

Scan

A7359
A7360

Marc LeBrun
and Jan Hoey

Emails

3 pages

2 scans

A7359
A7360

Mira:

%I A7359
 %S A7359 1,1,1,1,2,1,3,2,3,3,5,4,6,5,5,8,9,10,12,12,9,15,14,22,19
 %N A7359 Partitions of \$n\$ into relatively prime parts $\$ \geq ^ 2\$$.
 %R A7359 mlb.
 %O A7359 1,5 0,6
 %A A7359 njas

*please contact
external*

%I A7360
 %S A7360 ~~1,2,2,2,3,3,4,5,5,6,8,9,10,11,10,13~~
 %N A7360 Partitions of \$n\$ into relatively prime parts, (allowing a part $\$ = ^ 1\$$.
 %R A7360 mlb.
 %O A7360 1,2
 %A A7360 njas

*ignore this
part of series*

Original source:

From well.sf.ca.us!mlb Fri Apr 22 18:46:41 0700 1994
 Received: by ninet.research.att.com; Fri Apr 22 21:46 EDT 1994
 Received: (from mlb@localhost) by well.sf.ca.us (8.6.8/8.6.6) id SAA29732 for njas@research
 Date: Fri, 22 Apr 1994 18:46:41 -0700
 From: Marc Le Brun <mlb@well.sf.ca.us>
 Message-Id: <199404230146.SAA29732@well.sf.ca.us>
 To: njas@research.att.com
 Subject: relatively prime partitions
 Status: R

A7359
 1 1 1 1 2 1 3 2 3 3 5 4 6 5 5 8 9 10 12 12 9 15 14 22 19...
 Number of partitions of N with relatively prime parts.
 Caution: I generated these by hand during a bout of insomnia--
 I'll get them independently checked and send you a confirmation.

A7360
 A related sequence is 1 2 2 2 3 3 4 5 5 6 8 9 10 11 10 13...
 got by adding adjacent #s in the first sequence, which includes
 allowing a part=1. I'm sending these to you now because both
 came up dry from the sequence server...

By the way, did I tell you that my 9 year old daughter & I got
 a hit on a homework problem from her school? It was really
 quite a neat experience, which she shared with her class
 (just a simple quadratic, but it was a good motivator to
 introduce the online HIS and all the cool concepts it entrains)

As always, best wishes...

Later I got this coirrected version:

From well.sf.ca.us!mlb Mon Apr 25 21:37:21 0700 1994
 Received: by ninet.research.att.com; Tue Apr 26 00:37 EDT 1994
 Received: (from mlb@localhost) by well.sf.ca.us (8.6.8/8.6.6) id VAA11621 for njas@research

*Mark LeBrun
Dan Hoey*

Date: Mon, 25 Apr 1994 21:37:21 -0700
From: Marc Le Brun <mlb@well.sf.ca.us>
Message-Id: <199404260437.VAA11621@well.sf.ca.us>
To: njas@research.att.com
Subject: prime parts
Status: RO

Handwritten notes:
↓
A7359
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Hi, Dan Hoey wrote a program to generate the sequence, my hand values were wrong after p(18). I quibble with his assertion that p(0)=1, I'd suggest you start with p(1)=0... Also, the summed sequence, 1 2 3 4 6 7 10 12 15 18... may actually be more "natural" so I think it's worth (this will be ~~A7378~~ A7360 including too. I'm attaching Dan's message in full, as I'm handicapped in editing it down on this system; hope it's not too prolix. Enjoy!

>From hoey@AIC.NRL.Navy.Mil Mon Apr 25 17:16:51 1994
Return-Path: hoey@AIC.NRL.Navy.Mil
Received: from Sun0.AIC.NRL.Navy.Mil ([192.26.18.51]) by well.sf.ca.us (8.6.8/8.6.6) with From: hoey@AIC.NRL.Navy.Mil
Received: from sun13.aic.nrl.navy.mil by Sun0.AIC.NRL.Navy.Mil (4.1/SMI-4.0) id AA09453; Mon, 25 Apr 94 20:16:29 EDT
Received: by sun13.aic.nrl.navy.mil; Mon, 25 Apr 94 20:16:28 EDT
Date: Mon, 25 Apr 94 20:16:28 EDT
Message-Id: <9404260016.AA06022@sun13.aic.nrl.navy.mil>
To: Marc Le Brun <mlb@well.sf.ca.us>
Subject: Re: Subject: 11112132335465589...
Cc: math-fun@cs.arizona.edu
Status: R

