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Elementary Number Theory Problems. Part XI[1]

Adam Naumowicz
Faculty of Computer Science
University of Białystok
Poland

Summary. In this paper we present the Mizar formalization of the 36th problem from W. Sierpiński's book "250 Problems in Elementary Number Theory" [10].

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Introduction

This article demonstrates the solution to the 36th problem from W. Sierpiński's book "250 Problems in Elementary Number Theory" [10, 3]. To that end, for every positive integer $s \leqslant 25$ and for $s = 100$ we provide the least positive integer with the sum of its digits (in decimal system) equal to s, which is divisible by s. We make an extensive use of the general notion of natural number representations previously developed in [8] according to [9].

The preliminary part of this article contains a few auxiliary lemmas relating numbers and sequences of digits in a given numeric system. Most notably, we prove here the basic property that allows to determine the order between two numbers based on the digits representing them.

[1]The Mizar processing has been performed using the infrastructure of the University of Bialystok High Performance Computing Center.

The formalization of the main problem, using the Mizar system [1], [2], is split into theorems corresponding to every positive integer $s \leqslant 25$ and a specific one for $s = 100$. The first ten cases for $s < 10$ are obviously justified by taking the numbers s themselves. Other cases require studying successive multiples of s and the sums of digits of their decimal representations. The last case calls for a number with decimal digits composed of a leading 1, followed by a sequence of eleven 9s, and two trailing 0s. With such a large number evaluating all successive multiples of 100 would be impractical. Therefore, the final proof is of a general nature taking into account the properties of sequences of digits.

The work presented in this article is intended to extend the original dataset of Mizar elementary number theory formalizations presented in [6] and based on the Mizar article [7]. Other similar elementary facts concerning number divisibility can also be found, e.g., in articles [5, 4].

1. Preliminaries

Let n be a natural number. One can check that $\langle n \rangle$ is $\mathbb{N}$-valued. Let n_1, n_2 be natural numbers. One can verify that $\langle n_1, n_2 \rangle$ is $\mathbb{N}$-valued. Let n_1, n_2, n_3 be natural numbers. Note that $\langle n_1, n_2, n_3 \rangle$ is $\mathbb{N}$-valued. Let n_1, n_2, n_3, n_4 be natural numbers. One can check that $\langle n_1, n_2, n_3, n_4 \rangle$ is $\mathbb{N}$-valued. Now we state the proposition:

(1) Let us consider a natural number b, and a finite 0-sequence E of $\mathbb{N}$. If $E = \emptyset$, then $\operatorname{value}(E, b) = 0$.

Let us consider natural numbers n, b. Now we state the propositions:

(2) $\operatorname{value}(\langle n \rangle, b) = n$.

(3) If $n < b > 1$, then $\operatorname{digits}(n, b) = \langle n \rangle$. The theorem is a consequence of (2).

(4) Let us consider a natural number b. If $b > 1$, then $\operatorname{digits}(\operatorname{value}(\langle 0 \rangle, b), b) = \langle 0 \rangle$. The theorem is a consequence of (2).

(5) Let us consider a natural number b. Suppose $b > 1$. Let us consider a $\mathbb{N}$-valued finite 0-sequence s. Suppose $\operatorname{len} s > 0$ and $s(\operatorname{len} s - 1) \neq 0$ and for every natural number i such that $i \in \operatorname{dom} s$ holds $s(i) < b$. Then $\operatorname{digits}(\operatorname{value}(s, b), b) = s$.

Let us consider natural numbers n, b. Now we state the propositions:

(6) If $n < b > 1$, then $\sum \operatorname{digits}(n, b) = n$. The theorem is a consequence of (3).

(7) If $b > 1$, then $\operatorname{value}(n \longmapsto b -' 1, b) = b^n - 1$.

PROOF: Set $d = n \longmapsto b -' 1$. Set $g = (b -' 1) \cdot (b^{\kappa})_{\kappa \in \mathbb{N}}$. Set $d' = g \restriction n$. For every natural number i such that $i \in \operatorname{dom} d'$ holds $d'(i) = d(i) \cdot b^i$. $\operatorname{rng} d' \subseteq \mathbb{N}$. $\square$

(8) Let us consider a natural number b. Suppose $b > 1$. Let us consider a $\mathbb{N}$-valued finite 0-sequence s. Suppose $\operatorname{len} s > 0$ and for every natural number i such that $i \in \operatorname{dom} s$ holds $s(i) < b$. Then $s(\operatorname{len} s - 1) \cdot b^{\operatorname{len} s -' 1} \leqslant \operatorname{value}(s, b) < b^{\operatorname{len} s}$. The theorem is a consequence of (7).

