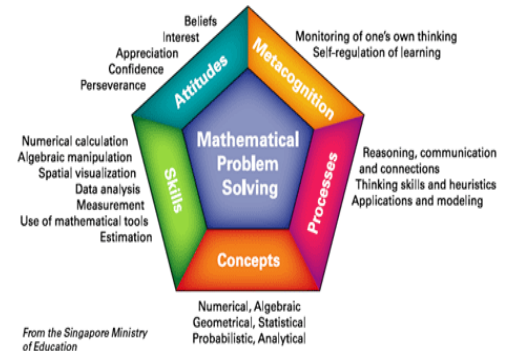


Math in Focus

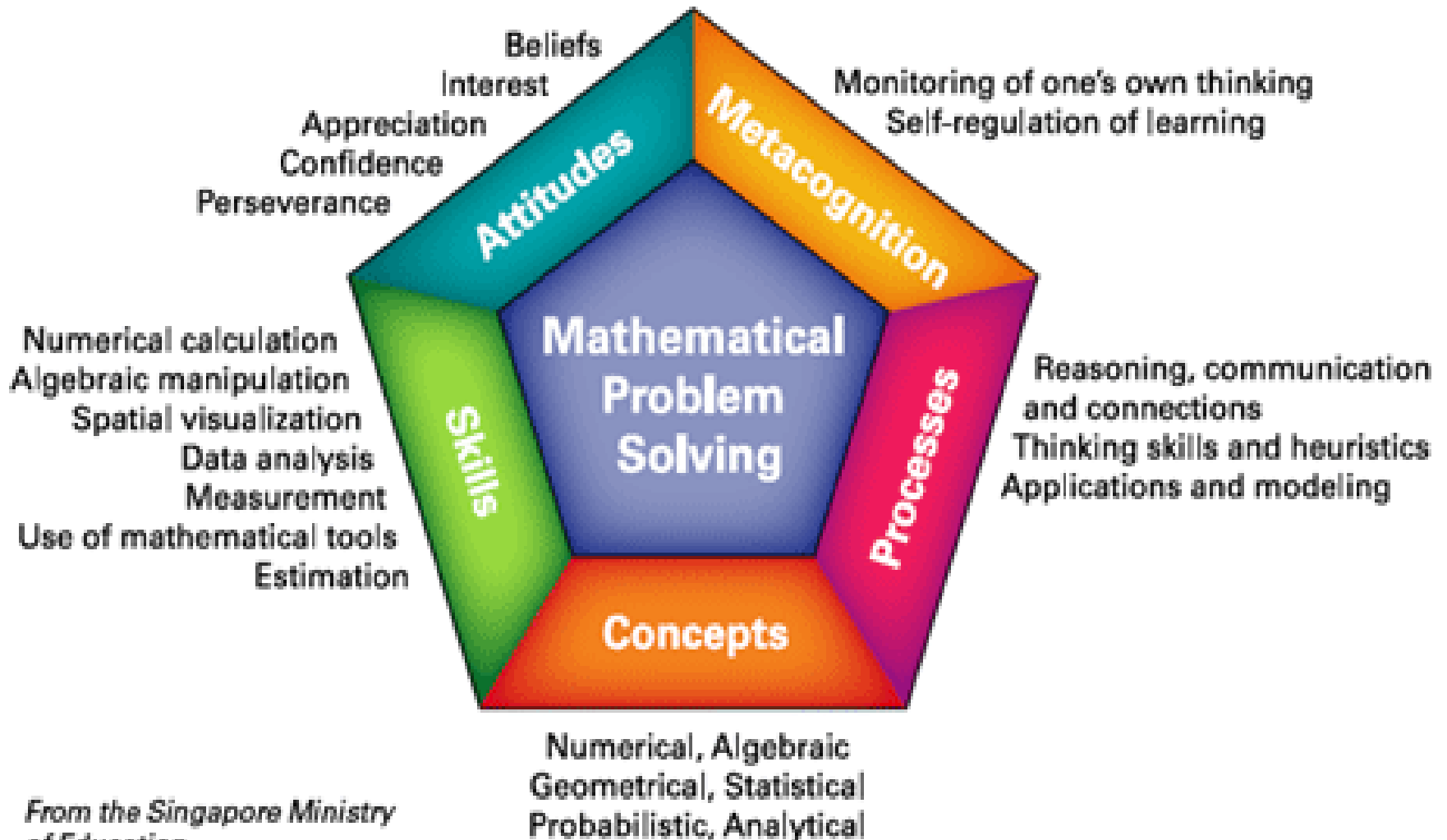
The Singapore Approach

Singapore's Mathematics Framework



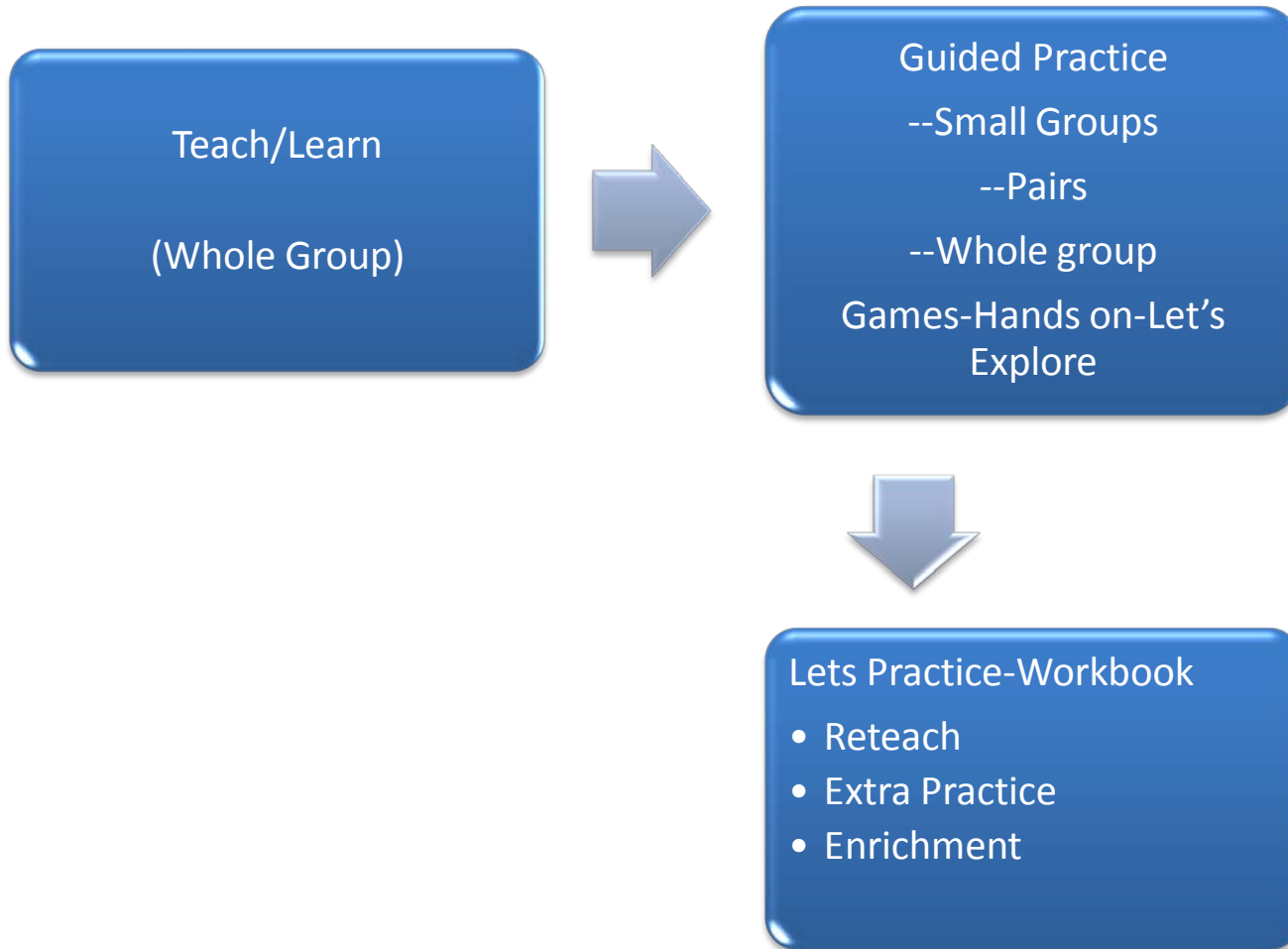
