4th Grade GA Milestones Study Guide

Operations & Algebraic Thinking 20%

Interpreting Multiplication and Division

Multiplicative Comparison: *5 x 8 = 40:* Sally is five years old. Her mom is eight times older. How old is Sally's Mom?

Unknown Product: A blue scarf costs $3. A red scarf costs 6 times as much. How much does the red scarf cost? *(3 × 6 = p)*

Group Size Unknown: A book costs $18. That is 3 times more than a DVD. How much does a DVD cost? *(18 ÷ p = 3 or 3 × p = 18)*

Number of Groups Unknown: A red scarf costs $18. A blue scarf costs $6. How many times as much does the red scarf cost compared to the blue scarf? *(18 ÷ 6 = p or 6 × p = 18)*

Estimation

329 + 175 =

329 is about 300 and 175 is about 200, so the answer is about 500

488 - 87 =

488 is about 500 and 87 is about 100, so the answer is about 400

Estimation

537
× 8

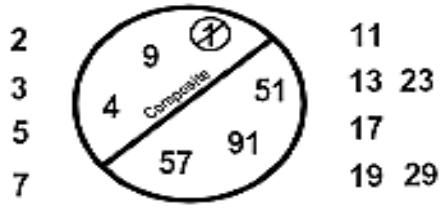
Estimate:
500 x 8 = 4,000

The product will be about 4,000

Interpreting Remainders

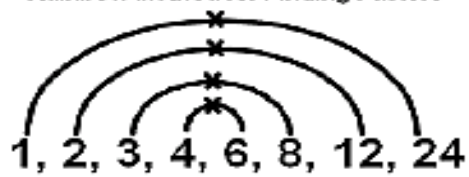
There are 128 students going on a field trip. If each bus held 30 students, how many buses are needed? *(128 ÷ 30 = b; b = 4 R 8; They will need 5 buses because 4 busses would not hold all of the students)*

Prime Numbers



Factors	Multiples
10 - 1,2,5,10 1x10 2x5 factor x factor = product 12 x 12 = 144	Skip Counting Adding On +5 +5 +5 +5 +5 5, 10, 15, 20, 25, 30, ... 144 is a multiple of 12

Rainbow Method for Finding Factors



Analyzing Patterns

Pattern	Rule	Feature(s)
3, 8, 13, 18, 23, 28, …	Start with 3; add 5	The numbers alternately end with a 3 or an 8
5, 10, 15, 20, …	Start with 5; add 5	The numbers are multiples of 5 and end with either 0 or 5. The numbers that 3nd with 5 are products of 5 and an odd number. The numbers that end in 0 are products of 5 and an even number.

Numbers & Operations in Base Ten 20%

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
10 × 100,000	10 × 10,000	10 × 1,000	10 × 100	10 × 10	10 × 1	1

Ten thousands	thousands		hundreds	tens	ones	decimal	tenths
2	6	,	7	5	9	.	3

Twenty six thousand, seven hundred fifty nine and three tenths

20,000 + 6,000 + 700 + 50 + 9 + 0.3

(2×10,000) + (6×1,000) + (7×100) + (5×10) + (9×1) + (3×0.1)

How many tens are in 750? There is a five in the tens place, but it takes 75 tens to make the number 750, so there are 75 tens in 750.

