

Petersburg Math Cohort

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Counting Principles

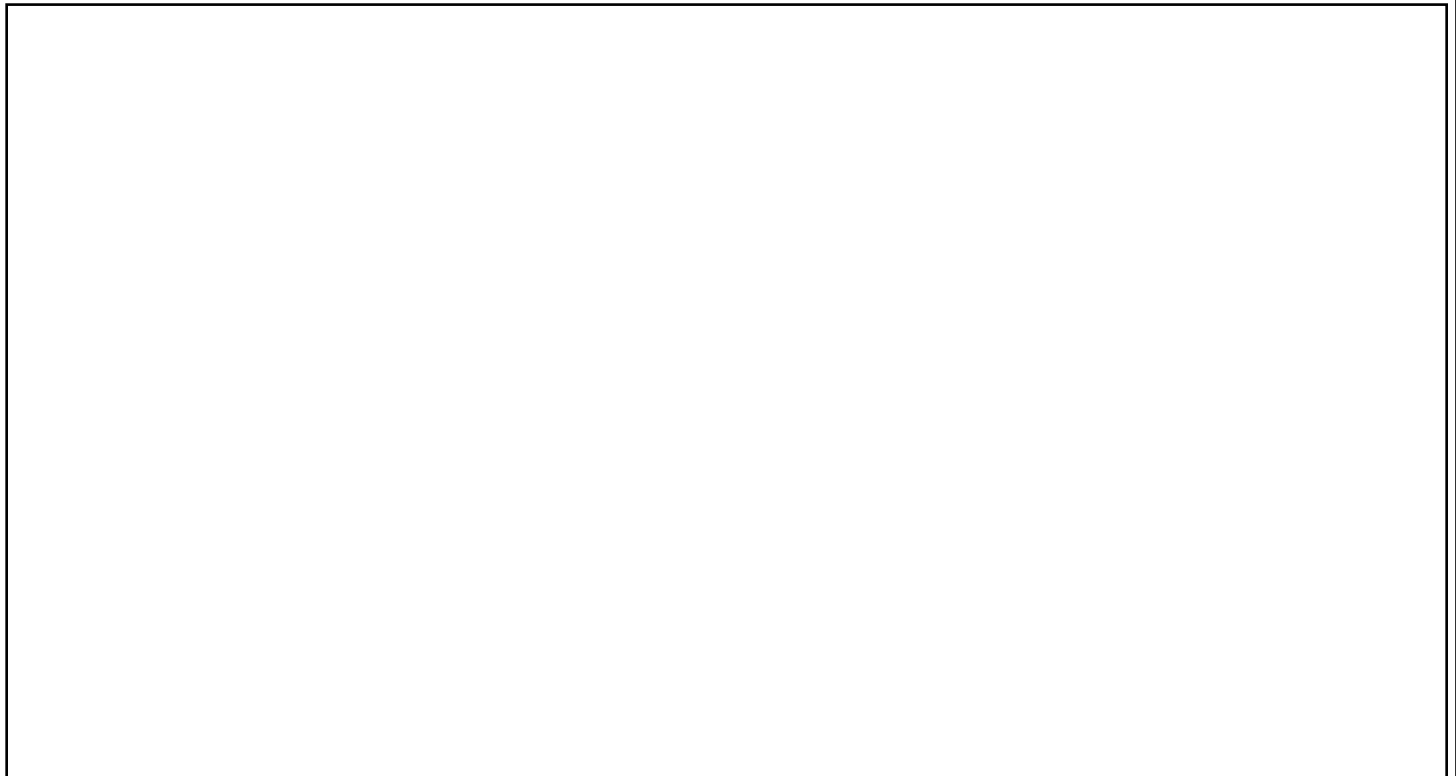
Stable Order	
One-to-One Correspondence	
Cardinality	
Abstraction	
Order Irrelevance	

