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# MATH for FUN - A place to post and work math problems.

Restricted Group, 3038 members

## Pythagorean triplets

Chenglong Zou

Message 1 of 6 , Mar 19, 2005

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Just wondering... what's the smallest pythagorean triplet that has three composite integers with no common factor (i.e. not 6,8,10 and so on.)

Peter Otzen

Message 2 of 6 , Mar 19, 2005

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--- In [mathforfun@yahoogroups.com](mailto:mathforfun@yahoogroups.com), "Chenglong Zou" <aqua\_bass@h...> wrote:

>  
> Just wondering... what's the smallest pythagorean triplet that has  
> three composite integers with no common factor (i.e. not 6,8,10 and  
> so on.)

I would like to suggest 16, 63, 65 as one which meets the requirement of three composites, but there may be something smaller, I haven't fully checked.

Did you mean smallest triplet in that the sum of the three numbers was the smallest? The difference between the largest and smallest of the triplet was smallest? or some other intention.

Peter

Chenglong Zou

Mar 19, 2005

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--- In [mathforfun@yahoogroups.com](mailto:mathforfun@yahoogroups.com), "Peter Otzen" <pmaxotzen@h...> wrote:

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> the triplet was smallest? or some other intention.  
 >  
 > Peter

I meant that the smallest term determines the smallest triplet.



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cino hilliard

Mar 19, 2005

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>From: "Chenglong Zou" <aqua\_bass@...>  
 >Reply-To: mathforfun@yahoogroups.com  
 >To: mathforfun@yahoogroups.com  
 >Subject: [MATH for FUN] Pythagorean triplets  
 >Date: Sat, 19 Mar 2005 18:36:18 -0000

&gt;

&gt;

>Just wondering... what's the smallest pythagorean triplet that has  
 >three composite integers with no common factor (i.e. not 6,8,10 and  
 >so on.)  
 $x^2+y^2 = z^2$

The first few in terms of x,y,z

16 63 65  
 24 143 145  
 36 77 85  
 36 323 325  
 44 117 125  
 44 483 485  
 56 33 65

In terms of y,x,z

220 21 221  
 364 27 365  
 56 33 65  
 544 33 545  
 1512 55 1513  
 176 57 185

In terms of z,x,y

16 63 65  
 56 33 65  
 36 77 85  
 44 117 125  
 24 143 145  
 120 119 169  
 104 153 185

I used the pari script output to a file pathtri.txt and then opened and  
 sorted in excel.  
 Be sure you delete the old file before doing another as pari appends to  
 existing files.

```

pythtri(n) =
{
local(a,b,c=0,k,x,y,z,vx,vy,wx,wy);
wx=wy= vector(n*n);
for(a=1,n,
for(b=1,n,
x=2*a*b;
y=b^2-a^2;
z=b^2+a^2;
if(y > 0 & !isprime(x) & !isprime(y) & !isprime(z),
if(gcd(x,y)==1 & gcd(x,z)==1 & gcd(y,z)==1,
c++;
wy[c]=y;
wx[c]=x;
\\ print(x,"y",z);
write("pythtri.txt",x,"y",z); \\ open in excel comma
delimited and sort to play with
)
)
);

```

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```

n(vyjj+1j<>vyjj,print(vyjj,"")) \print 200 sorted
y values without dupes
)
}

```

CLH

Peter Otzen

Mar 19, 2005

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--- In [mathforfun@yahoo.com](mailto:mathforfun@yahoo.com), "Chenglong Zou" <aqua\_bass@h...> wrote:  
>  
> --- In [mathforfun@yahoo.com](mailto:mathforfun@yahoo.com), "Peter Otzen" <pmaxotzen@h...>  
> wrote:  
>  
> > I would like to suggest 16, 63, 65

> I meant that the smallest term determines the smallest triplet.

In that case, I am pretty sure of the 16,63,65 answer!

Peter

[Excel assisted as I am half asleep today - late night]

cloneman@yahoo.com

Message 6 of 6 , Mar 22, 2005

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3, 4 and 5.

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