Rounding

3,461

Nearest 10	Nearest 100	Nearest 1,000
3,460	3,500	3,000

- Which 10 is it closest to? 3,461

  60 65 70

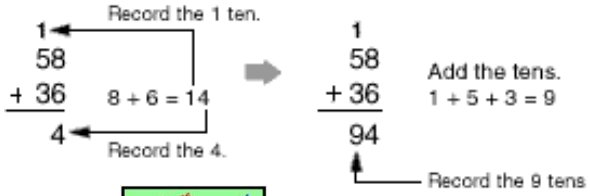
- Which 100 is it closest to? 3,461

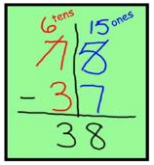
  400 450 500

- Which 1,000 is it closer to? 3,461

  3,000 3,500 4,000

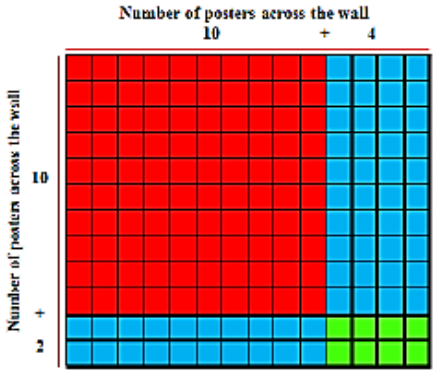
Addition & Subtraction

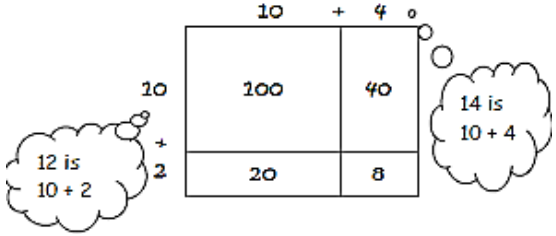




Multiplication of Whole Numbers
(2 digit by 2 digit area model)

I am placing posters on my wall in my room. I can fit 14 posters across and 12 posters down my wall. How many posters can I put on my wall?





168 posters

Various Strategies for Multiplication

There are 25 dozen cookies in the bakery. What is the total number of cookies at the bakery?

Student 1: I broke 12 up into 10 and 2.

$25 \times 10 = 250$
$25 \times 2 = 50$
$250 + 50 = 300$

Student 2: I broke 25 into 5 groups of 5.

$5 \times 12 = 60$

I have 5 groups of 5 in 25.

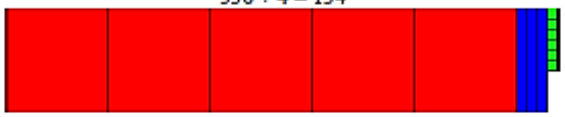
$60 \times 5 = 300$

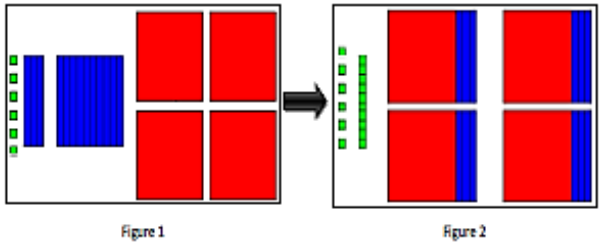
Student 3: I doubled 25 and cut 12 in half to get 50×6.

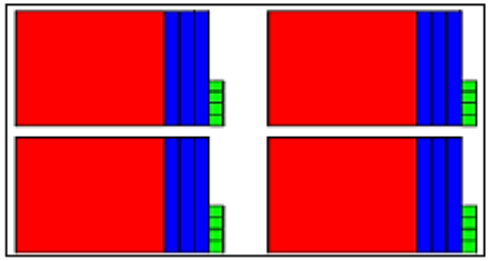
$50 \times 6 = 300$

Division of Whole Numbers Fair Share Model

$536 \div 4 = 134$

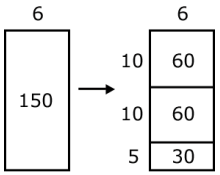






Open Array or Area Model for Division

$150 \div 6 = 25$



10 + 10 + 5 = 25

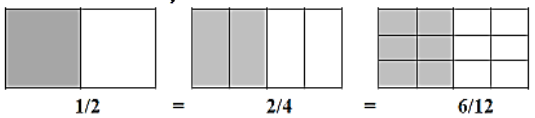
Using the Relationship between Multiplication & Division

There are 592 students participating in Field Day. They are put into teams of 8 for the competition. How many teams get created?

I want to get to 592.
$8 \times 25 = 200$
$8 \times 25 = 200$
$8 \times 25 = 200$
$200 + 200 + 200 = 600$
$600 - 8 = 592$
I had 75 groups of 8 and took one away, so there are 74 teams.