Ten Frame

Counting Boards



Three Representations of Number

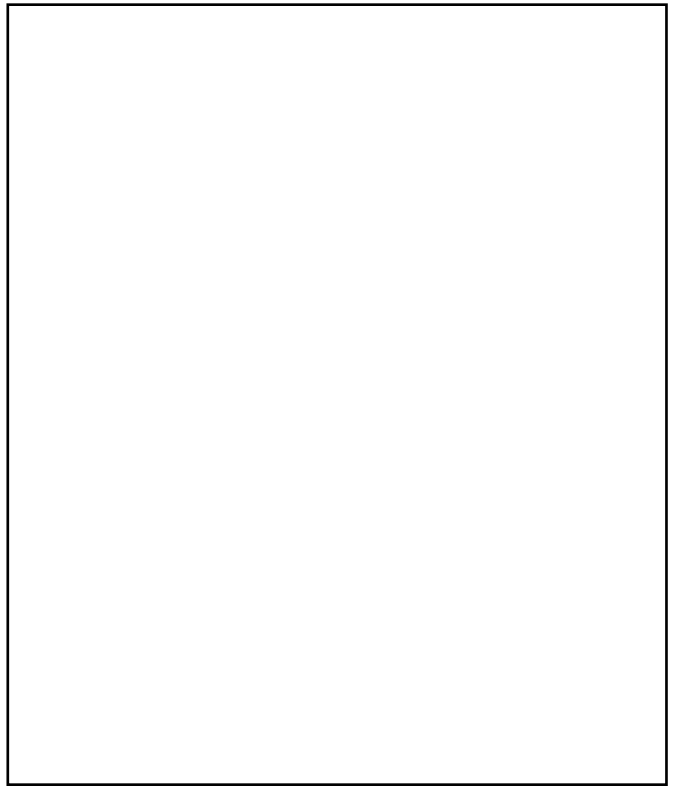
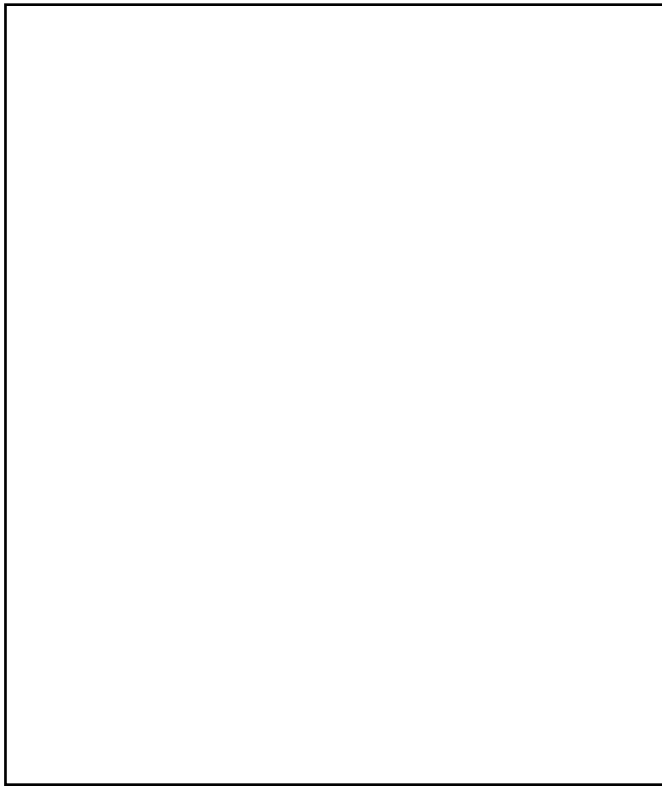


