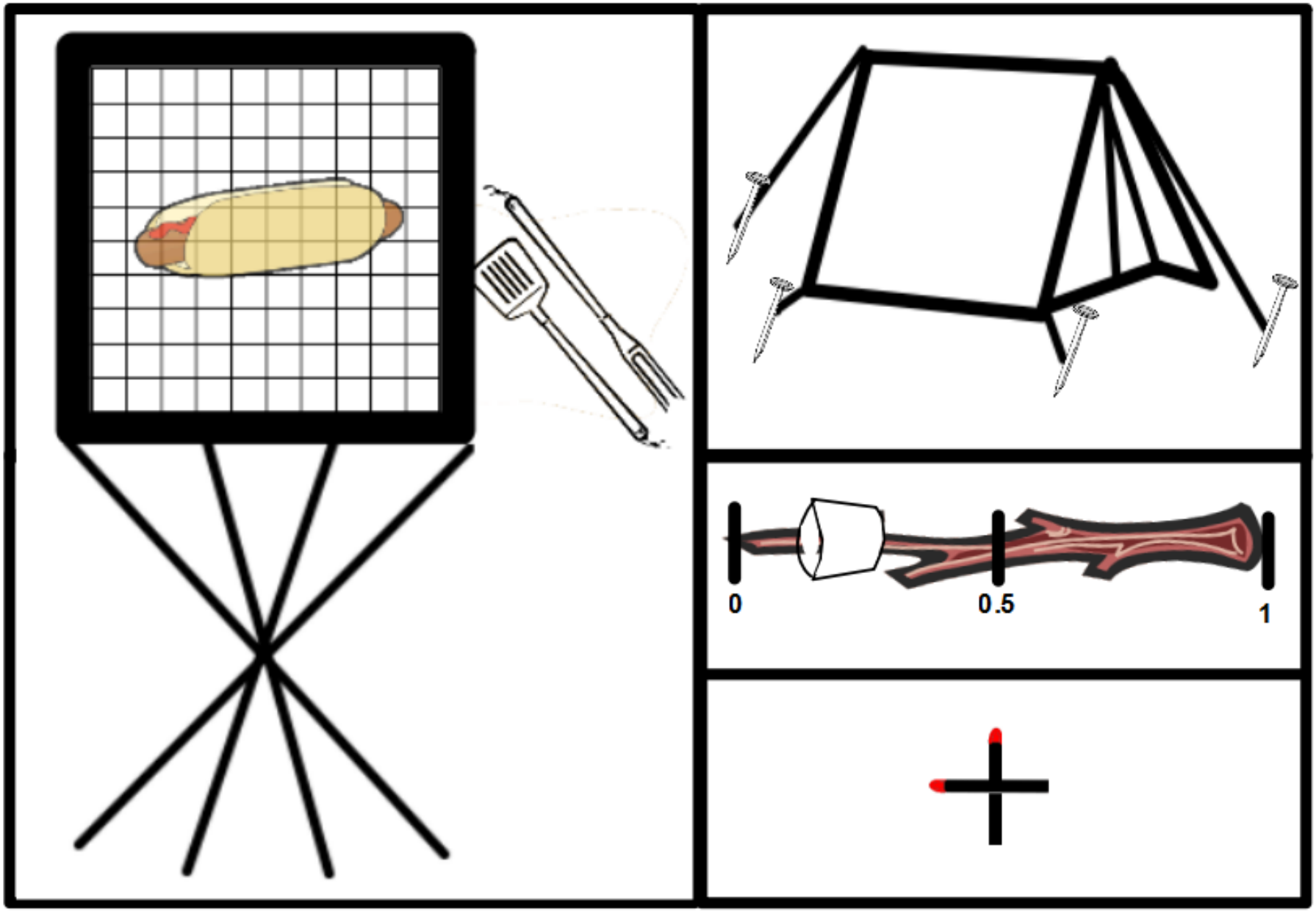
Decimal Campfire

Use the the campfire mat to show different representations of a given decimal. See an example below.