Math in Focus: A Singapore Approach to Math Instruction

Singapore's Mathematics Framework

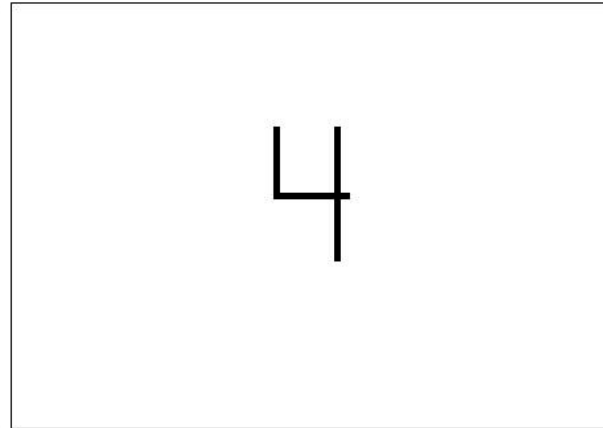
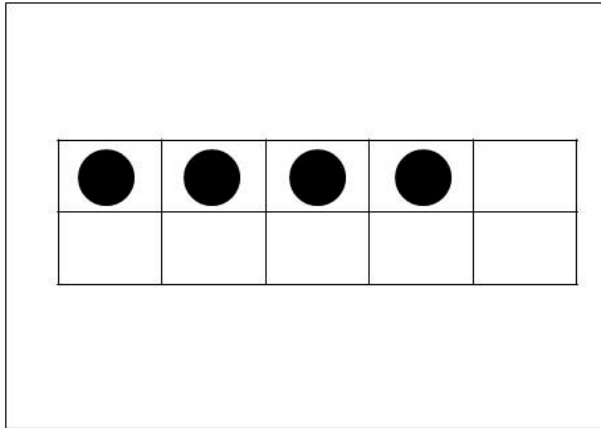