Comparing Numbers

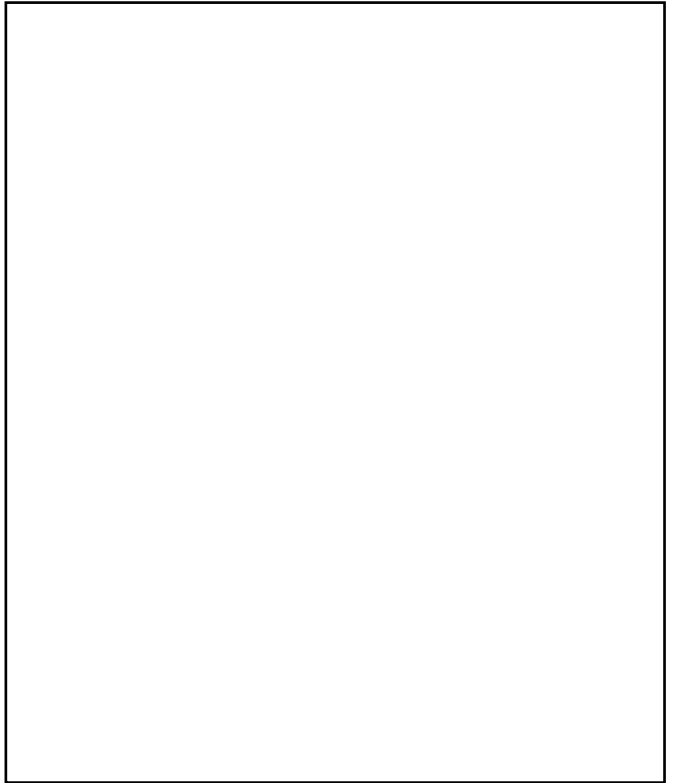
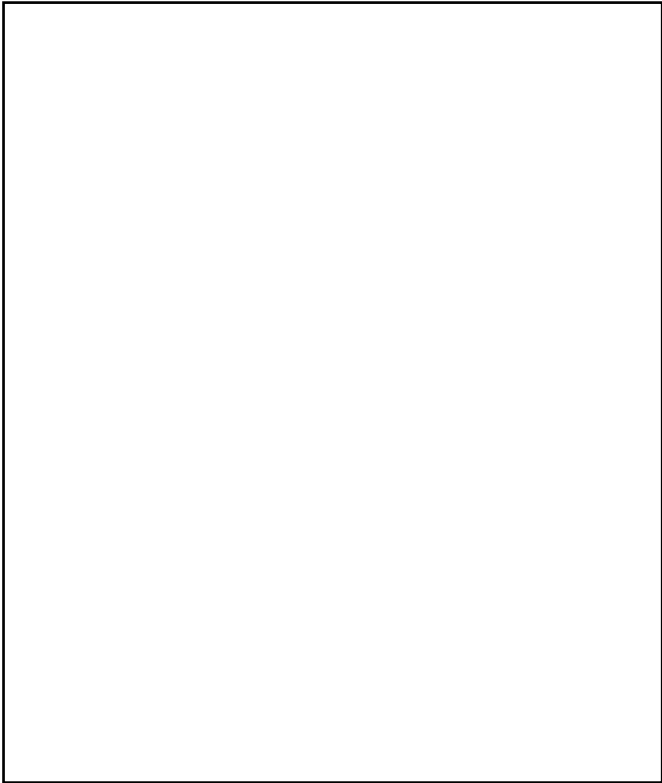
Build a Tower

