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...Solution: Writing $17(2x$
 $+ 3y) = 6z$ shows that z is
 divisible by 17. Because z

is a prime, we must have
 $z = 17$. We can now divide

the whole expression by 17 to get $2x+3y = 6$. Writing this as $3y = 2(3-x)$ shows that y is divisible by 2. Because y is a prime, $y = 2$. Finally $x = 0$. • Prove that \sqrt{p} is an irrational number for any prime p . Solution: Suppose that

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Number Theory Problems. Go through the given number theory problems once to get a better understanding.

Problem 1: Find the Greatest Common Divisor(G.C.D) of a number 30 and 52. Solution: Divisors of 30 are 1, 2, 3, 5, 6, 10, 15, 30. Divisors of 52 are 1, 2, 4, 13, 26, 52. The common divisors in 30 and 52 is 2. Therefore, the G. C.D of 30 and 52 is 2. $\gcd(30,52)= 2$.

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Theorem: Let p be a prime and a a natural number not divisible by p . Then

$$a^{p-1} \equiv 1 \pmod{p}$$

This is in essence the same as the following statement: Let p be a prime and a a natural number. Then

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Why is this really the same? An Introduction to Number Theory

Solution: In base 10, $7 + 1 = 8$, but in base 7, $7 + 1 = 10$.

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