MTH 23.5 LECTURE NOTES (Ojakian)

Topic 4: Percentiles and Quartiles

OUTLINE

References (**Algebra Book**: page 9; **Statistics Book**: 2.3)

1. Simplifying Fractions
2. Percentiles and Quartiles

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1. Simplifying Fractions

(a) The Fundamental Principle of Fractions

i. $\frac{a}{b} = \frac{ac}{bc}$ (multiply top and bottom by same number)

ii. $\frac{a}{b} = \frac{a \div c}{b \div c}$ (divide top and bottom by same number)

PROBLEM 1. *Write each fraction as two different, but equivalent fractions:* $2/4,\ 7/3,\ -1/4,\ 5$.

(b) Simplified Fraction (or Reduced Fraction)

Definition 1. *A fraction a/b is* ***simplified*** *if there is no whole number larger than 1 divides evenly into both a and b.*

PROBLEM 2. *Simplify the fractions:* $28/36,\ 3/13$

2. Leftover from earlier: Converting Decimal to Fraction ...

Decimal $\rightarrow$ Fraction

(a) Write as "(decimal)/1"

(b) Multiply top/bottom by appropriate power of 10 (so decimal point is gone)

(c) Then simplify

(d)

PROBLEM 3. *Suppose* 65% *of your neighborhood has an iphone. What fraction of the people have an iphone?*

PROBLEM 4. *Convert the decimal* 2.8 *to a fraction.*

3. Quartiles

   (a) Second Quartile = Median
   (b) First Quartile = Median of lower half of data.
   (c) Third Quartile = Median of upper half of data.

4. Percentile

   (a) Calculate: See 2.3, page 90.
   Note: Always chose a percentile between 0 and 100, exclusive!
   (b) Example 2.3 - 2.16 (page 90)
   (c) Put quartile language in terms of percentiles.
   (d) Example: Make up some test score percentages, choose a curve based on percentiles, and find some grades.
   (e) Examples: 2.3 (page 128ff): 26, 27, 28.