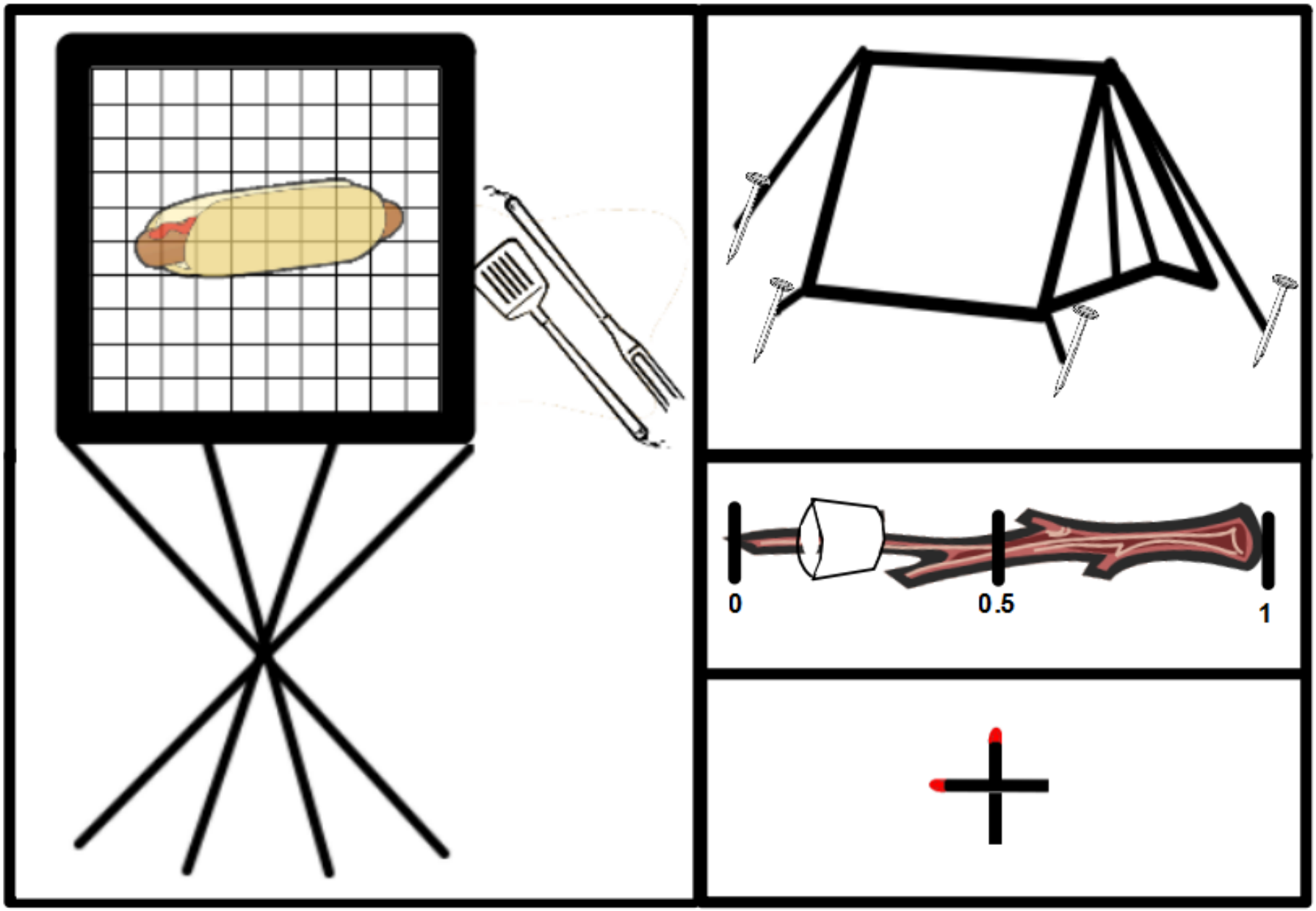
0.28



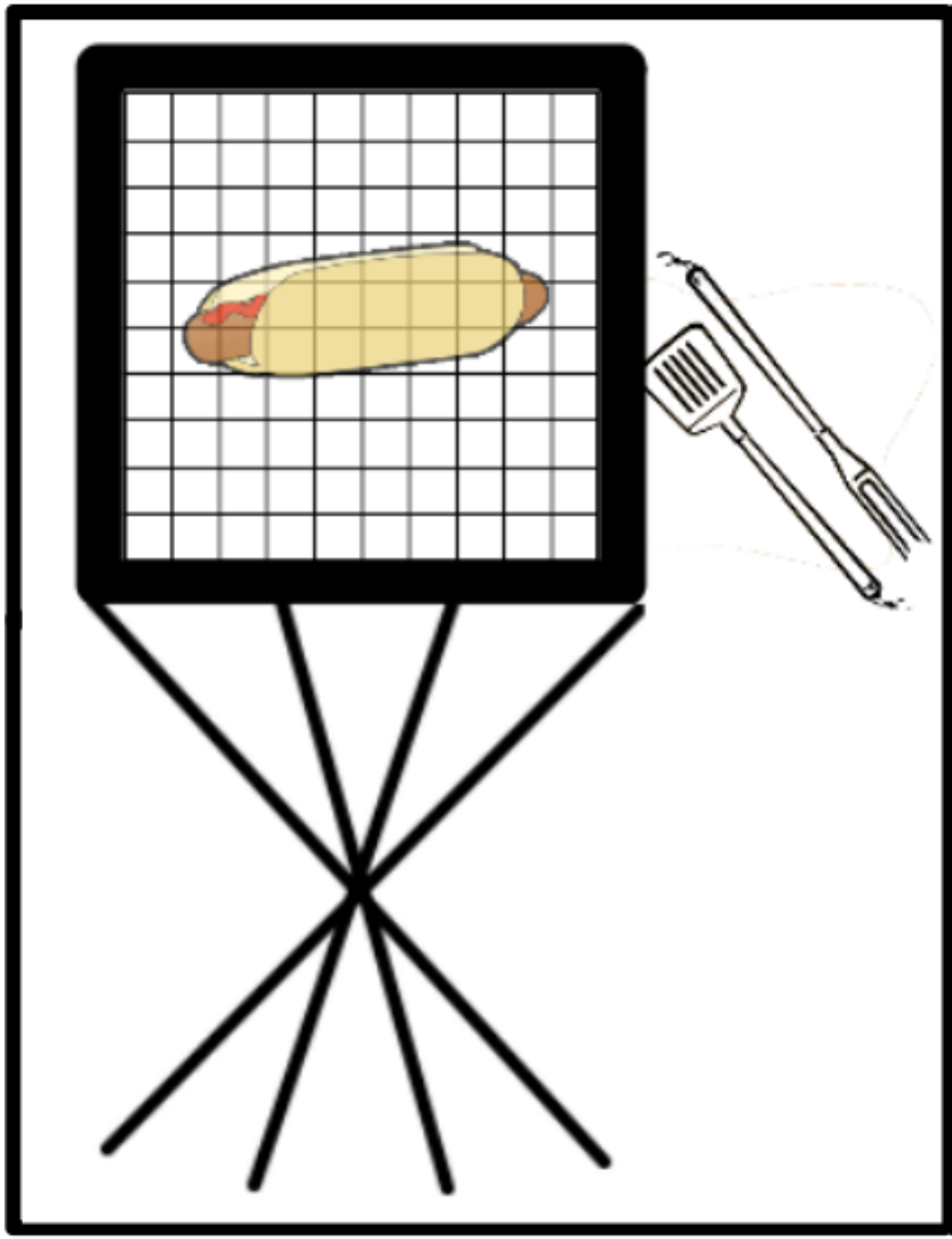
0.08

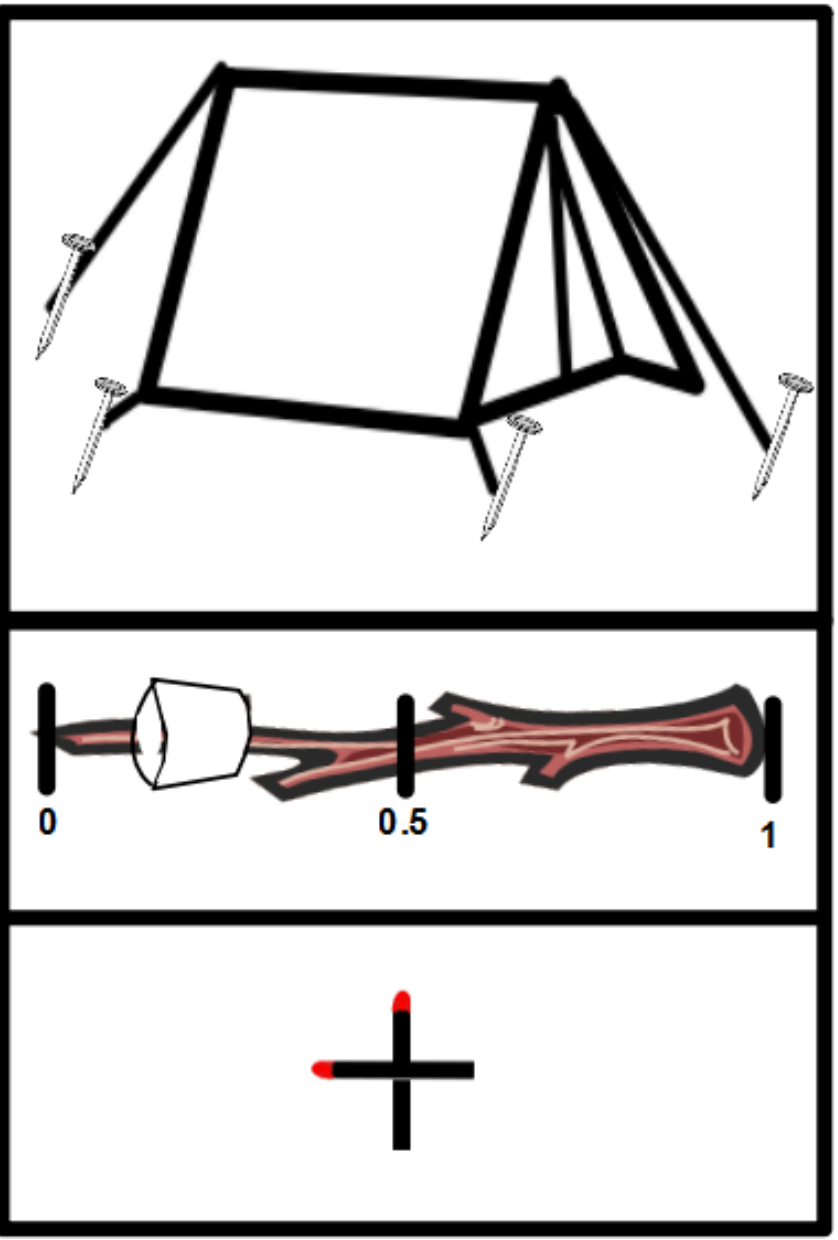


0.5



0.21





NUMBER & OPERATIONS/Fractions-Activity B

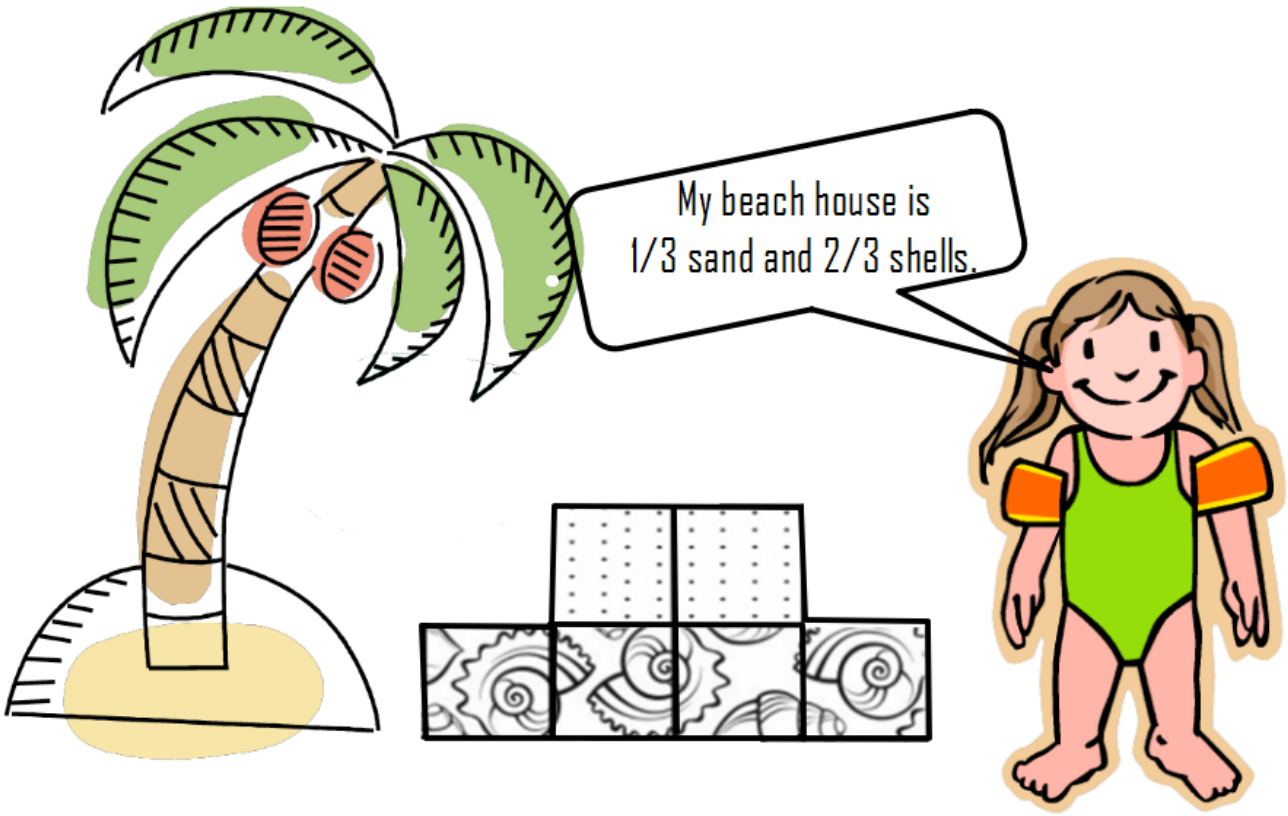
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. **

1.4.D.3 Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
  Examples: $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$.

Build a Beach House

Cut out the 40 tiles on the next page. Use the tiles to construct a beach house given the criteria on each activity card.



(adapted from http://maccss.ncdpi.wikispaces.net/file/view/4thGradeUnit.pdf/295313404/4thGradeUnit.pdf)

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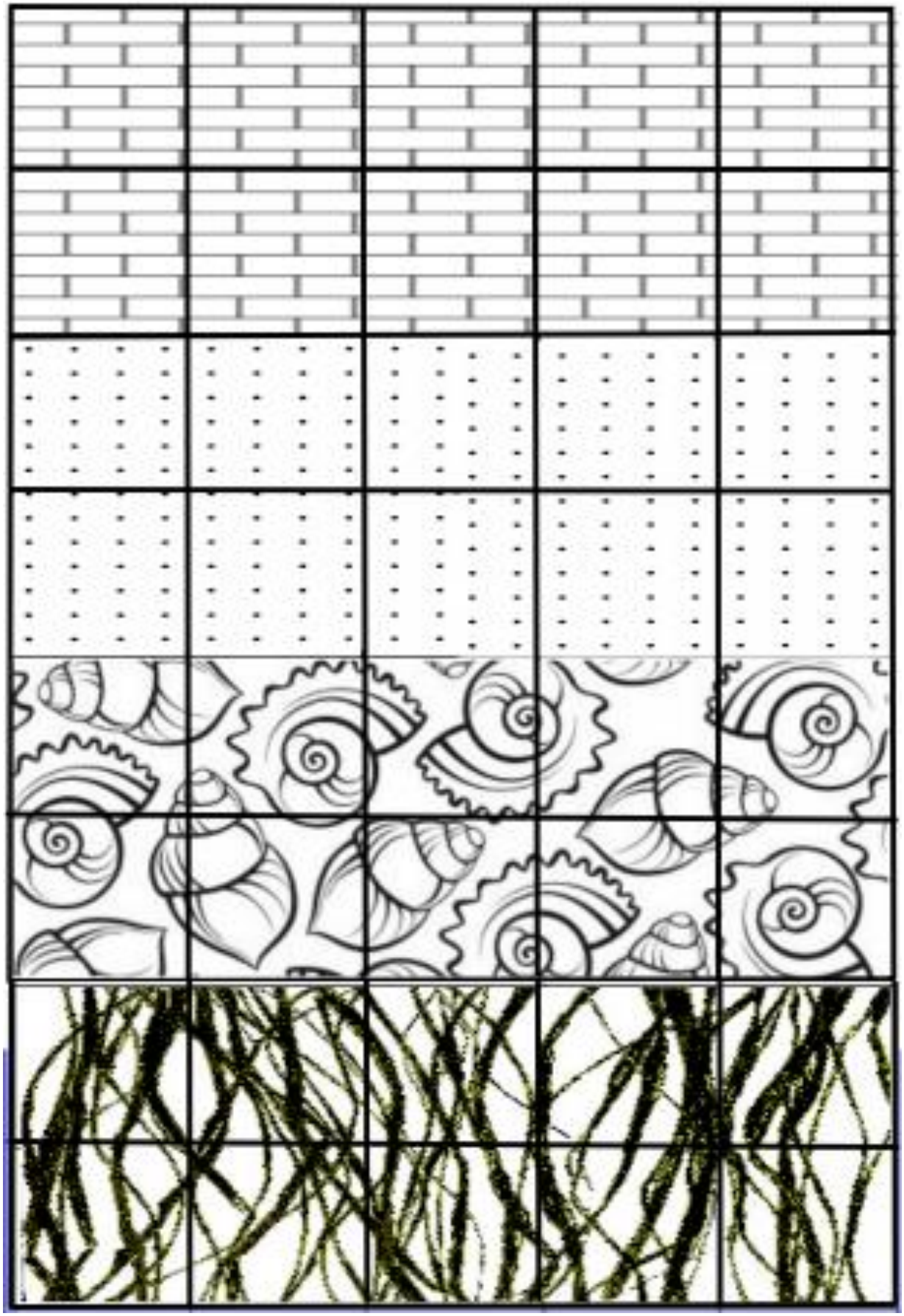