Less than	7	More than

Addition



Subtraction

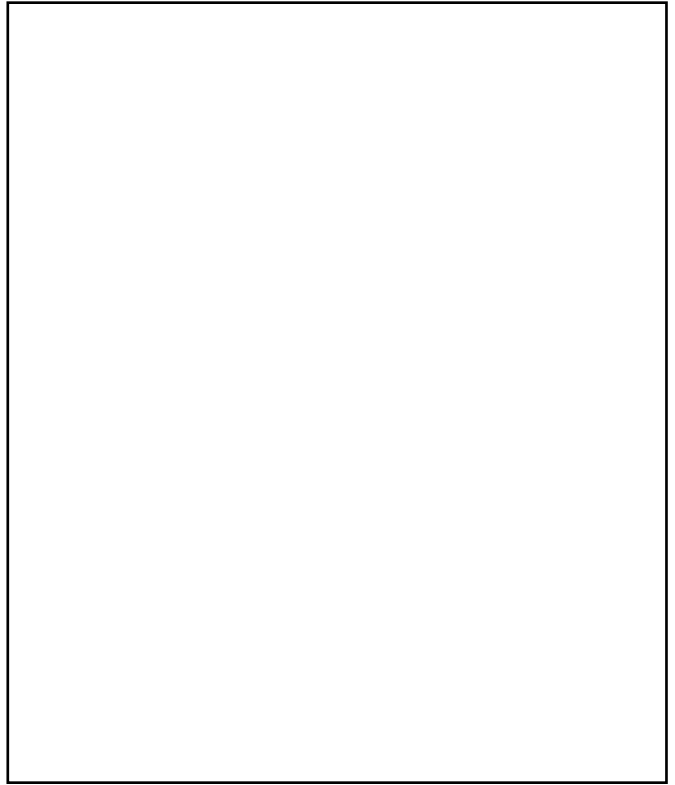
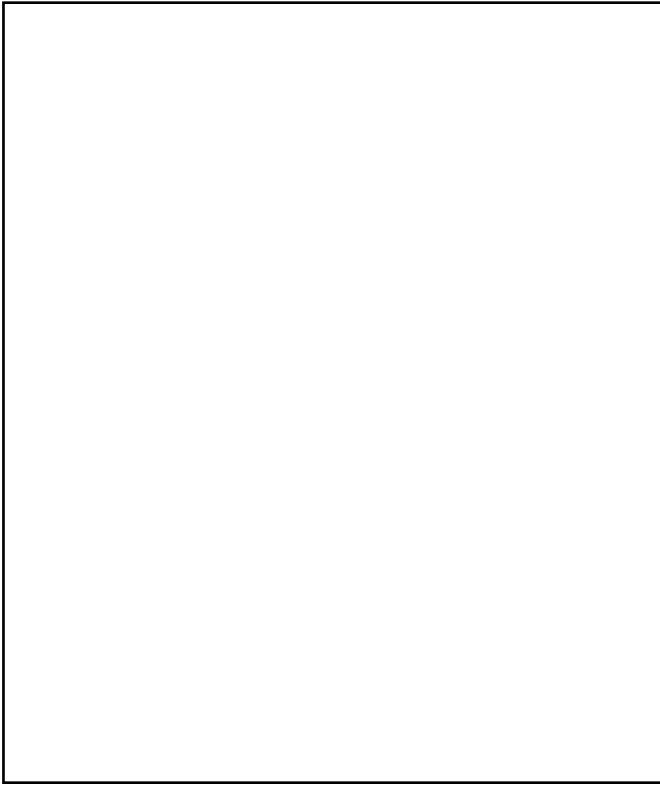