From the Singapore Ministry of Education

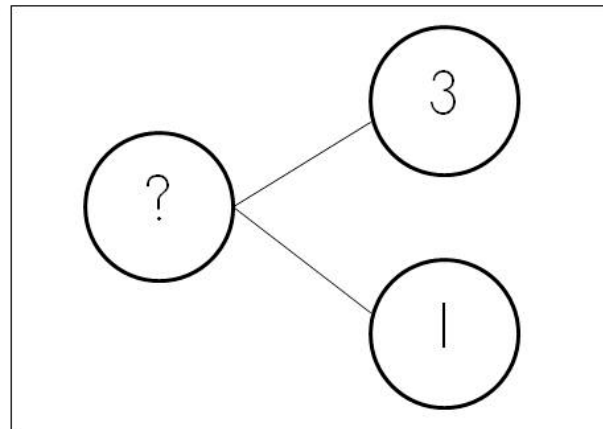
Lesson Structure



Representations



four

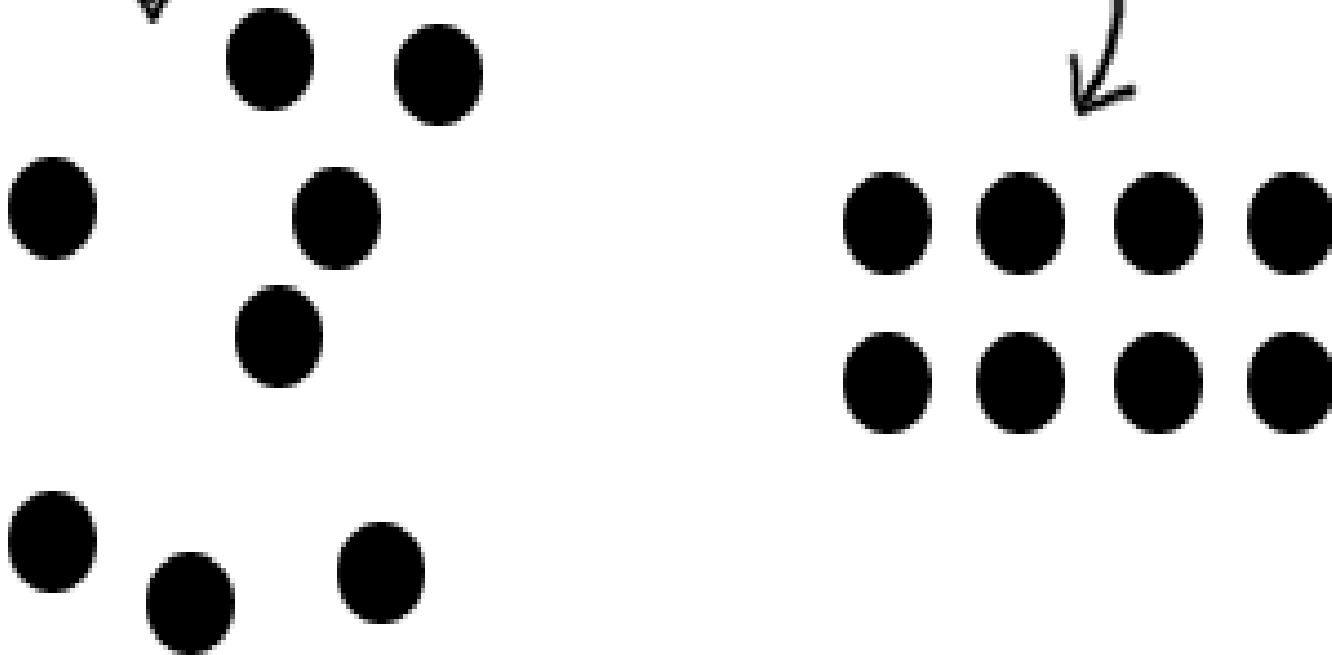


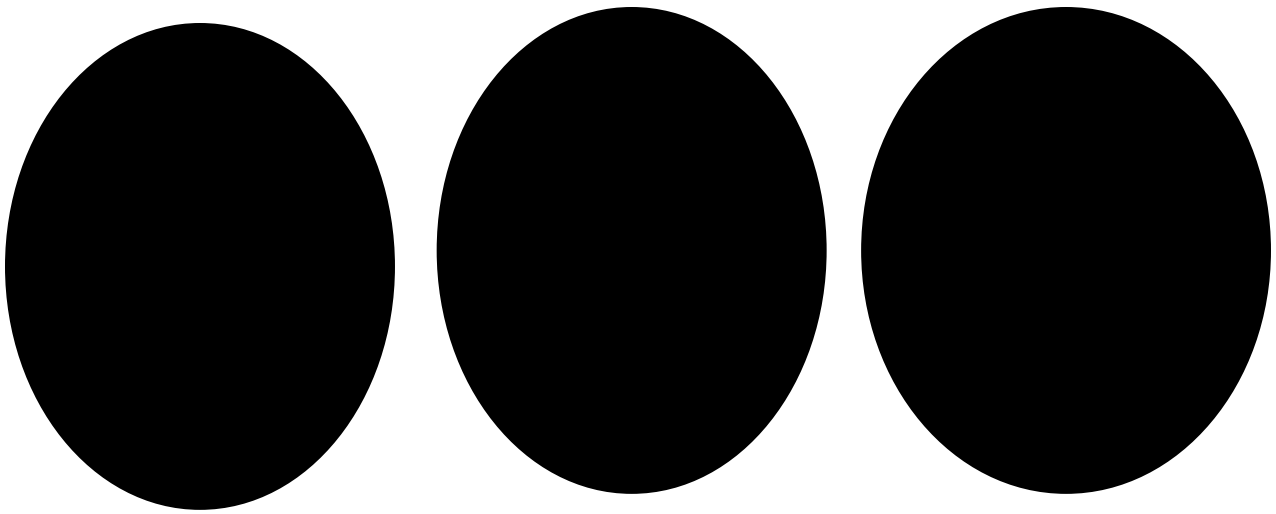