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CARD A Build beach house that is… • One fourth brick • One fourth seaweed	CARD B Build beach house that is… • Two thirds sand
CARD C Build beach house that is… • One eighth sand • Four eighths seaweed	CARD D Build beach house that is… • One third shells • Two thirds brick
CARD E Build beach house that is… • One half brick • One fourth sand	CARD F Build beach house that is… • Five twelfths shells • One sixth brick • Two sixths seaweed
CARD G Build beach house that is… • One fifth brick • Four tenths seaweed • Two fifths shells	CARD H Build beach house that is… • One third sand • One sixth brick • One half seaweed

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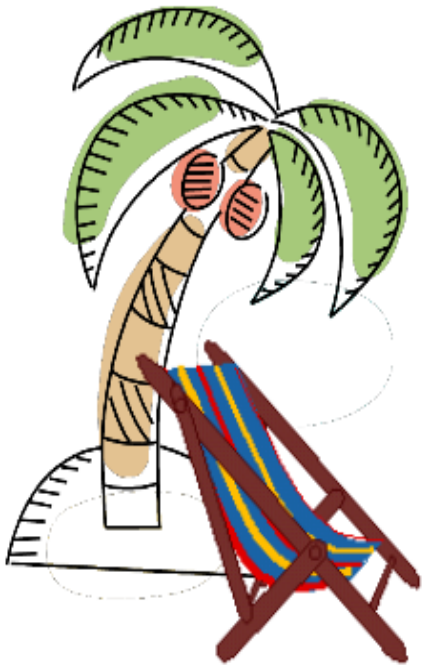
Build your beach house here.