I take it you are counting the number of partitions of N in which each part is at least 2 and the parts are relatively prime in pairs. I get the first few values:

A7359 corrected:

0- 9:	1	0	1	1	1	2	1	3	2	3
10- 19:	3	5	4	6	5	5	8	9	10	11
20- 29:	11	10	14	18	19	18	20	20	25	30
30- 39:	35	34	32	32	43	43	57	56	51	55
40- 49:	67	78	87	87	80	82	97	125	128	127
50- 59:	128	127	146	182	191	185	184	193	213	263
60- 69:	290	279	258	271	312	354	404	402	366	390
70- 79:	458	520	545	565	519	530	617	705	769	773
80- 89:	735	751	829	987	1062	1006	994	1030	1133	1328
90- 99:	1448	1371	1332	1382	1527	1729	1873	1878	1794	1823
100-109:	2077	2332	2466	2485	2358	2362	2688	3092	3222	3235
110-119:	3158	3171	3511	3999	4213	4134	4039	4154	4546	5093
120-129:	5544	5416	5174	5377	5859	6485	7058	6957	6664	6866
130-139:	7634	8396	8878	8821	8561	8658	9567	10734	11208	11228
140-149:	11044	11077	12054	13490	14165	13991	13728			

Handwritten: A7359

I'm amused that there is no such partition of 1, while there is one of zero. But I'm concerned because you continue:

> ...10 12 12 9 15 14 22 19...

and I disagree with all but the first. I get

```
f(19)=11 2+17, 3+4+5+7, 3+5+11, 3+16, 4+15, 5+14, 6+13, 7+12, 8+11,
9+10, 19
f(20)=11 2+5+13, 2+7+11, 3+4+13, 3+7+10, 3+17, 4+5+11, 4+7+9, 5+7+8,
7+13, 9+11, 20
f(21)=10 2+3+5+11, 2+19, 3+5+13, 3+7+11, 4+17, 5+7+9, 5+16, 8+13,
10+11, 21
f(22)=14 2+3+17, 2+7+13, 2+9+11, 3+5+14, 3+8+11, 3+19, 4+5+13, 4+7+11,
5+6+11, 5+8+9, 5+17, 7+15, 9+13, 22
f(23)=18 2+3+5+13, 2+3+7+11, 2+5+7+9, 2+21, 3+4+5+11, 3+5+7+8, 3+7+13,
3+20, 4+19, 5+7+11, 5+18, 6+17, 7+16, 8+15, 9+14, 10+13,
11+12, 23
f(24)=19 2+3+19, 2+5+17, 2+7+15, 2+9+13, 3+4+17, 3+5+16, 3+8+13,
3+10+11, 4+7+13, 4+9+11, 5+6+13, 5+7+12, 5+8+11, 5+19,
6+7+11, 7+8+9, 7+17, 11+13, 24
f(25)=18 2+3+7+13, 2+5+7+11, 2+23, 3+4+5+13, 3+4+7+11, 3+5+17, 3+22,
4+5+7+9, 4+21, 5+7+13, 5+9+11, 6+19, 7+18, 8+17, 9+16, 11+14,
12+13, 25
```

Normally, I don't include code unless someone asks for it, but in this case it's short and the results are in question, so maybe someone will see a bug.

```
(defun count-rel-p-par (n &optional (printem nil) &aux (ans 0))
  (labels ((crpl (left min sofar)
            (cond ((= left 0)
                  (incf ans)
                  (when printem (print (reverse sofar))))
                  ((do ((i min (1+ i)))
                       ((> i left))
                        (dolist (oa sofar (crpl (- left i) (1+ i) (cons i sofar)))
                          (unless (= 1 (gcd oa i)) (return nil))))))))
    (crpl n 2 nil))
  ans)
```

Dan Hoey - Hoey@AIC.NRL.Navy.Mil - Like a boat from the blue