Are You Ready for Abstract Academy?

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ΔΣ Preface

This document should be used as a guide for your readiness to join Abstract Academy. We ask that our prospective students feel comfortable with **at least half** of the listed problems. We ask that you glance at these problems to make sure you are ready before you sign up. If you have any questions about the material, please contact @contact.abstract.academy@gmail.com.

ΔΣ Problems

Problem: Simplify each of the following terms

$$\frac{x^4(yz)^2}{xyz^2} \qquad \frac{(a+b)(a-b)}{(a+b)-2b} \qquad \frac{p^2-q^2}{(p+q)}$$

Problem: Solve for x given that

$$2x+5y=10 \quad \text{and} \quad 4x+5y=10$$

Problem: Given that $f(x)=3(x-2)$ what is the value of

$$f(1)+f(2)+f(3)$$

Problem: List the following

What are all of the prime factors of 741?

Problem: Factor the following terms

$$x^2-x-6 \qquad x^2+5x+6 \qquad 4x^2-1$$

Problem: Fact or fiction:

Is $(x-y)^2$ always greater than or equal to 0? Why or why not?

Problem: Calculate the chances:

There are 33 red marbles in a bag and 22 blue marbles in a bag. After drawing from the bag, what is the chance that I get a red marble?

Problem: Calculate the chances:

There are 33 red marbles in a bag and 22 blue marbles in a bag. After drawing two marbles without replacement, what is the chance I get a red marble and blue marble?