Addition and Subtraction Computation

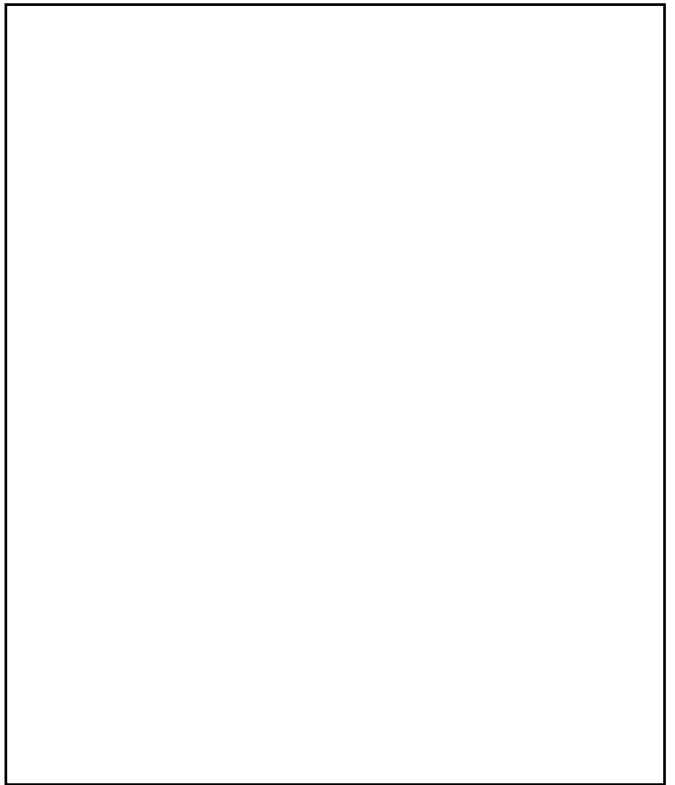
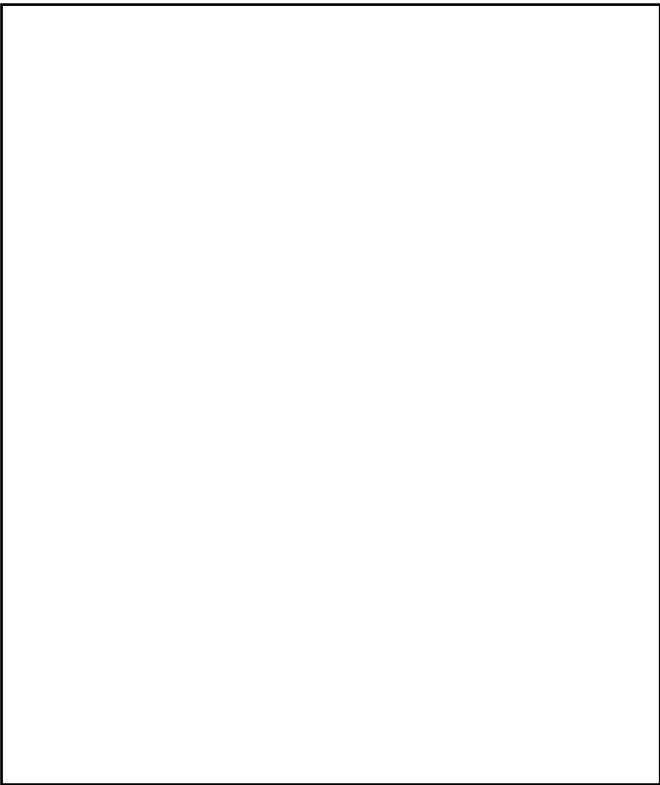
$$227 + 185 =$$

$$232 - 164 =$$

Multiplication



Division



Multiplication and Division Computation

$13 \times 7 =$

$135 \div 5 =$

Fraction Concepts

Fraction	Length	Area	Set
$\frac{2}{3}$			
$\frac{1}{4}$			
$1\frac{1}{2}$			
$\frac{3}{7}$			

Improper Fractions and Mixed Numbers

Equivalent Fractions

$$\frac{1}{2}$$

$$\frac{1}{4}$$

Comparing Fractions

$$\frac{1}{2} \quad \frac{3}{10}$$

$$\frac{2}{6} \quad \frac{4}{6}$$

$$\frac{2}{3} \quad \frac{2}{5}$$

Ordering Fractions

$$\frac{6}{8} \quad \frac{3}{5} \quad \frac{1}{3}$$

Fraction Computation: Addition and Subtraction

Problem	Representation
$\frac{1}{5} + \frac{3}{5}$	
$\frac{2}{3} + \frac{2}{3}$	
$\frac{1}{2} + \frac{1}{4}$	
$\frac{1}{4} + \frac{4}{6}$	
$\frac{4}{5} - \frac{1}{5}$	
$\frac{6}{5} - \frac{2}{5}$	
$\frac{7}{8} - \frac{2}{4}$	
$\frac{1}{2} - \frac{2}{5}$	

Fraction Computation: Multiplication

Problem	Representation
$2 \times \frac{1}{4}$	
$\frac{1}{2} \times \frac{4}{4}$	
$\frac{1}{2} \times \frac{2}{4}$	
$\frac{1}{2} \times \frac{3}{4}$	
$\frac{2}{3} \times \frac{3}{3}$	
$\frac{2}{5} \times \frac{5}{6}$	
$\frac{1}{4} \times \frac{2}{3}$	
$\frac{3}{4} \times \frac{1}{3}$	

