Number Sense

1. Rational vs. Irrational (Ends or Repeats)
   - a. Order Rational and Irrational on a number line

2. Turn repeating decimals into fractions
   - a. In the form $\frac{a}{b}$ with no common factors (reduce)

Equations and Expressions

1. Exponent Rules
   - * no negative exponents
   - * anything to the 0 power is 1
   - * exponent tells you how many times to write the base
2. Calculate square roots and cubed roots

   $x^2 = 36$ $\quad$ $x^3 = 27$

   $x = \pm 6$ $\quad$ $x = 3$
3. Scientific Notation (2nd comma - $\{3.2 \times 10^{-6}\}$ $\{3.2E\text{-}6\}$)
   - a. write #'s back and forth (decimal-sci. notation)
   - b. operations (+, −, ×, ÷) #'s in scientific notation
   - c. division - "how many times bigger"

④ Proportional Relationships
compare slopes of graphs to slopes of tables

⑤ Write equations of lines using
$y = mx + b$ (2 pts, slope and a point, m and b)

⑥ Solve equations
3 solutions
ⓐ one solution ($x = \#$)
ⓑ infinitely many (a # = itself)
ⓒ no solution (a # = a different #)

* distributive property and like terms

⑦ Solve Systems of equations
ⓐ substitution ⓑ graphing (where the lines intersect)
ⓒ word problems

Functions

1. Identify a function (x's don't repeat / passes vertical line test)
2. compare two functions (slopes and y-intercepts)
3. linear functions (x and y to the 1st power)
   vs.
   non-linear
4. Write a linear function from two points
   (2,3), (6,8) $y = mx + b$
   - a) from a table
   - b) from a graph

   } be able to find slope(m) and y-int.(b)

⑤ Story Graphs (look at the labels)

Geometry

① Rotations (turn)

$x(-3,4) \rightarrow (4,3)$

90 CW $(x,y) \rightarrow (y,-x)$

180 CW $(x,y) \rightarrow (-x,-y)$

270 CW $(x,y) \rightarrow (-y,x)$

figures are congruent

ⓐ Translations (slide)

ⓑ Reflections (flip)

x-axis → opposite y

y-axis → opposite x

② Dilation

* multiply by the scale factor

figures are similar

(3) Exterior Angle theorem 

$m\angle 4 = m\angle 2 + m\angle 3$

(4) Parallel lines cut by a transversal

(5) Pythagorean Theorem $a^2+b^2=c^2$

(a) find the leg or hyp.

(b) find diagonal of box (spear)

(c) distance between two points on a coordinate plane

(6) Volume

$V_{cone} = \frac{1}{3}\pi r^2 h$

$V_{cylinder} = \pi r^2 h$

$V_{spheres} = \frac{4}{3}\pi r^3$

radius is $\frac{1}{2}$ diameter

Probability and Statistics

1. Scatterplots –
   - a. outliers
   - b. clustering
   - c. positive or negative association
   - d. linear association
   - e. non-linear association
2. line of best fit (good or weak)
3. Interpret the meaning of the slope
4. Two-way frequency tables (total columns)
   Answer the question.