## GED Math Test Study Guide

Very common questions and quick ways to solve them

1. Find the Mean, Median, and Range

Mean: Add all the numbers, divide by the number of items
Median: Find the middle number
Range: Find the difference between the smallest and biggest numbers
Example:

| 23 |
| :---: |
| 17 |
| 13 |
| 20 |
| 14 |
| 21 |

Mean: $23+17+13+20+14+21=108 \quad 108 / 6=18$
Median: $\begin{array}{lllllll}13 & 14 & 17 & 20 & z 1 & z 3 & \text { Cross off the lowest and highest }\end{array}$ numbers. The numbers in the middle are 17 and 20. You can ask yourself, "what number comes between 17 and 20?" or you can work your way to the middle on a number line. You can also find the mean of 17 and 20: $17+20=37$ $37 / 2=18.5$

Range: $23-13=10$

## 2. Multiply and divide exponents

Multiplying exponents: Keep the base number the same and add the exponents Dividing exponents: Keep the base number the same and subtract exponents

Example:

$$
5^{3} * 5^{4}
$$

$5^{3}=5 * 5 * 5$ and $55^{4}=5 * 5 * 5 * 5$ so multiplied together you get: $5 * 5 * 5 * 5 * 5 * 5 * 5$ or $5^{7}$

$$
\begin{aligned}
& 6^{8} / 6^{5} \\
& 6^{8}=\frac{6 * 6 * 6 * 6 * 6 * 6 * 6 * 6}{6 * 6 * 6 * 6 * 6}
\end{aligned}
$$

Every time 6 is divided by 6 the result is 1 , so those numbers are cancelled out. What is left is $6 * 6 * 6$ or

## 3. Make an expression undefined

"Undefined" means dividing by 0.

You can divide a number from zero, but you can't divide by zero. Imagine these two scenarios:

Four people split the price of a free pizza. How much does each person pay?
This is a weird question, but you could imagine dividing a free pizza among 4 people:
4 people / \$0 = \$0 per person

Zero people go to restaurant and split the price of a $\$ 4$ pizza. How much does each person pay? This scenario makes no sense, and \$4 / 0 people $=$ undefined

The GED test may ask something like this:

What value of $x$ makes this expression undefined?

$$
\frac{x^{2}+4 x-12}{x-2}
$$

A. -2
B. -4
C. 2
D. 4

To make this undefined, you need to make the denominator (the bottom number) be 0 , so just focus on $x-2$. What number for $x$ would make that result in zero? 2-2 $=0$ so when $\mathrm{x}=2$ the expression is undefined.
C. 2

## 4. Guess and check

Many of the algebra questions with multiple choices can be solved by guess and checking, but there are some tricks to guessing and checking:

Tip 1: If the multiple choices are ordered from smallest number to largest number, start with $C$.

## Example:

Solve for $x: 3 x+7=22$
A. $X=4$
B. $X=5$
C. $x=6$
D. $x=7$

You can solve this by trying each option for x . Start with C :
$3 * 6+7=25$
This number is too high (we wanted 22). Since $C$ is too high, then $D$ is also too high. Try B:
$3 * 5+7=22$

This is correct. If it were still too big, then A. is the correct answer. With this method you only need to try two options.

## B. 22

You can often choose a number for $x$ and see what happens.

## Example:

Simplify this expression

$$
\frac{x^{2}+9 x+18}{x+3}
$$

A. $x-3$
B. $x+6$
C. $x+3$
D. $x+9$

This problem can look complicated. If you're not sure how to solve it, you can choose a number that you think is easy to work with and plug it in for $x$. Let's say $x$ is 2 . Then the expression is:
$\frac{2^{2}+9(2)+18}{2+3} \quad$ The result is 8

Which of the options also give you 8 if $x=2$ ?
B. $x+6$

## 5. Find the slope

Slope can be defined in a couple useful ways: Rate of change, difference in y divided by the difference in $x$, rise over run

In a word problem (rate of change):
A tree is 48 inches tall and it will grow 2 inches every year. What is the slope in this situation?
Here the slope is $\mathbf{2}$ because that is the rate of change per year

In a table:

| Year | Tree size (in.) |
| :--- | :--- |
| 1 | 50 |
| 2 | 52 |
| 3 | 54 |
| 4 | 56 |

Here you can see the rate of change (slope) is 2. You
can also calculate the change in $y$ (the tree size) and
the change in $x$ (the year) between any two points:
56 inches -50 inches = 6 inches $=\mathbf{2}$
Year $4-$ Year $1=3$ Years

In a graph:


Rise over run: On a graph, you can start with any point and count up or down to the height of the next point (this is the rise). Then count left or right to the second point (this is the run).

Rise
Run
In the graph to the left: 2 / $1=\mathbf{2}$