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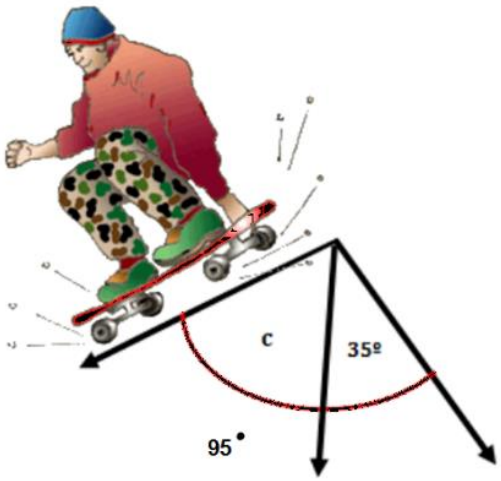
Measurement and Data-Activity A

Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Summer Skate Park



What is the value of angle c? _____

Tell how you found your answer.

Kevin set a goal to learn to do a 360º turn on his skateboard. On his first attempt he manages to turn 90º. How many more degrees does he need to turn to meet his goal? Justify your solution.

https://grade4commoncoremath.wikispaces.hcpss.org/Assessing+4.MD.7

Measurement and Data-Activity B

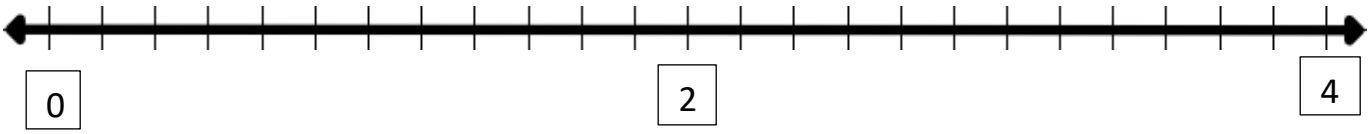
Make a line plot to display a data set of measurements in fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$. Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Garden Plot Line Plot

You are visiting *Ritchie Park Botanical Gardens*. You recorded the height of different flowers.

Type of Flower	Height
Veronica	$1\frac{1}{6}$ feet
Tall Garden Phlox	$3\frac{1}{3}$ feet
Russian Sage	$3\frac{5}{6}$ feet
Perennial Sage	$1\frac{4}{6}$ feet
Astilbe	$2\frac{5}{6}$ feet
Purple Coneflower	3 feet
Switchgrass	$2\frac{1}{2}$ feet
Purple Ice Plant	$\frac{2}{6}$ foot
Yellow Alyssum	$\frac{1}{6}$ foot
Moss Phlox	$\frac{4}{6}$ foot
Black-Eyed Susan	$1\frac{1}{3}$ feet

Display the data on the line plot below.



What is the difference between the height of the tallest and the shortest flower? How can the line plot help you determine your answer? Explain your thinking.

Geometry—Activity A

Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Baseball Symmetry

Cut out the playing cards on the following pages. Turn the cards upside down and place in the center between the players. Each player takes a turn drawing a card from the pile. The player receives a score equal to the number if lines of symmetry for the shape drawn. There are three "strike" cards in the pile. When all three "strike" cards are drawn, the game is over. The player who has the highest total score at the end of the game wins.

Player 1	Player 2

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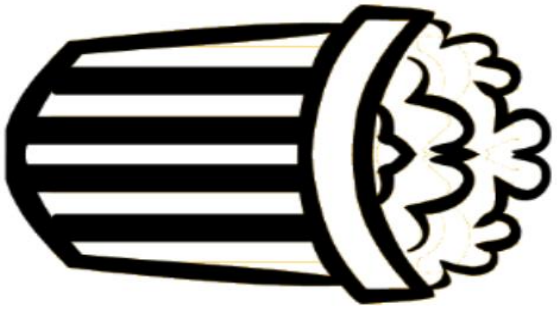

ADMIT ONE

Seat R

Section 15

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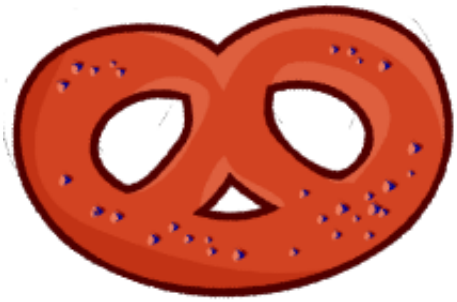
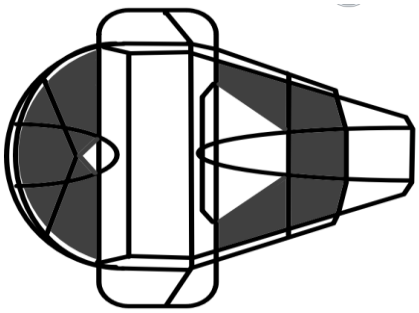
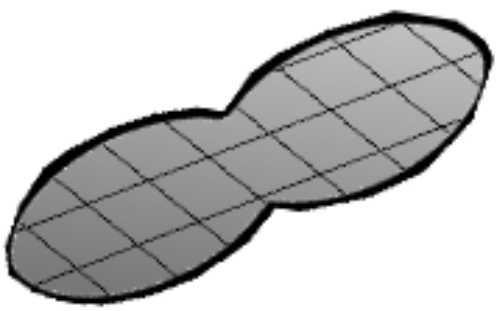


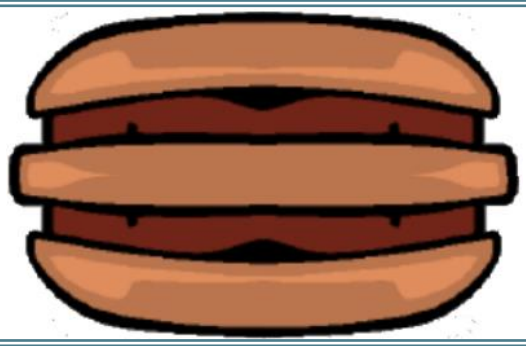



STRIKE


STRIKE


STRIKE





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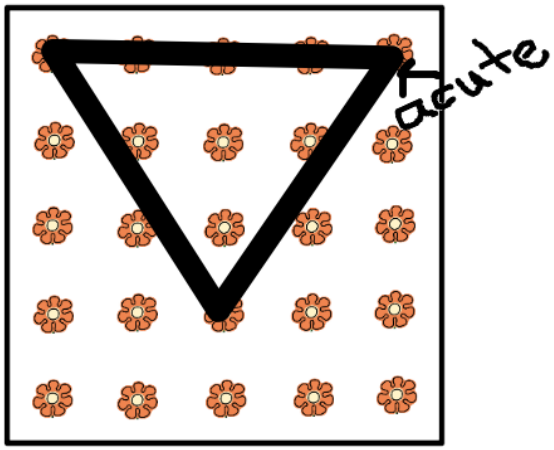
Geometry—Activity B