Subitizing

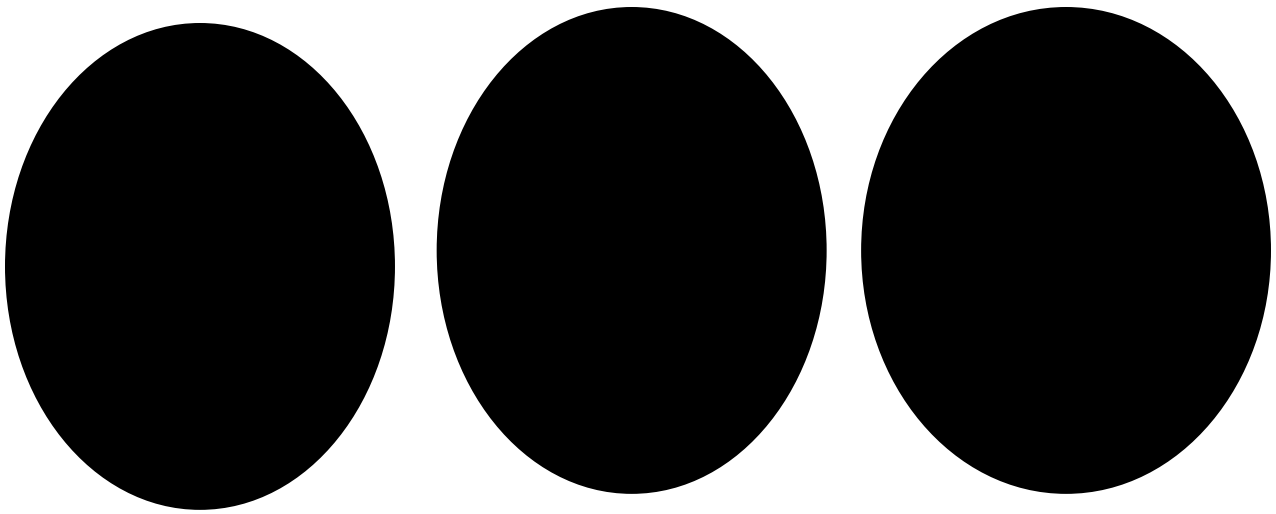
- To perceive the number of a group of items, at a glance and without counting: *the maximum number of items that can be subitized is about five*