(9) Let us consider natural numbers n, b. If $b > 1$, then $n < b^{\operatorname{len} \operatorname{digits}(n,b)}$. The theorem is a consequence of (8).

(10) Let us consider natural numbers n, m, b. If $n \neq 0$ and $b > 1$ and $m < \operatorname{len} \operatorname{digits}(n, b)$, then $n \geqslant b^m$. The theorem is a consequence of (8).

(11) Let us consider finite 0-sequences d_1, d_2 of $\mathbb{N}$, and a natural number b. Suppose $b > 1$ and $\operatorname{dom} d_1 = \operatorname{dom} d_2$ and for every natural number n such that $n \in \operatorname{dom} d_1$ holds $d_1(n) \leqslant d_2(n)$. Then $\operatorname{value}(d_1, b) \leqslant \operatorname{value}(d_2, b)$.

(12) Let us consider natural numbers m, n, b. Suppose $b > 1$. Then $m < n$ if and only if $\operatorname{len} \operatorname{digits}(m, b) < \operatorname{len} \operatorname{digits}(n, b)$ or $\operatorname{len} \operatorname{digits}(m, b) = \operatorname{len} \operatorname{digits}(n, b)$ and there exists a natural number i such that $i < \operatorname{len} \operatorname{digits}(m, b)$ and $(\operatorname{digits}(m, b))(i) < (\operatorname{digits}(n, b))(i)$ and for every natural number j such that $j < \operatorname{len} \operatorname{digits}(m, b)$ and $(\operatorname{digits}(m, b))(j) \neq (\operatorname{digits}(n, b))(j)$ holds $i \geqslant j$.

PROOF: Set $d_3 = \operatorname{digits}(m, b)$. Set $d_4 = \operatorname{digits}(n, b)$. Consider v_1 being a finite 0-sequence of $\mathbb{N}$ such that $\operatorname{dom} v_1 = \operatorname{dom} d_3$ and for every natural number i such that $i \in \operatorname{dom} v_1$ holds $v_1(i) = d_3(i) \cdot b^i$ and $\operatorname{value}(\operatorname{digits}(m, b), b) = \sum v_1$. Consider v_0 being a finite 0-sequence of $\mathbb{N}$ such that $\operatorname{dom} v_0 = \operatorname{dom} d_4$ and for every natural number i such that $i \in \operatorname{dom} v_0$ holds $v_0(i) = d_4(i) \cdot b^i$ and $\operatorname{value}(\operatorname{digits}(n, b), b) = \sum v_0$.

If $m < n$, then $\operatorname{len} d_3 < \operatorname{len} d_4$ or $\operatorname{len} d_3 = \operatorname{len} d_4$ and there exists a natural number i such that $i < \operatorname{len} d_3$ and $d_3(i) < d_4(i)$ and for every natural number j such that $j < \operatorname{len} d_3$ and $d_3(j) \neq d_4(j)$ holds $i \geqslant j$. If $\operatorname{len} d_3 < \operatorname{len} d_4$ or $\operatorname{len} d_3 = \operatorname{len} d_4$ and there exists a natural number i such that $i < \operatorname{len} d_3$ and $d_3(i) < d_4(i)$ and for every natural number j such that $j < \operatorname{len} d_3$ and $d_3(j) \neq d_4(j)$ holds $i \geqslant j$, then $m < n$. $\square$

(13) Let us consider a natural number n.
Then $100 \mid n$ if and only if $(\operatorname{digits}(n, 10))(0) = 0$ and $(\operatorname{digits}(n, 10))(1) = 0$.
PROOF: If $100 \mid n$, then $(\operatorname{digits}(n, 10))(0) = 0$ and $(\operatorname{digits}(n, 10))(1) = 0$. Consider d' being a finite 0-sequence of $\mathbb{N}$ such that $\operatorname{dom} d' = \operatorname{dom}(\operatorname{digits}(n, 10))$ and for every natural number i such that $i \in \operatorname{dom} d'$ holds $d'(i) = (\operatorname{digits}(n, 10))(i) \cdot 10^i$ and $\operatorname{value}(\operatorname{digits}(n, 10), 10) = \sum d'$. $\square$

(14) Let us consider a finite 0-sequence f. If $\operatorname{len} f \geqslant 2$, then $f \restriction 2 = \langle f(0), f(1) \rangle$.