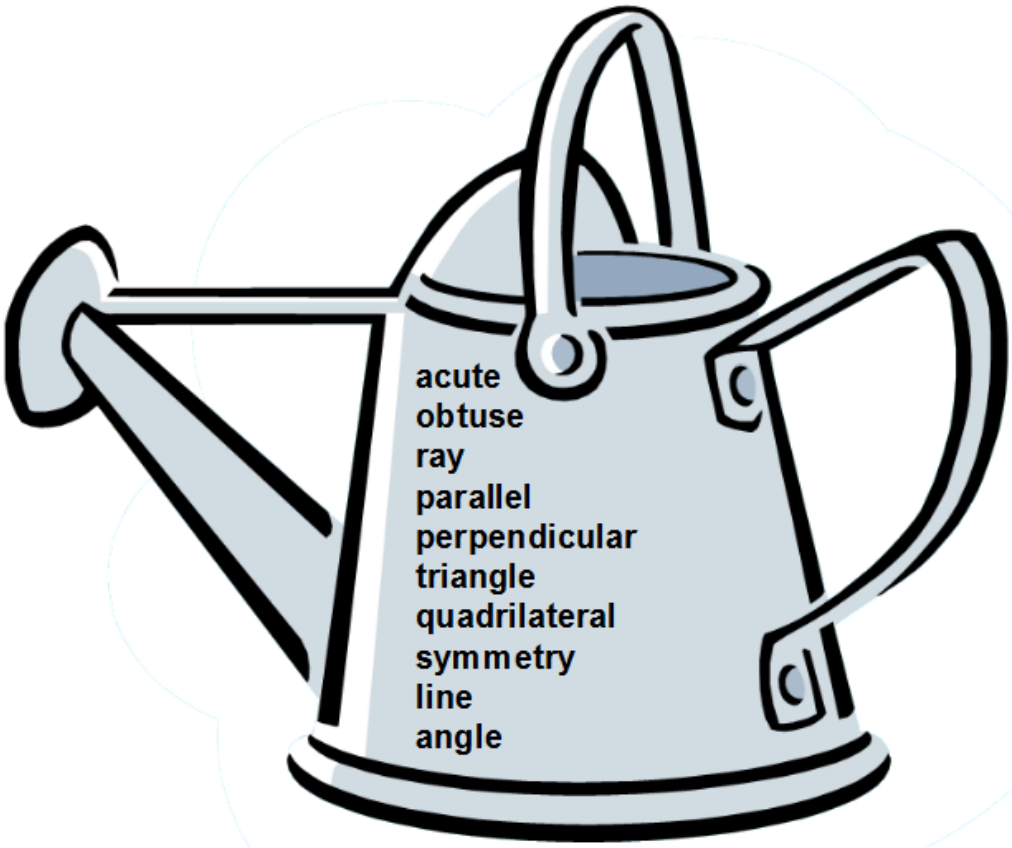
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

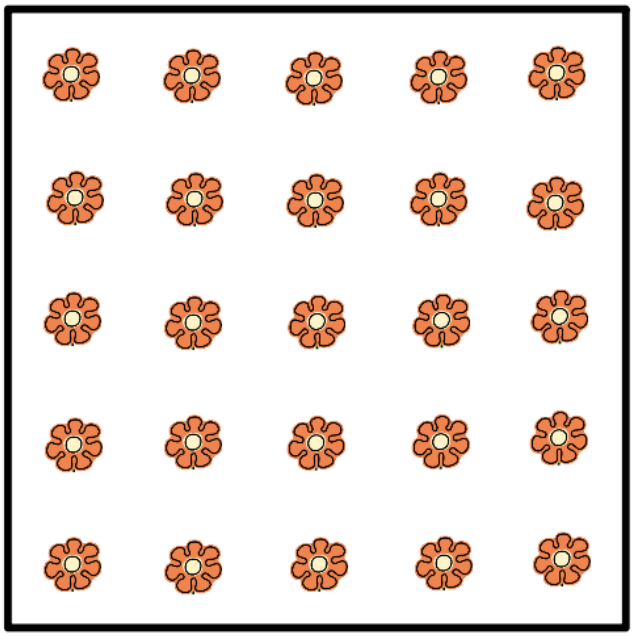
3.4.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

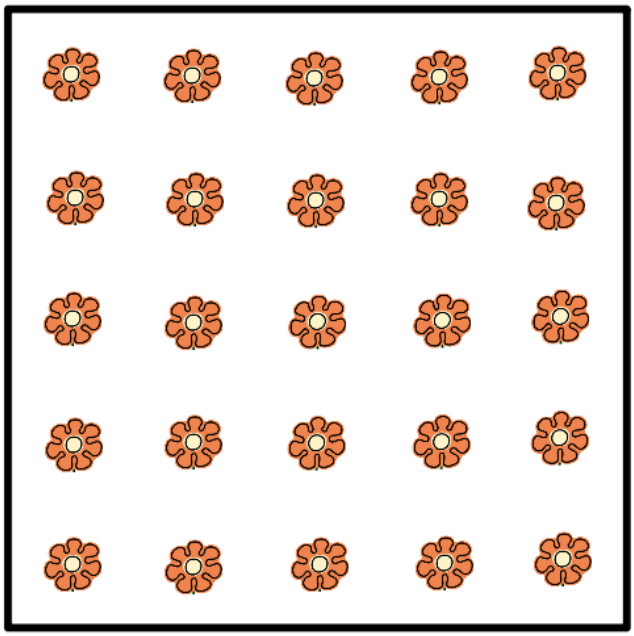
Flower Garden Geoboards

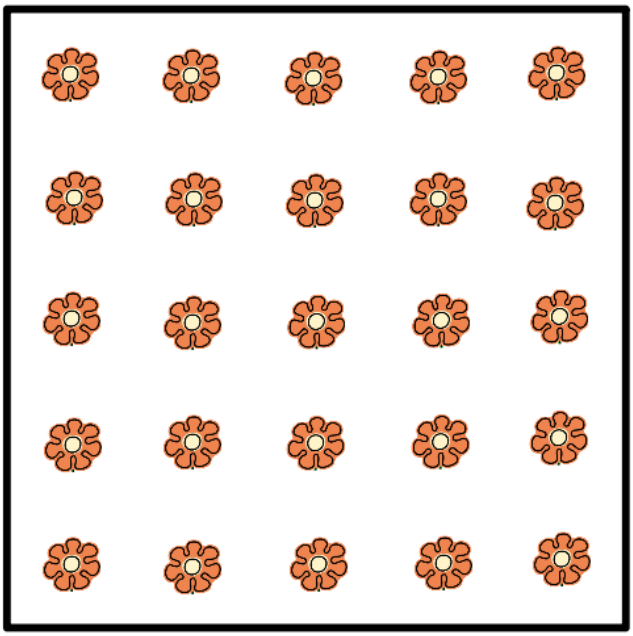
Look at the list of geometry terms on the watering can. Using a straight edge, draw on the flower gardens. Label your drawings. Make sure you use all the terms provided. Multiple terms can be used on a drawing.

