

### Plugging In Your Own Numbers (PIYON)

Whenever you see a problem with variables in the answer choices, Plug In.

in terms of;  
equivalent form

messy/nasty algebra => simple clear arithmetic

Try 1, verify with 0 or 2; be careful the number must be in the domain

if answers are percents or fractional parts of some unknown quantity

try Plugging In:  
percent =  $100 \cdot \text{diff} / \text{original}$

eg total number of marbles in a jar, total miles to travel in a trip

ratio percent => p-  
lugin ==> number,  
10% => 10

### PLUGGING IN THE ANSWERS (PITA): answer is a number

If the average (arithmetic mean) of 8 and x is equal to the average of 5, 9, and x, what is the value of x?

Don't try to solve problems like this by writing equations and solving for x or y. Plugging In the Answers lets you use arithmetic instead of algebra, so you're less likely to make errors.

Start from either end (greatest or least) or middle (mean)

if answer has very small/big number, try bigger/smaller first

### DATA ANALYSIS

The Average Pie [total, avg, n] When calculating averages, always find the total.  
Pie It's the one piece of information that ETS loves to withhold.

### DATA ANALYSIS (cont)

Median To find the median of a set containing an even number of items, take the average of the two middle numbers after putting the numbers in order.

Mode the number that appears the most. (Remember: Mode sounds like most.)

Range highest-lowest

Rate pie = average pie car speed, work done, average pie

Percent translation percent: /100; of: x; what x; is are equals: =

5 is what percent of 80?

$$5 = x \cdot 80 / 100$$

what percent of 5 is 80?

$$x \cdot 5 / 100 = 80$$

### PERCENTS increase and decrease

$100 \cdot \text{difference} / \text{original amt}$

Growth and decay final amount = original amount  $(1 \pm \text{rate})^{\text{number of changes}}$

population growth, radioactive decay, and credit payments

RATIOS AND PROPORTIONS fraction = part/whole; ratio = part/part, part+part=100

sometimes : fraction/ratio => decimal

ratio box [p,p,w]\*[r,m,a]: fill in known -> calc unknown

direct proportion/variation  $x_1 y_1 = x_2 y_2$

inverse proportion/variation  $x_1 y_1 = x_2 y_2$