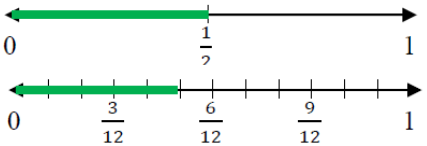
Numbers & Operations—Fractions 30%

Equivalent Fractions

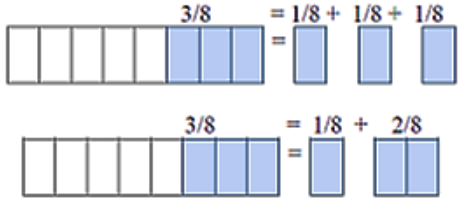


Comparing Fractions

There are two cakes on the counter that are the same size. The first cake has 1/2 of it left. The second cake has 5/12 left. Which cake has more left? *The second cake*

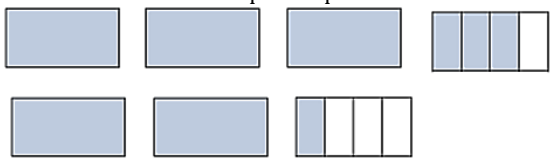


Decomposing Fractions



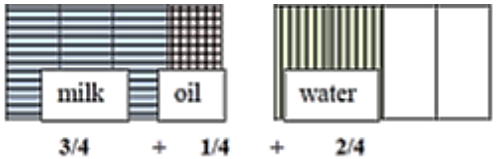
Adding and Subtracting Fractions with Like Denominators

$3\frac{3}{4} + 2\frac{1}{4}$

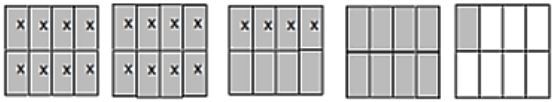


3 + 2 = 5 and $\frac{3}{4} + \frac{1}{4} = 1$, *so 5 + 1 = 6.*

A cake recipe calls for you to use $\frac{3}{4}$ cup of milk, $\frac{1}{4}$ cup of oil, and $\frac{2}{4}$ cup of water. How much liquid was needed to make the cake? *$1\frac{2}{4}$ or $1\frac{1}{2}$*



Trevor has $4\frac{1}{8}$ pizzas left over from his soccer party. After giving some pizza to his friend, he has $2\frac{4}{8}$ of a pizza left. How much pizza did Trevor give to his friend?

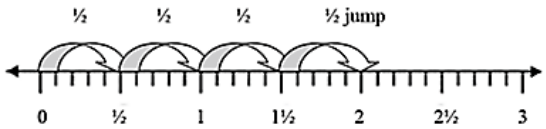


$1\frac{5}{8}$ *pizza*

Multiplication of Fractions

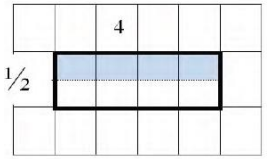
In a relay race, each runner runs $\frac{1}{2}$ of a lap. If there are 4 team members how long is the race?

Student 1: Draws a number line of 4 jumps of $\frac{1}{2}$.



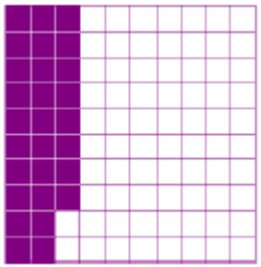
Student 2: Draws an area model showing 4 pieces of $\frac{1}{2}$ joined together to equal 2.

Student 3: Draws an area model representing 4 × $\frac{1}{2}$ on a grid, dividing one row into $\frac{1}{2}$ to represent the multiplier. The four halves shaded combine to make 2.