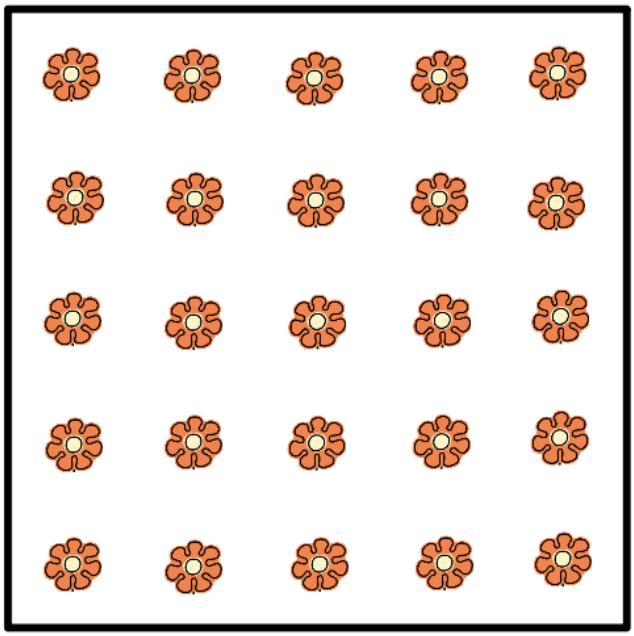


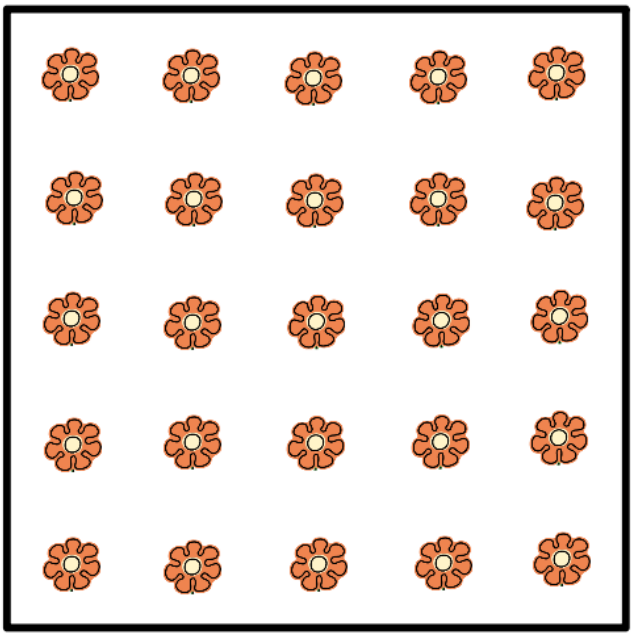


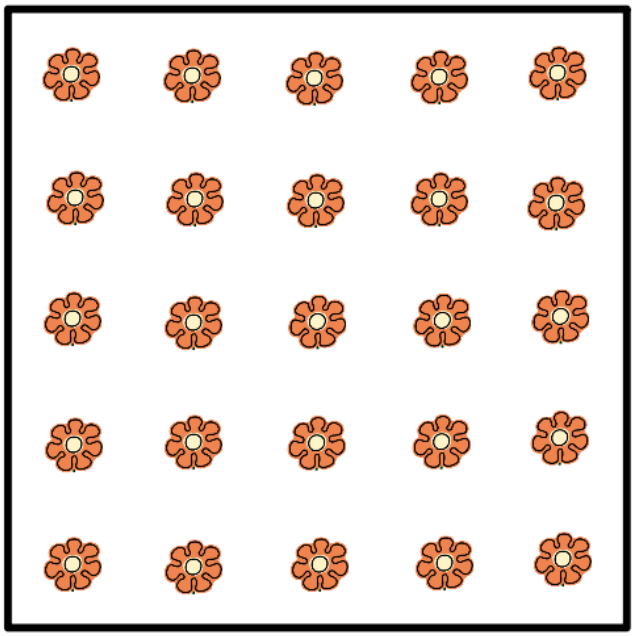


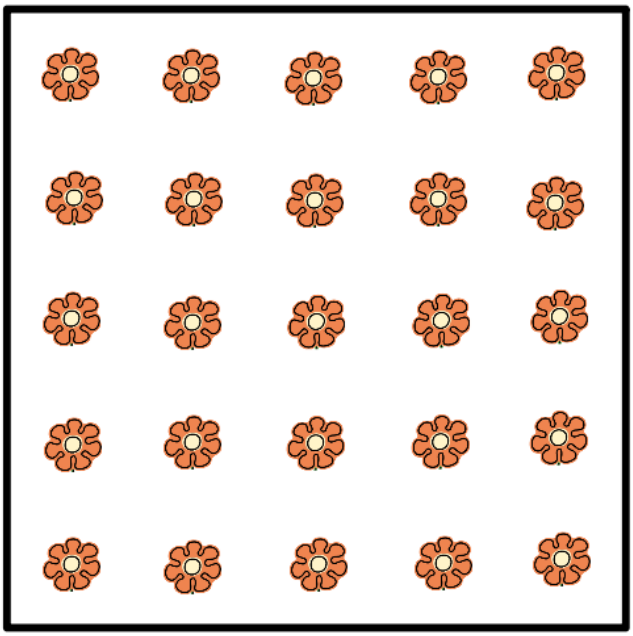


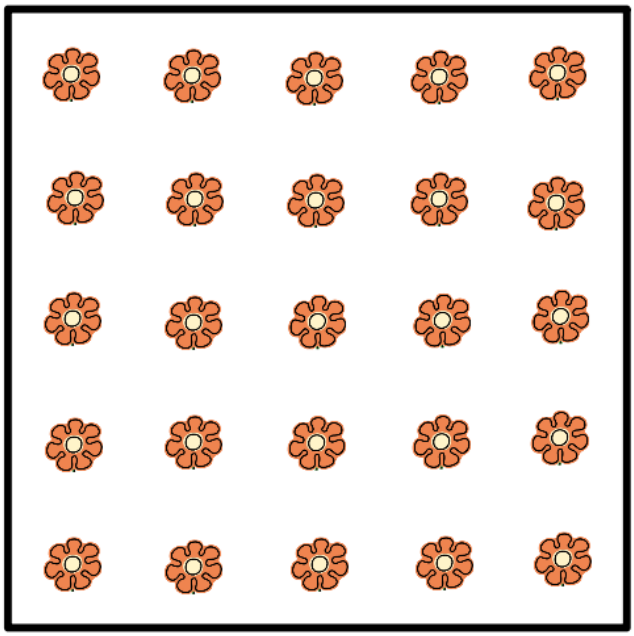












Facts Practice Using Multiplication/Division Fact Triangles

This document contains directions and cut-out templates for the arithmetic facts from 2 x 2 up to 9 x 9 and their related division facts

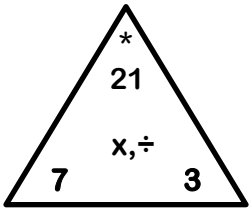
Warning!!! The reasoning (thinking) part of your brain can shut off under time pressure!!!

The goal of using these cards is to achieve accuracy and reasonable speed (3 to 5 seconds per fact). Use the cards to help assess which facts come reasonably quickly and which facts need more practice or connections to other known facts.

Whenever possible, connect thinking strategies with memorization such as 6 x 8 is double 3 x 8 or 6 x 8 is 8 more than 5 x 8

What are Fact Triangles?

- Fact triangles are a type of flash card that group together families of related arithmetic facts ("fact families") like the one shown here:



What are "fact families"?

- 3 x 7 = 21 is related to 7 x 3 = 21 because multiplication is commutative (a x b = b x a).
- 3 x 7 = 21 also is related to 21 ÷ 7 = 3 and 21 ÷ 3 = 7 because multiplication and division are inverse operations.
- So 3, 7, and 21 make up the following family of four factors.

3 x 7 = 21
7 x 3 = 21
21 ÷ 7 = 3
21 ÷ 3 = 7

- Learning basic arithmetic facts in families reinforces the relationship between facts and requires significantly less memorization of isolated facts!

