GRE Prep Cheat Sheet

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Math

4 types of Questions:

1. Problem Solving - multiple choice
2. Multiple Answer - Multiple choice with multiple correct answer choices
3. Numeric Entry - no answer choices provided
4. Quantitative Comparison - 4 answer choices to choose from (A is larger, B is larger, the 2 are equal, solution can't be determined)

Mental Math Tips:

Dividing by 5: Double the # you want to divide, then divide this number by 10.

Quick mental multiplication: If multiplying with a large number, factor a 2 out of the large number and multiply it by the smaller number. Factoring out the 2 numbers you want to multiply can help simply the calculation.
Ex) 260 x 15 = (2)(15)(130) = (30)(10)(13)=(3)(10)(10)(13)= 3900}}

Squaring Shortcuts:

1. Multiples of ten: square the non-zero part of the number you want to square
2. Numbers ending in 5: The last 2 digits of the square will always be 25; remove the 5 and add 1 to the remaining digit (n), find the product of this number (n+1) and the non-five number (n)
3. Figuring out the square of (n+1): If we know n^2, $(n+1)^2 = n + (n+1) + n^2$

Multiples of 10:

If multiplying by 10: move decimal to the right
If dividing by 10: move decimal to the left

Numbers can't be divided by 0

0 divided by any number = 0

Quantitative Comparison

Strategies:

1. You will only ever need to be able to estimate solutions; use math to simplify relationships between the 2 choices presented
2. Add or subtract X to both choices
3. Multiply or divide by a positive number
4. You can decrease numerator or increase denominator to simplify fractions for estimation

Rounding

There is an infinite quantity of numbers between any 2 numbers on a number line.

Integer

A number written without a fractional component {nl}} Ex) 21, 0, -2100

Examples of non-integers: 9.75, 5 1/2, $2^{1/2}$

Properties of Real Numbers

Assume a number is real if the questions refers to a "number".

Real Number: all numbers on the number line (positive, negative, or zero); can also include decimals

Zero: is neither positive or negative; the absolute value of zero = zero

Absolute value: the distance of a number from zero (origin on the number line)

Order of Operations: PEMDAS

Grouping Symbols: parentheses, brackets, square root sign, long fraction bar, exponents written as equations (ie x^{y+7})

Word Problems

Key Words:

1. Is = equals
2. Of = multiply

Data Interpretation

1. Read all relevant text.
2. Look at axis labels
3. Look for trends in data: Repeated patterns, highs vs lows, increase vs decrease
4. Pay attention to units mentioned in the question: they might not match the units on the graphs!

Types of graphs:

1. Pie chart - usually paired with another chart
2. Line graph: usually has a horizontal axis (time)
3. Bar graph: bars will usually represent a category or interval of time
4. Scatter plot: used when each data point can be described by 2 numerical measurements. Positive correlation: if 1 variable increases, then the other will too.

Profit = Revenue - Loss

Remainder Problems

If the dividend is less than the divisor, then the remainder will be equal to the dividend. This is always the smallest positive dividend with this remainder.

Percents

The test likes to ask about % increase or decrease.

Simple interest: Unlikely to asked on test, but useful for making estimations. Concept where interest only paid on principle. Numbers will rise on a constant slope.

Percents (cont)

Compound Interest: Interest paid on principle & interest previously accrued. No 2 consecutive payments will be the same.

Ex) $1000 deposited into account with 5% compound interest.
Year 1 = $1000(1.05) = $1050
Year 2 = $1050(1.05) = $1102.50

Ratios

When presented with a ratio problem, find a common variable between the 2 ratios.