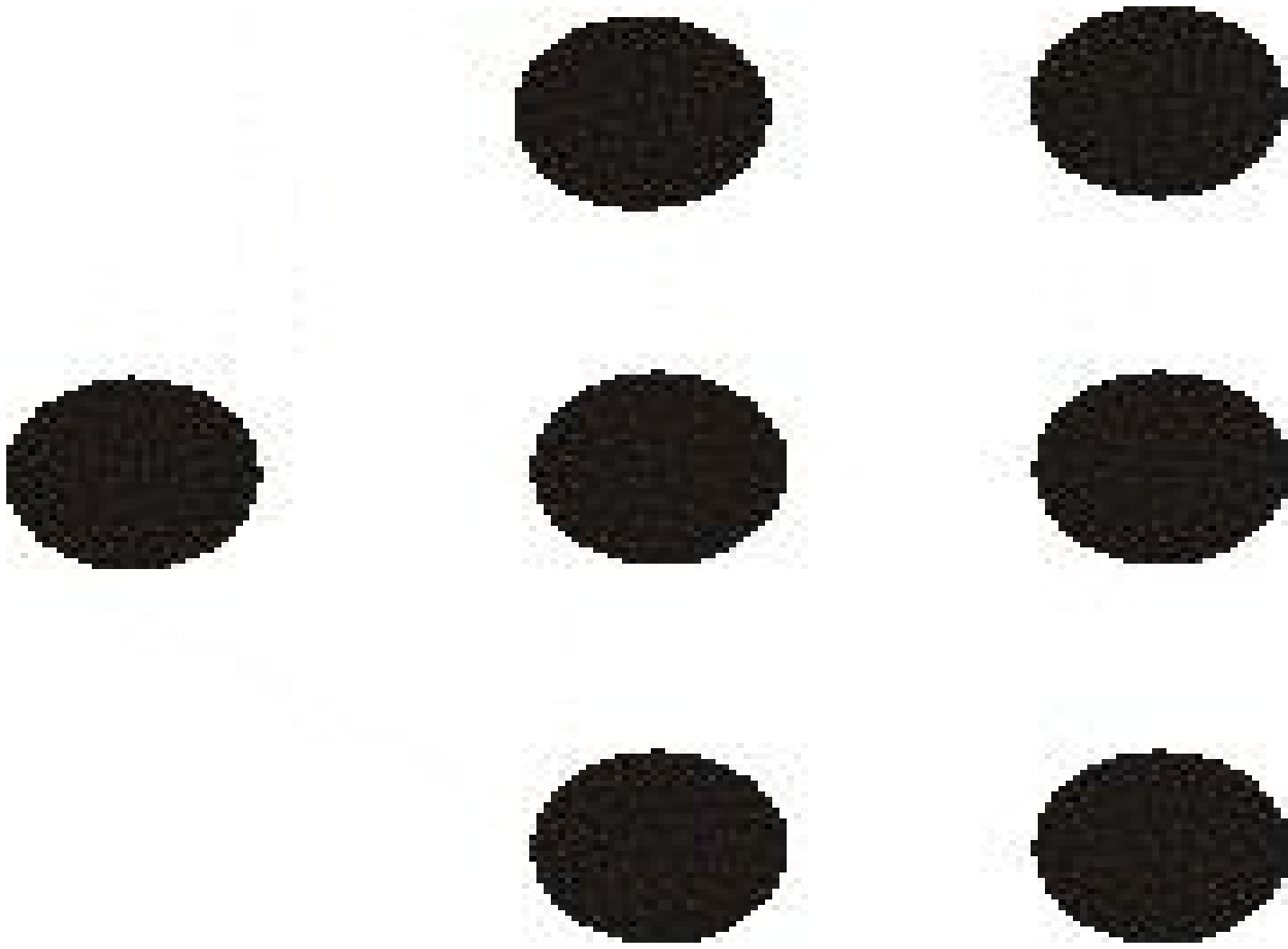
Subitizing

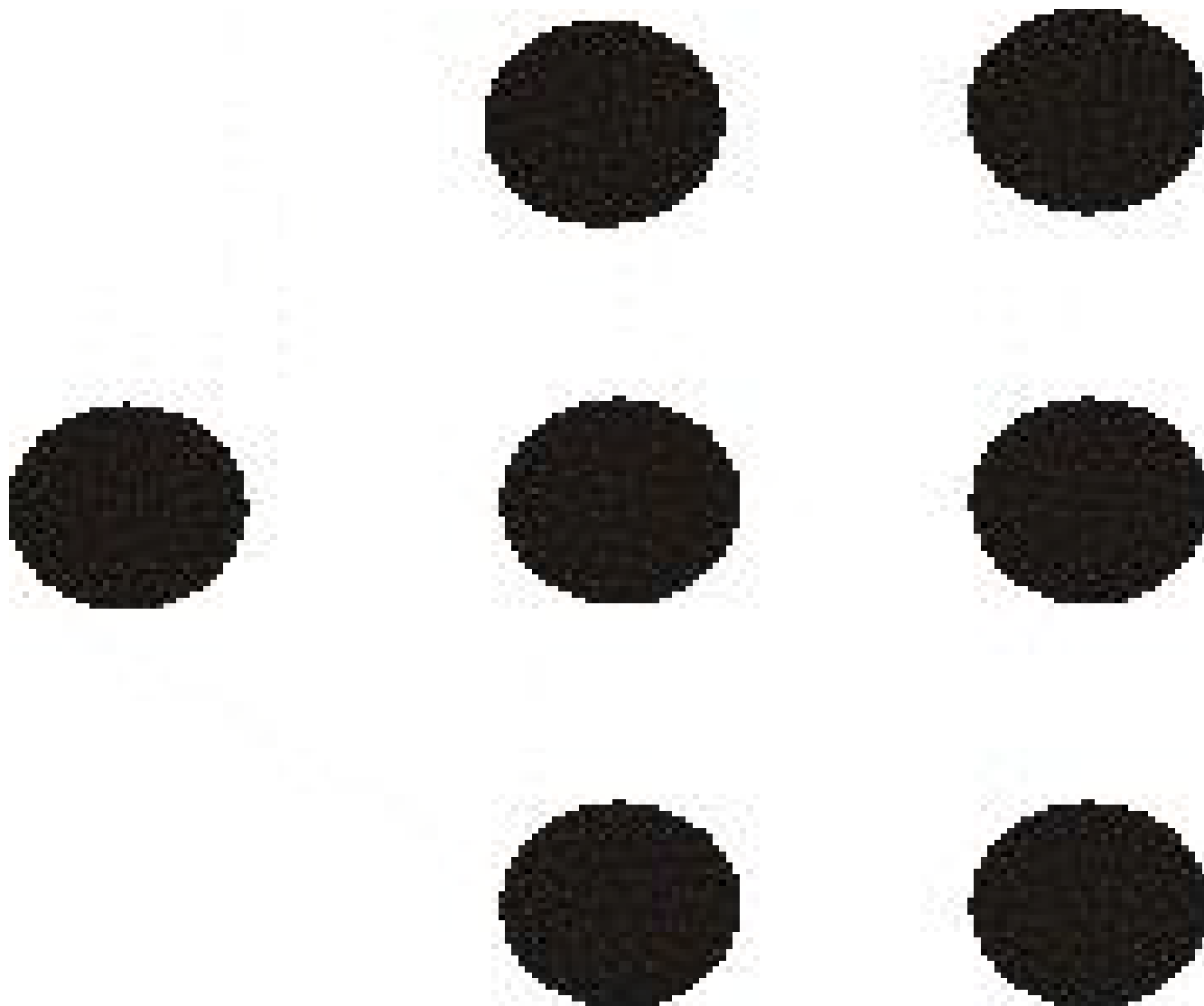
Which quantity is easier to count?

