

CHAPTER 7: INEQUALITIES

You will be asked to solve problems that involve inequalities. Those are the problems that use the following symbols. I have also included their meanings.

<	“Less than”
≤	“less than or equal to”
>	“greater than”
≥	“greater than or equal to”

Lucky for us, the way to solve inequalities is exactly the same way we solve equations. The only difference is that an inequality uses one of the symbols above. We still try to isolate the variable on one side of the inequality symbol. But there is one rule that we need to remember with inequalities. The key rule when solving inequalities is “if you multiply OR divide both sides of the inequality by a negative number, you MUST reverse the inequality sign.” You have to do this reversal every time you multiply or divide by a negative number. Most problems you would only have to do this once. So just be careful when you are solving inequalities. Don’t make a mistake by reversing the inequality when you add or subtract. This is a common mistake made by a lot of students.

EXAMPLE 1

Solve $3 > \frac{4+u}{-5}$

SOLUTION TO EXAMPLE 1

1.	Multiply both sides by (-5). Since we are multiplying by a negative value, remember to reverse the inequality sign.	$3 \cdot (-5) < \frac{4+u}{-5} \cdot (-5)$ $-15 < 4+u$
2.	Subtract 4 from both sides. Since we subtracted, we do not need to reverse the inequality.	$-15 - 4 < 4 - 4 + u$ $-19 < u$
3.	Some professors are fine by the answer as it is. But mathematically, we want to have the variable on the left side. So we need to make a little adjustment. Since our answer has the inequality opening up to the “u”, when we switched it around, the inequality is still opening up to the “u”.	$u > -19$

Now that we have an answer, what does the inequality actually mean? Our answer for EXAMPLE 1 is $u > -19$. That means that I can pick any number greater than -19 and when I plug it back into the inequality, it will make sense. Try a couple of numbers and see.

MATHEMATICS COMPETENCY EXAM STUDY GUIDE – PART A

Again, solving inequality problems are really no different than solving equations. You simply have to remember the multiplying or dividing by a negative number rule.

.....

TRY THESE – Solving Inequalities

1. $4(3x - 5) + 2 \geq 13x + 30$

2. $3x - 5 < 6x + 25$

3. $11(2x - 1) \leq 33$

4. $3x + 3 > \frac{4x - 3}{-2}$

5. $2x - 4(2x + 2) > 2x + 12$

6. $\frac{3x - 5}{2} \leq \frac{7x}{4}$

.....