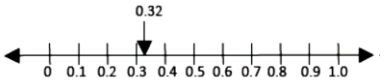
Decimals

$$\frac{28}{100} = \frac{2}{10} + \frac{8}{100}$$



Ones	.	Tenths	Hundredths

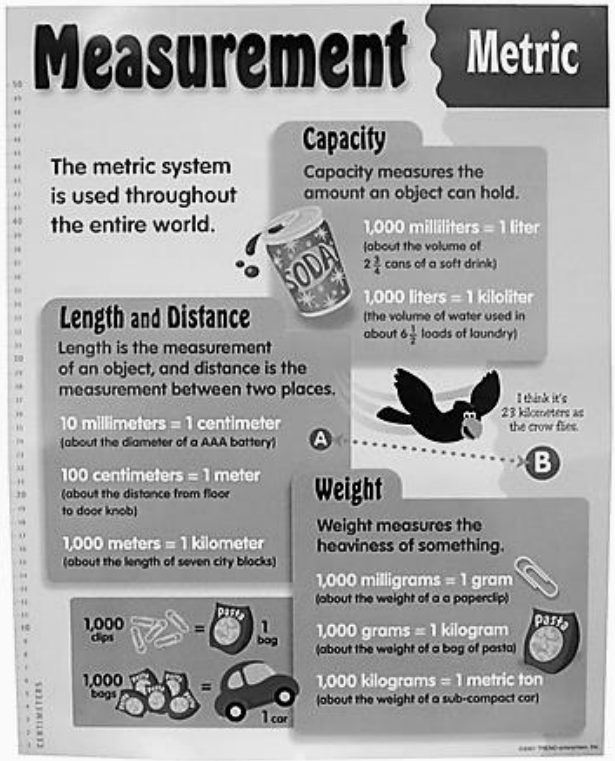
$0.32 = \frac{32}{100} =$



Comparing Decimals

Draw a model to show that 0.3 < 0.5

Measurement and Data 20%



Length
12 in = 1 ft
3 ft = 1 yrd
5,280 ft = 1 mi
1,760 yrd = 1 mi

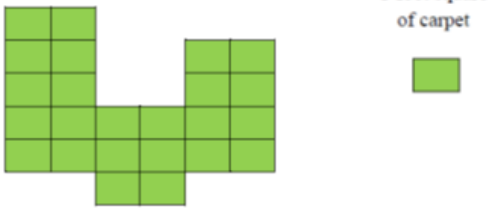
Weight
16 oz = 1lb
2000 lb = 1 ton

Capacity
128 fl oz = 1 gal
2 pt = 1 qt
8 pt = 1 gl
4 qt = 1 gal

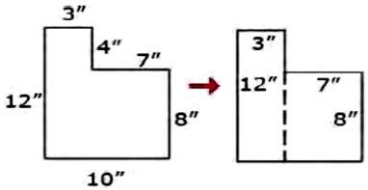
Time
60 sec = 1 min
60 min = 1 hr
24 hr = 1 day
7 days = 1 wk
52 wk = 1 yr
12 mon = 1 yr
365 days = 1 yr

Area and Perimeter

Mr. Rutherford is covering the miniature golf course with an artificial grass. How many 1-foot squares of carpet will he need to cover the entire course?



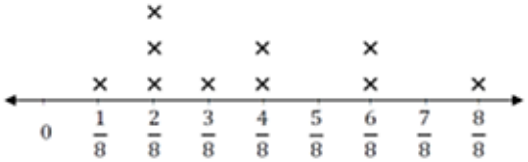
Area of Rectilinear Figures



area is 12 x 3 + 8 x 7 = 92 sq inches

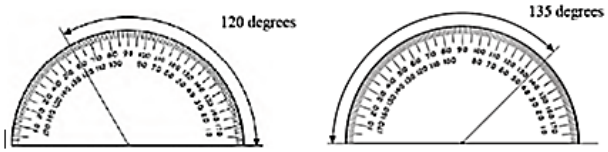
Line Plots

Items Measured to the Nearest 1/8 inch

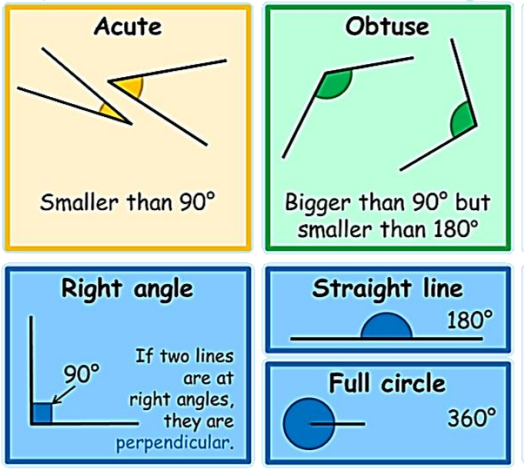


How many objects measured 1/4 inch? ***3 items***
1/2 inch? ***2 items*** If you put all the objects together end to end what would be the total length of **all** the objects? ***$4\frac{2}{8}$ or $4\frac{1}{4}$***