2. Problem 36 for $s < 10$

Let n, s be natural numbers. We say that n is the solution to Sierpiński's problem 36 for s if and only if

(Def. 1) $\sum \mathrm{digits}(n, 10) = s$ and $s \mid n$ and for every natural number m such that $\sum \mathrm{digits}(m, 10) = s$ and $s \mid m$ holds $n \leqslant m$.

Now we state the proposition:

(15) Let us consider a natural number n. If $n < 10$, then n is the solution to Sierpiński's problem 36 for n. The theorem is a consequence of (3).

3. Problem 36 for $s = 10$

Now we state the propositions:

(16) $\mathrm{digits}(10, 10) = \langle 0, 1 \rangle$.

(17) $\sum \mathrm{digits}(10, 10) = 1$. The theorem is a consequence of (16).

(18) $\mathrm{digits}(20, 10) = \langle 0, 2 \rangle$.

(19) $\sum \mathrm{digits}(20, 10) = 2$. The theorem is a consequence of (18).

(20) $\mathrm{digits}(30, 10) = \langle 0, 3 \rangle$.

(21) $\sum \mathrm{digits}(30, 10) = 3$. The theorem is a consequence of (20).

(22) $\mathrm{digits}(40, 10) = \langle 0, 4 \rangle$.

(23) $\sum \mathrm{digits}(40, 10) = 4$. The theorem is a consequence of (22).

(24) $\mathrm{digits}(50, 10) = \langle 0, 5 \rangle$.

(25) $\sum \mathrm{digits}(50, 10) = 5$. The theorem is a consequence of (24).

(26) $\mathrm{digits}(60, 10) = \langle 0, 6 \rangle$.

(27) $\sum \mathrm{digits}(60, 10) = 6$. The theorem is a consequence of (26).

(28) $\mathrm{digits}(70, 10) = \langle 0, 7 \rangle$.

(29) $\sum \mathrm{digits}(70, 10) = 7$. The theorem is a consequence of (28).

(30) $\mathrm{digits}(80, 10) = \langle 0, 8 \rangle$.

(31) $\sum \mathrm{digits}(80, 10) = 8$. The theorem is a consequence of (30).

(32) $\mathrm{digits}(90, 10) = \langle 0, 9 \rangle$.

(33) $\sum \mathrm{digits}(90, 10) = 9$. The theorem is a consequence of (32).

(34) $\mathrm{digits}(100, 10) = \langle 0, 0, 1 \rangle$.

(35) $\sum \mathrm{digits}(100, 10) = 1$. The theorem is a consequence of (34).

(36) $\mathrm{digits}(110, 10) = \langle 0, 1, 1 \rangle$.

(37) $\sum \mathrm{digits}(110, 10) = 2$. The theorem is a consequence of (36).

(38) $\mathrm{digits}(120, 10) = \langle 0, 2, 1 \rangle$.

(39) $\sum \mathrm{digits}(120, 10) = 3$. The theorem is a consequence of (38).
(40) $\mathrm{digits}(130, 10) = \langle 0, 3, 1 \rangle$.
(41) $\sum \mathrm{digits}(130, 10) = 4$. The theorem is a consequence of (40).
(42) $\mathrm{digits}(140, 10) = \langle 0, 4, 1 \rangle$.
(43) $\sum \mathrm{digits}(140, 10) = 5$. The theorem is a consequence of (42).
(44) $\mathrm{digits}(150, 10) = \langle 0, 5, 1 \rangle$.
(45) $\sum \mathrm{digits}(150, 10) = 6$. The theorem is a consequence of (44).
(46) $\mathrm{digits}(160, 10) = \langle 0, 6, 1 \rangle$.
(47) $\sum \mathrm{digits}(160, 10) = 7$. The theorem is a consequence of (46).
(48) $\mathrm{digits}(170, 10) = \langle 0, 7, 1 \rangle$.
(49) $\sum \mathrm{digits}(170, 10) = 8$. The theorem is a consequence of (48).
(50) $\mathrm{digits}(180, 10) = \langle 0, 8, 1 \rangle$.
(51) $\sum \mathrm{digits}(180, 10) = 9$. The theorem is a consequence of (50).
(52) $\mathrm{digits}(190, 10) = \langle 0, 9, 1 \rangle$.
(53) $\sum \mathrm{digits}(190, 10) = 10$. The theorem is a consequence of (52).
(54) 190 is the solution to Sierpiński's problem 36 for 10. The theorem is a consequence of (53), (6), (17), (19), (21), (23), (25), (27), (29), (31), (33), (35), (37), (39), (41), (43), (45), (47), (49), and (51).