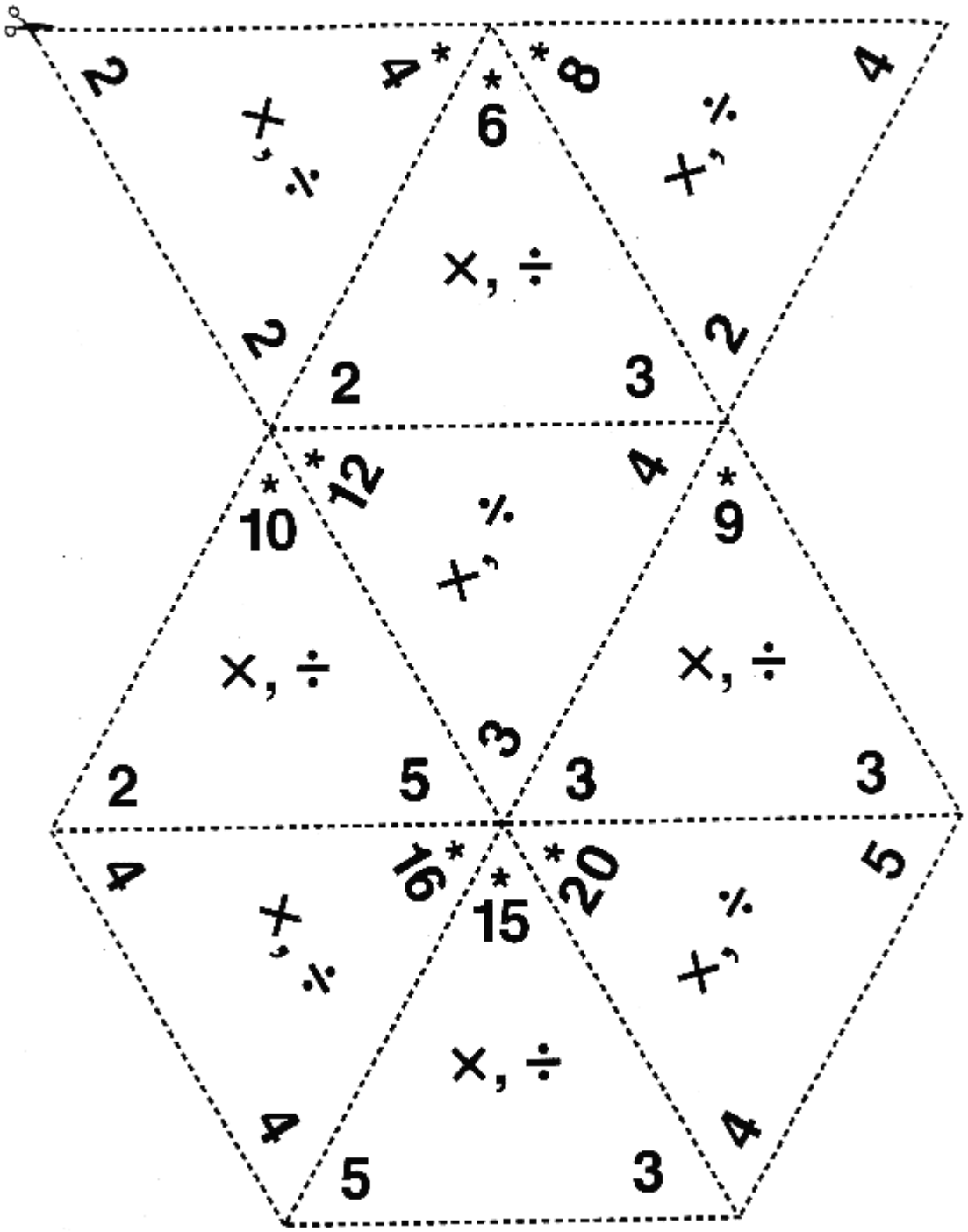
How might Fact Triangles be used to encourage thinking?

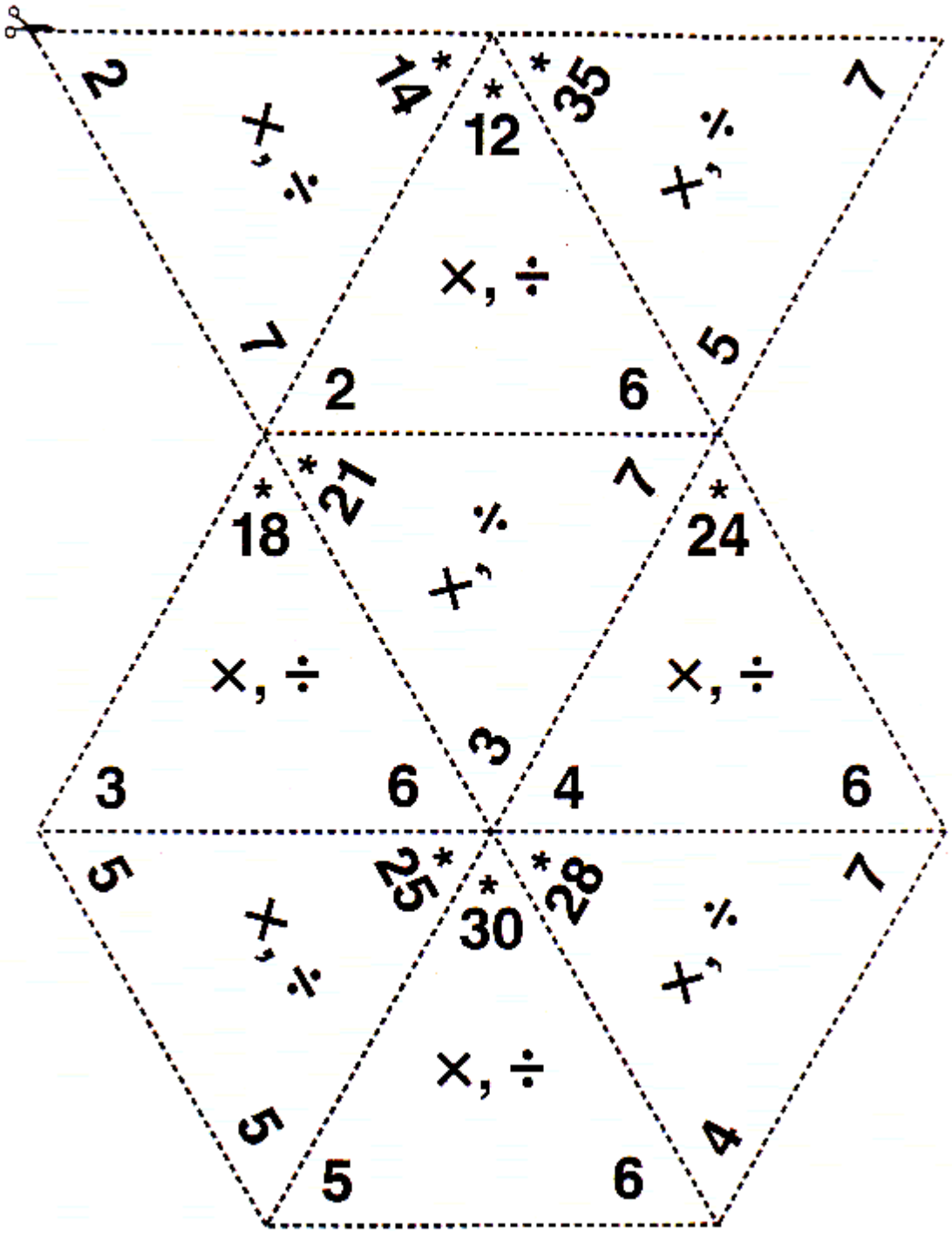
- Before practicing facts, the student must first understand what multiplication and Division represent and how they are related to each other.
- In each triangle, the product (21 in the triangle above) is marked with a star (*). After Cutting out the individual triangles, have the student write the fact family on the back of each triangle.
- In partners, one person shows the front side of a triangle while covering one number. The other person must identify the missing number and the four facts in that fact family.