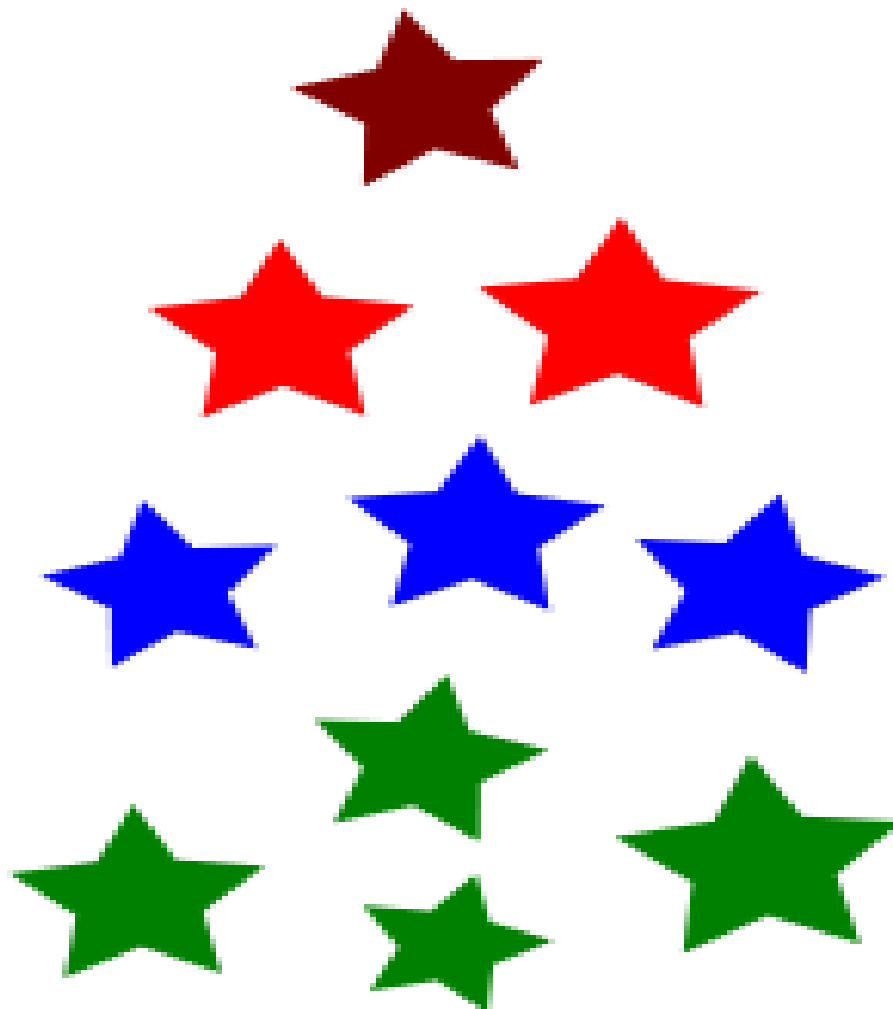


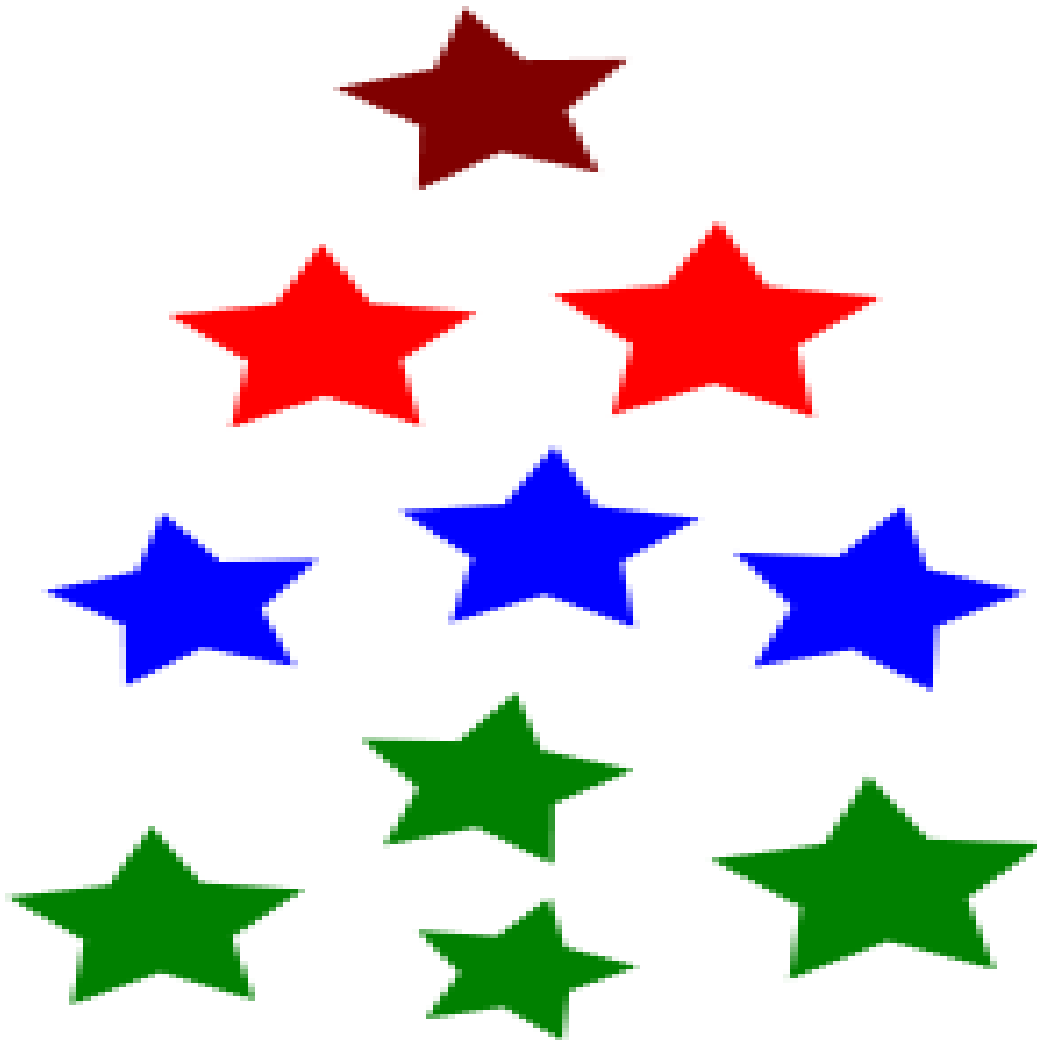




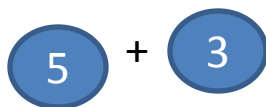
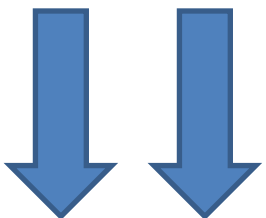
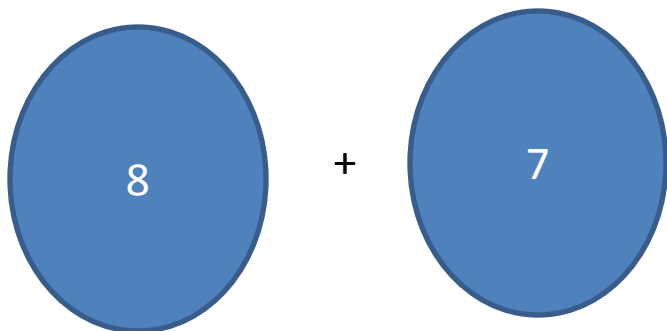








Number Bonds



$$7 + 3 = 10$$

$$10 + 5 = 15$$

MODEL DRAWING

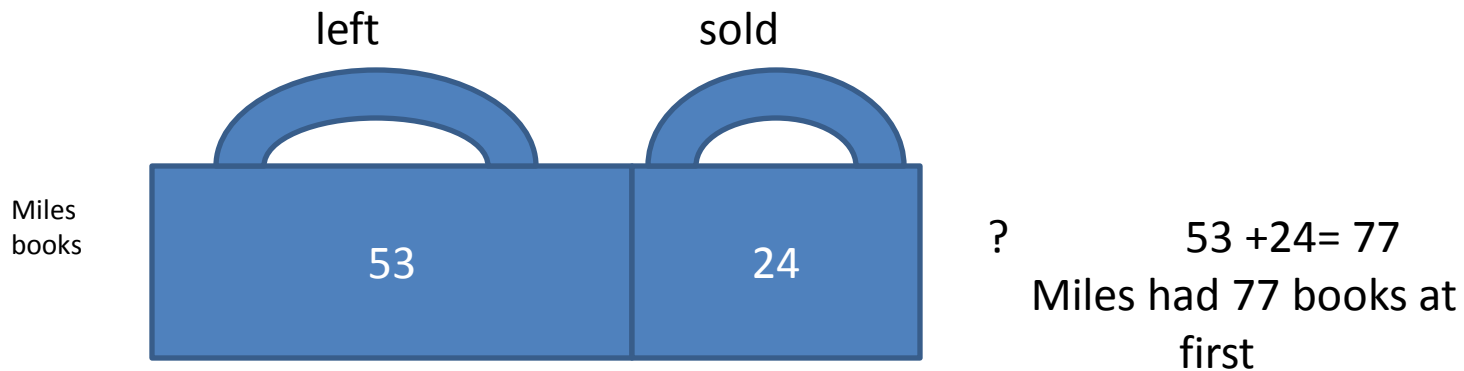
Beginning in second grade students are taught to use rectangular shapes to model a word problem. These models:

- Help students visualize abstract math relationships through pictorial representations
- Use rectangular blocks because they are easily divided
- Pre algebraic solution

Video of Bar Model

- <http://www.hmheducation.com/singaporemath/classroom-videos.php?playerID=802276244001>

After selling 24 books Miles had 53 books left. How many books did he have at first?

