Re: Question about zero divisors in finite rings

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- *From*: "G.E. Ivey" <george.ivey@xxxxxxxxxxxxx>
- *Date*: Wed, 12 Sep 2007 07:06:21 EDT

In article
<kuiee39s3pni8ah478mk7fcqv0tt9rejdb@xxxxxxx>,
Brian VanPelt <brvanpelt@xxxxxxxxxxxxx> wrote:

> On Tue, 11 Sep 2007 18:07:54 −0700, Rotwang

<sg552@xxxxxxxxxxxxx>

> wrote:

>> While reading an old thread the other day I saw an

article in which a

>> poster asserted that any ring with 6 elements

necessarily contains

>> zero divisors. Having thought a bit about why this

is true I think I

>> can show that a ring with n elements must have

zero divisors provided

>> i) n is composite, and
>> ii) no prime appears in the prime factorisation of

n with exponent

>> greater than one.
>>
>> My question is: is this correct, and is it a

special case of a more

general fact?

If n is composite with unity, then i) is all you

need. If n = km,

then the k*1 times m*1 is the ring zero.

I don't know what it means for a number to be
"composite with unity,"
but the field of 4 elements is a ring with a
composite number of
elements and no zero divisors.

−−
Gerry Myerson (gerry@xxxxxxxxxxxxxxx) (i −> u for
email)

The field with 4 elements? I was under the impression that a finite field had to have a prime number of elements for exactly the reasons expressed before.

(I think he meant the number was composite and the ring had "unity", a multiplicative identity.)
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