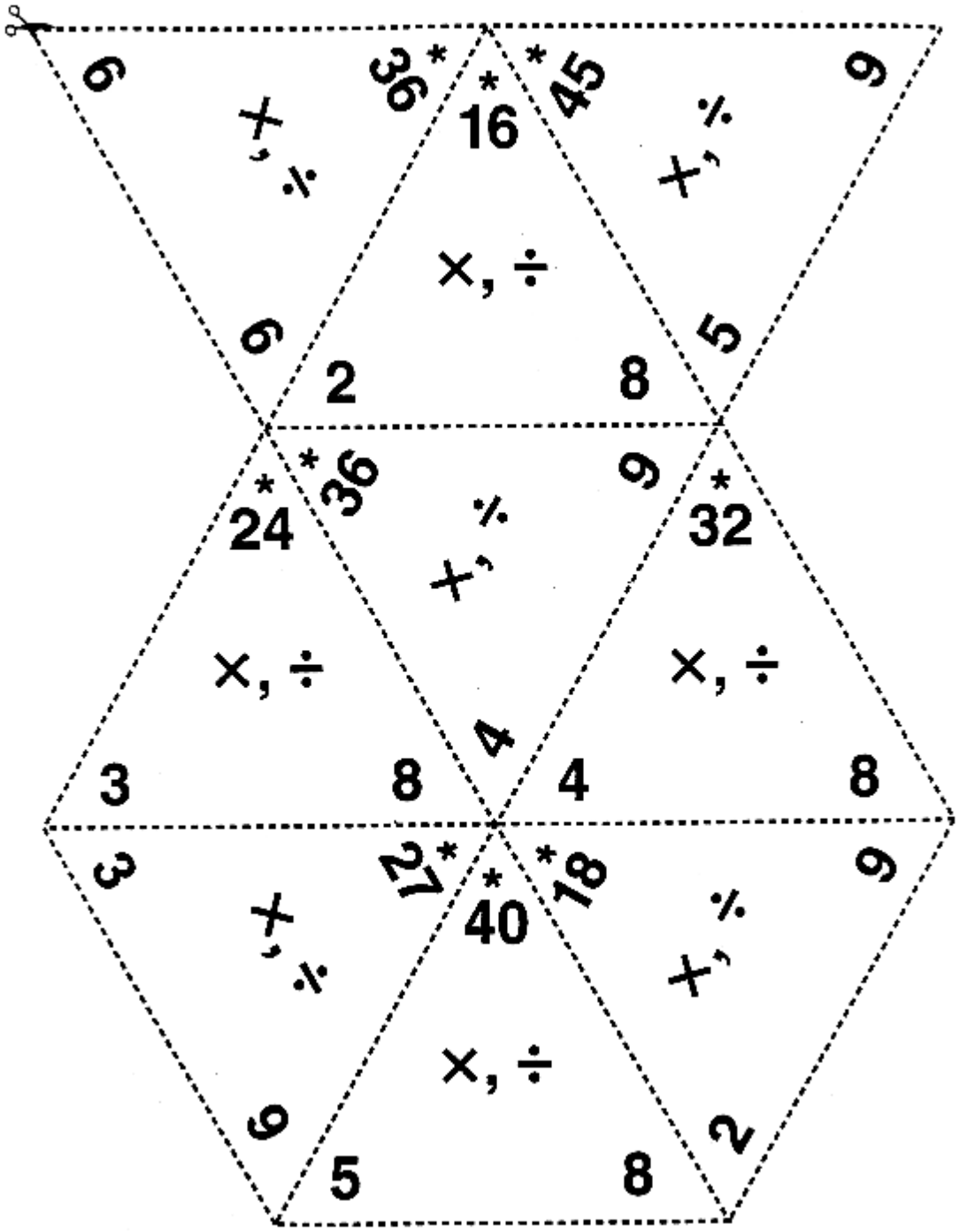
An example using the 3-7-21 card pictured above:

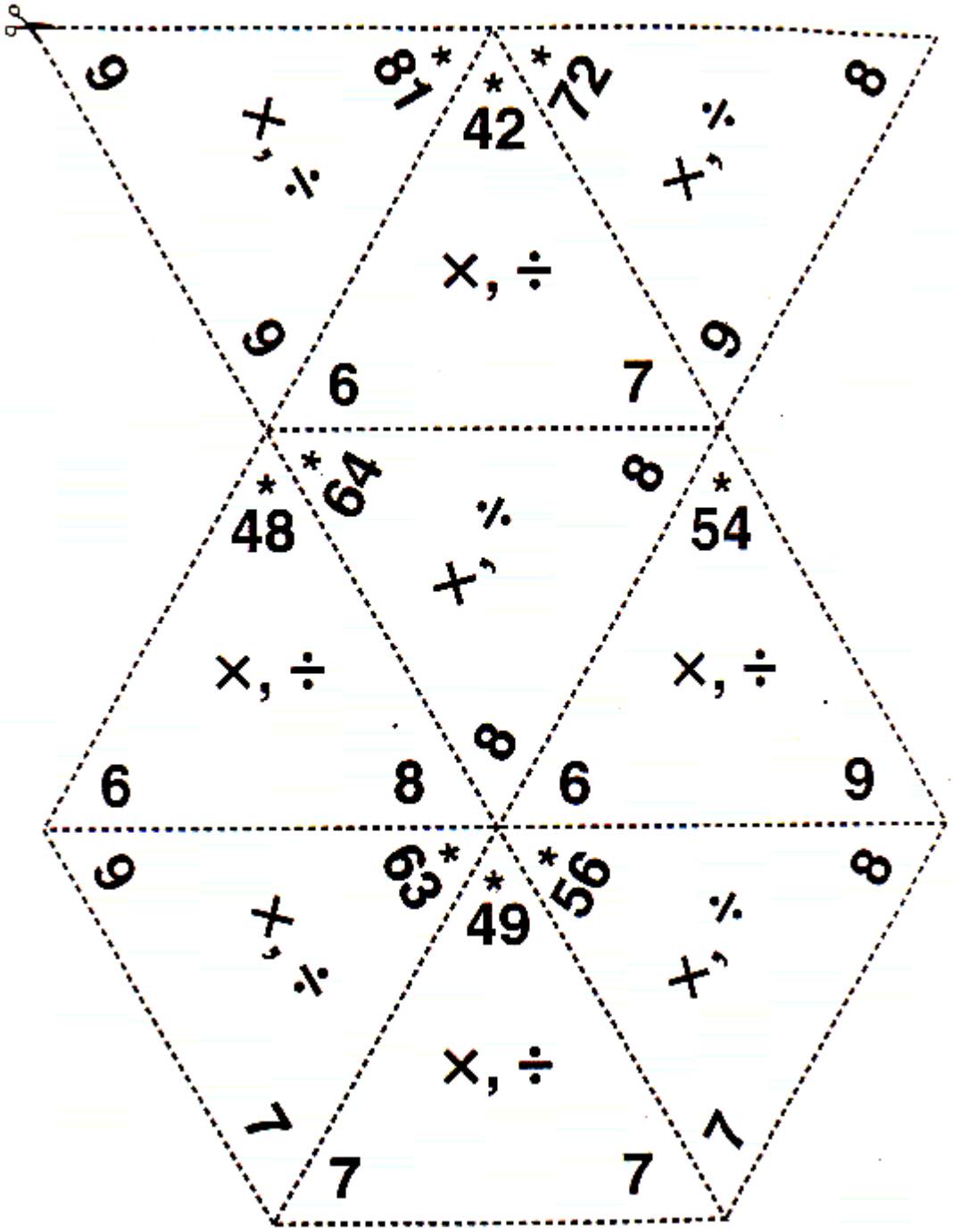
- Covering the starred number (21) requires the other person to find 3 x 7 or 7 x 3 and the related multiplication and division facts.
- Covering the 3 requires the other period to find what number times 7 is 21 or 21 divided by 7 and the related multiplication and division facts.

- Reinforce that the starred number is called the product and the other two numbers are factors of that product.


2
4*
×, ÷
2
2
6*
×, ÷
2
3
8*
4
×, ÷
2
10*
12*
4
×, ÷
3
9*
×, ÷
×, ÷
2
5
3
3
3
4
16*
15*
20*
5
×, ÷
4
5
×, ÷
3
4


2
14*
12*
35*
7
x, ÷
x, ÷
x, ÷
x, ÷
7
2
6
5
18*
21*
7
24*
x, ÷
x, ÷
x, ÷
3
3
6
4
6
5
25*
30*
28*
7
x, ÷
x, ÷
x, ÷
x, ÷
5
5
6
4


6
×, ÷
6
36*
16*
45*
×, ÷
9
×, ÷
6
2
8
5
24*
36*
×, ÷
9
32*
×, ÷
×, ÷
3
8
4
4
8
3
×, ÷
6
12*
40*
18*
×, ÷
9
×, ÷
6
5
8
2


9
81*
*42
*72
8
x, ÷
x, ÷
x, ÷
9
9
6
7
*48
*64
8
*54
x, ÷
x, ÷
x, ÷
6
8
8
6
9
9
63*
*49
*56
8
x, ÷
x, ÷
x, ÷
7
7
7

15÷5=	20÷5=	25÷5=	30÷5=
35÷5=	40÷5=	45÷5=	50÷5=