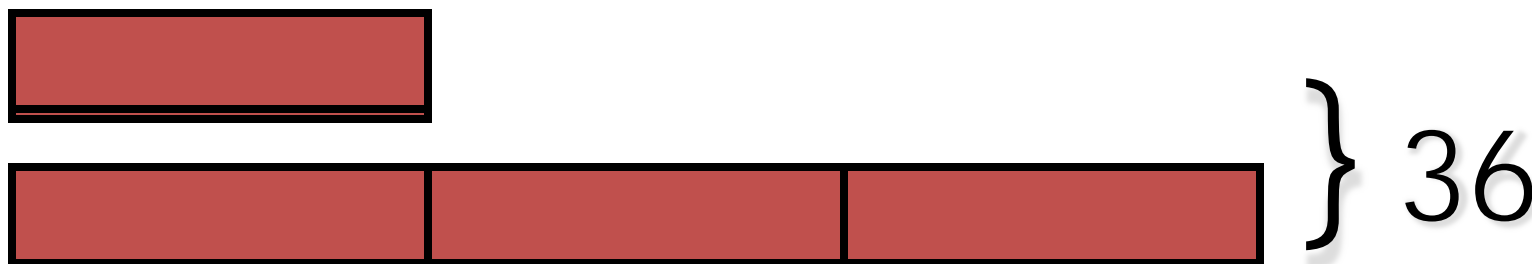


3rd Grade Problem

The sum of two numbers is 36.
The larger number is three times
the size of the smaller number.
Find the two numbers.

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The sum of two numbers is 36. The larger number is three times the size of the smaller number. Find the two numbers.



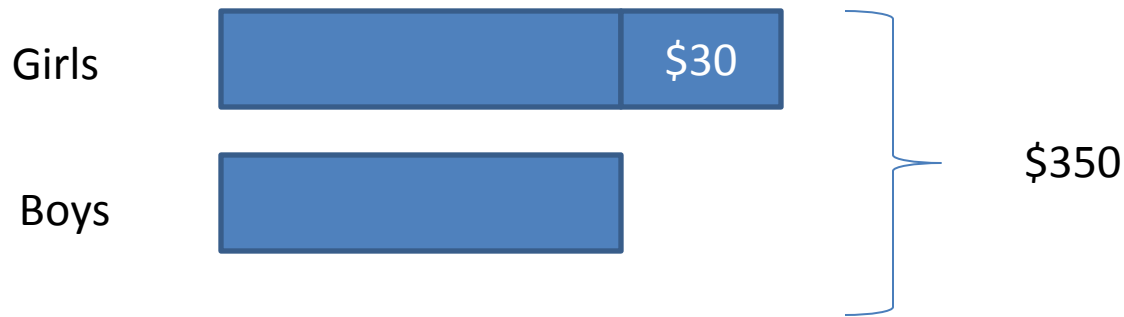
$36 \div 4 = 9$
The smaller
number is 9.

$3 \times 9 = 27$
The larger
number is 27.

The two numbers are 9 and 27.
Check: $9 + 27 = 36$

The third grade class raised \$350 for their field trip.
The girls raised \$30 more than the boys. How much did
the girls raise for their field trip?

The third grade class raised \$350 for their field trip.
The girls raised \$30 more than the boys. How much did
the girls raise?



$$\$350 - \$30 = \$320$$

$$\$320 \div 2 = \$160$$

$$\$160 + \$30 = \$190 \quad \text{Girls raised } \$190$$

$$\text{Check } \$190 + \$160 = \$350$$

Common Core Standards

SAMPLE STRAND PROGRESSION THROUGH THE GRADES K–4

Number and Operations in Base Ten

- Students' work in the base-ten system is intertwined with their work on counting and cardinality, and with the meanings and properties of addition, subtraction, multiplication, and division.

Kindergarten

- In Kindergarten, teachers help children lay the foundation for understanding the base-ten system by drawing special attention to 10.
- Children learn to view the whole numbers 11 through 19 as ten ones and some more ones.
- They decompose 10 into pairs such as 1/ 9, 2/ 8, and 3 /7
- They also find the number that makes 10 when added to a given number such as 3 (7)

Grade 1

- In first grade, students learn to view ten ones as a unit called a ten.
- The ability to compose and decompose this unit flexibly, and to view the numbers 11 to 19 as composed of one ten and some ones, allows development of efficient, general base-ten methods for addition and subtraction.
- Students see a two-digit numeral as representing some tens and they add and subtract using this understanding.

Grade 2

- Students extend their base-ten understanding to hundreds.
- They now add and subtract within 1000, with composing and decomposing, and they understand and explain the reasoning of the processes they use.
- They become fluent with addition and subtraction within 100.
- students extend their understanding of the base-ten system by viewing 10 tens as forming a new unit called a “hundred”.

Grade 3

- Use place value understanding to round whole numbers to the nearest 10 or 100.
- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Grade 4

- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 is 70×10 by applying concepts of place value and division.*
- 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 \leq , \geq , $=$, and other symbols to record the results of comparisons.
- Use place value understanding to round multi-digit whole numbers to any place.
- Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- 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.