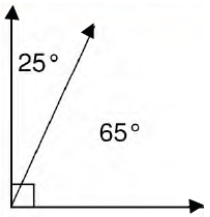
Angle Measurement

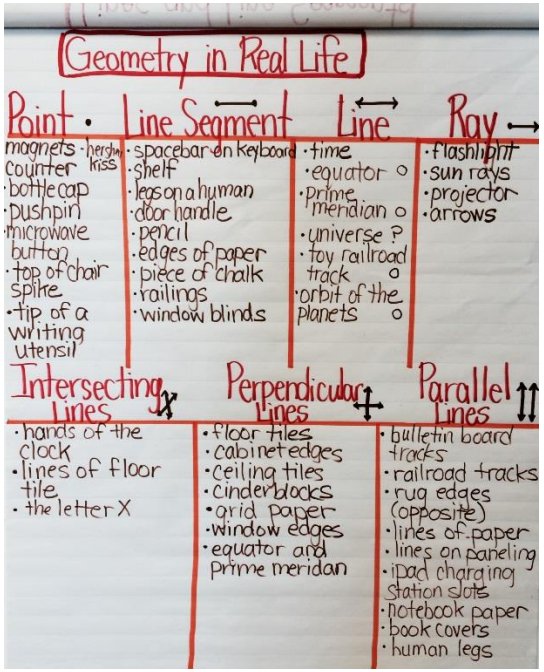


Angles are named or classified according to their size.

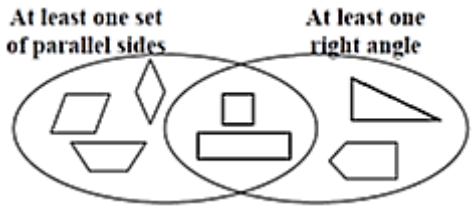


A lawn water sprinkler rotates 65 degrees and then pauses. It then rotates an additional 25 degrees. What is the total degree of the water sprinkler rotation? ***65° + 25° = 90°***

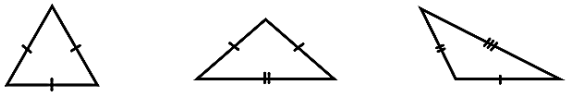




Classification of Geometric Figures



Classifying Triangles by their Sides

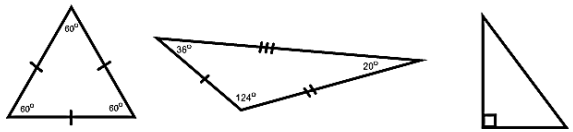


Equilateral - all sides congruent

Isosceles - two sides congruent

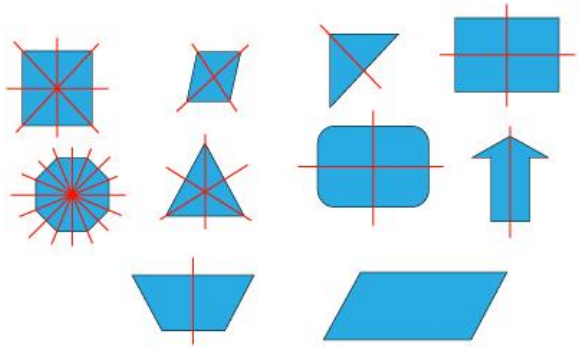
Scalene - no sides are congruent

Classifying Triangles by their Angles



Acute - all angles acute

Obtuse - one obtuse angle

Right - one right angle

Symmetry