Fraction Computation: Division

Problem	Representation
$\frac{3}{3} \div 3$	
$\frac{3}{3} \div \frac{1}{3}$	
$\frac{2}{3} \div \frac{1}{3}$	
$\frac{5}{6} \div \frac{1}{2}$	
$\frac{7}{8} \div \frac{3}{4}$	
$\frac{1}{4} \div \frac{1}{2}$	
$\frac{3}{4} \div \frac{2}{3}$	
$\frac{4}{5} \div \frac{1}{2}$	

Decimals

1.2 **0.88** **1.034**
2.8 **1.04** **0.829**

Ones

Tenths

Hundredths

Thousandths

Decimal Computation

Problem	Representation
$\begin{array}{r} 2.34 \\ + 1.61 \\ \hline \end{array}$	
$\begin{array}{r} 1.98 \\ + 0.34 \\ \hline \end{array}$	
$\begin{array}{r} 2.34 \\ - 1.61 \\ \hline \end{array}$	
$\begin{array}{r} 3.09 \\ - 1.88 \\ \hline \end{array}$	

Decimal Computation

Problem	Representation
$\begin{array}{r} 0.52 \\ \times \quad 3 \\ \hline \end{array}$	
$\begin{array}{r} 0.52 \\ \times \quad 34 \\ \hline \end{array}$	
$1.24 \div 2$	
$1.27 \div 5$	

Integers

Addition

Problem	Representation
$3 + 5$	
$3 + (-5)$	
$3 + (-5)$	
$3 + (-5)$	
$-2 + 6$	
$-6 + (-3)$	
$3 + (-1)$	

Integers

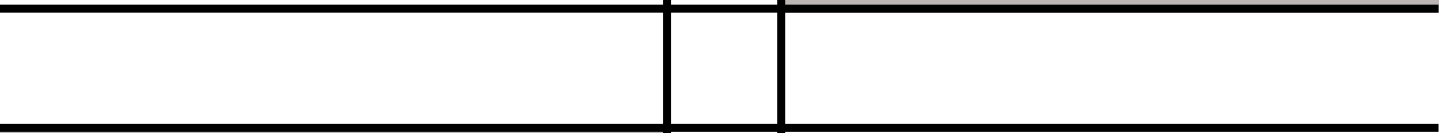
Subtraction

Problem	Representation
$5 - 3$	
$-3 - 4$	
$-3 - 4$	
$-3 - 4$	
$2 - 5$	
$-2 - (-6)$	
$-3 - 2$	

Integers

Multiplication and Division

Problem	Representation
$2(3)$	
$(2)(-3)$	
$(-2)(-3)$	
$9 \div 3$	
$9 \div (-3)$	
$-9 \div (-3)$	



Showing Expressions

With Cups/Plates and Counters

Problem	Representations
$x + 4$	
$y - 6$	
$2(x)$	

With Algebra Tiles

Problem	Representations
$x + 4$	
$y - 6$	
$2(x)$	

With Algeblocks

Problem	Representations
$x + 4$	
$y - 6$	
$2(x)$	

Solving Equations

With Cups/Plates and Counters

Problem	Representations
$x + 2 = 5$	
$x + 2 = 5$	
$4 + x = 6$	
$5 = x - 3$	
$-2 = x + 3$	

With Algebra Tiles

Problem	Representations
$x + 2 = 5$	
$4 + x = 6$ $x + 3 = 7$	
$y - 4 = 2$	
$5 = x - 3$ $y - 2 = 5$	

Solving Equations

With Algeblocks

Problem	Representations
$x + 2 = 5$	
$4 + x = 6$	
$-2 = x + 3$	
$-1 = y - 4$	
$2x + 2 = 6$	
$x + 4 = 3x$	
$2(x + 3) = x + 4$	
$2x - 4 = 1 + 3x$	
$3y - 5 = -y - 1$	
$1 - x = x + 1$	

Solving Equations

With Algeblocks

Problem	Representation
$x(3)$	
$-2(y)$	
$x(1 + x)$	
$-y(y + 2)$	
$(x - 2)(-2x)$	
$(y - 1)(y + 2)$	
$3y \div 3$	
$-2xy \div y$	
$-3x \div 3x$	
$4x^2 \div -x$	