4. Problem 36 for $s = 11$

Now we state the propositions:
(55) $\mathrm{digits}(11, 10) = \langle 1, 1 \rangle$.
(56) $\sum \mathrm{digits}(11, 10) = 2$. The theorem is a consequence of (55).
(57) $\mathrm{digits}(22, 10) = \langle 2, 2 \rangle$.
(58) $\sum \mathrm{digits}(22, 10) = 4$. The theorem is a consequence of (57).
(59) $\mathrm{digits}(33, 10) = \langle 3, 3 \rangle$.
(60) $\sum \mathrm{digits}(33, 10) = 6$. The theorem is a consequence of (59).
(61) $\mathrm{digits}(44, 10) = \langle 4, 4 \rangle$.
(62) $\sum \mathrm{digits}(44, 10) = 8$. The theorem is a consequence of (61).
(63) $\mathrm{digits}(55, 10) = \langle 5, 5 \rangle$.
(64) $\sum \mathrm{digits}(55, 10) = 10$. The theorem is a consequence of (63).
(65) $\mathrm{digits}(66, 10) = \langle 6, 6 \rangle$.
(66) $\sum \mathrm{digits}(66, 10) = 12$. The theorem is a consequence of (65).
(67) $\mathrm{digits}(77, 10) = \langle 7, 7 \rangle$.

(68) $\sum \mathrm{digits}(77, 10) = 14$. The theorem is a consequence of (67).

(69) $\mathrm{digits}(88, 10) = \langle 8, 8 \rangle$.

(70) $\sum \mathrm{digits}(88, 10) = 16$. The theorem is a consequence of (69).

(71) $\mathrm{digits}(99, 10) = \langle 9, 9 \rangle$.

(72) $\sum \mathrm{digits}(99, 10) = 18$. The theorem is a consequence of (71).

(73) $\mathrm{digits}(121, 10) = \langle 1, 2, 1 \rangle$.

(74) $\sum \mathrm{digits}(121, 10) = 4$. The theorem is a consequence of (73).

(75) $\mathrm{digits}(132, 10) = \langle 2, 3, 1 \rangle$.

(76) $\sum \mathrm{digits}(132, 10) = 6$. The theorem is a consequence of (75).

(77) $\mathrm{digits}(143, 10) = \langle 3, 4, 1 \rangle$.

(78) $\sum \mathrm{digits}(143, 10) = 8$. The theorem is a consequence of (77).

(79) $\mathrm{digits}(154, 10) = \langle 4, 5, 1 \rangle$.

(80) $\sum \mathrm{digits}(154, 10) = 10$. The theorem is a consequence of (79).

(81) $\mathrm{digits}(165, 10) = \langle 5, 6, 1 \rangle$.

(82) $\sum \mathrm{digits}(165, 10) = 12$. The theorem is a consequence of (81).

(83) $\mathrm{digits}(176, 10) = \langle 6, 7, 1 \rangle$.

(84) $\sum \mathrm{digits}(176, 10) = 14$. The theorem is a consequence of (83).

(85) $\mathrm{digits}(187, 10) = \langle 7, 8, 1 \rangle$.

(86) $\sum \mathrm{digits}(187, 10) = 16$. The theorem is a consequence of (85).

(87) $\mathrm{digits}(198, 10) = \langle 8, 9, 1 \rangle$.

(88) $\sum \mathrm{digits}(198, 10) = 18$. The theorem is a consequence of (87).

(89) $\mathrm{digits}(209, 10) = \langle 9, 0, 2 \rangle$.

(90) $\sum \mathrm{digits}(209, 10) = 11$. The theorem is a consequence of (89).

(91) 209 is the solution to Sierpiński's problem 36 for 11. The theorem is a consequence of (90), (6), (56), (58), (60), (62), (64), (66), (68), (70), (72), (37), (74), (76), (78), (80), (82), (84), (86), and (88).

5. Problem 36 for $s = 12$

Now we state the propositions:

(92) $\mathrm{digits}(12, 10) = \langle 2, 1 \rangle$.

(93) $\sum \mathrm{digits}(12, 10) = 3$. The theorem is a consequence of (92).

(94) $\mathrm{digits}(24, 10) = \langle 4, 2 \rangle$.

(95) $\sum \mathrm{digits}(24, 10) = 6$. The theorem is a consequence of (94).

(96) $\mathrm{digits}(36, 10) = \langle 6, 3 \rangle$.

(97) $\sum \mathrm{digits}(36, 10) = 9$. The theorem is a consequence of (96).

(98) $\mathrm{digits}(48, 10) = \langle 8, 4 \rangle$.

(99) $\sum \mathrm{digits}(48, 10) = 12$. The theorem is a consequence of (98).

(100) 48 is the solution to Sierpiński's problem 36 for 12. The theorem is a consequence of (99), (6), (93), (95), and (97).

6. Problem 36 for $s = 13$

Now we state the propositions:

(101) $\mathrm{digits}(13, 10) = \langle 3, 1 \rangle$.

(102) $\sum \mathrm{digits}(13, 10) = 4$. The theorem is a consequence of (101).

(103) $\mathrm{digits}(26, 10) = \langle 6, 2 \rangle$.

(104) $\sum \mathrm{digits}(26, 10) = 8$. The theorem is a consequence of (103).

(105) $\mathrm{digits}(39, 10) = \langle 9, 3 \rangle$.

(106) $\sum \mathrm{digits}(39, 10) = 12$. The theorem is a consequence of (105).

(107) $\mathrm{digits}(52, 10) = \langle 2, 5 \rangle$.

(108) $\sum \mathrm{digits}(52, 10) = 7$. The theorem is a consequence of (107).

(109) $\mathrm{digits}(65, 10) = \langle 5, 6 \rangle$.

(110) $\sum \mathrm{digits}(65, 10) = 11$. The theorem is a consequence of (109).

(111) $\mathrm{digits}(78, 10) = \langle 8, 7 \rangle$.

(112) $\sum \mathrm{digits}(78, 10) = 15$. The theorem is a consequence of (111).

(113) $\mathrm{digits}(91, 10) = \langle 1, 9 \rangle$.

(114) $\sum \mathrm{digits}(91, 10) = 10$. The theorem is a consequence of (113).

(115) $\mathrm{digits}(104, 10) = \langle 4, 0, 1 \rangle$.

(116) $\sum \mathrm{digits}(104, 10) = 5$. The theorem is a consequence of (115).

(117) $\mathrm{digits}(117, 10) = \langle 7, 1, 1 \rangle$.

(118) $\sum \mathrm{digits}(117, 10) = 9$. The theorem is a consequence of (117).

(119) $\mathrm{digits}(156, 10) = \langle 6, 5, 1 \rangle$.

(120) $\sum \mathrm{digits}(156, 10) = 12$. The theorem is a consequence of (119).

(121) $\mathrm{digits}(169, 10) = \langle 9, 6, 1 \rangle$.

(122) $\sum \mathrm{digits}(169, 10) = 16$. The theorem is a consequence of (121).

(123) $\mathrm{digits}(182, 10) = \langle 2, 8, 1 \rangle$.

(124) $\sum \mathrm{digits}(182, 10) = 11$. The theorem is a consequence of (123).

(125) $\mathrm{digits}(195, 10) = \langle 5, 9, 1 \rangle$.

(126) $\sum \mathrm{digits}(195, 10) = 15$. The theorem is a consequence of (125).

(127) $\mathrm{digits}(208, 10) = \langle 8, 0, 2\rangle$.

(128) $\sum \mathrm{digits}(208, 10) = 10$. The theorem is a consequence of (127).

(129) $\mathrm{digits}(221, 10) = \langle 1, 2, 2\rangle$.

(130) $\sum \mathrm{digits}(221, 10) = 5$. The theorem is a consequence of (129).

(131) $\mathrm{digits}(234, 10) = \langle 4, 3, 2\rangle$.

(132) $\sum \mathrm{digits}(234, 10) = 9$. The theorem is a consequence of (131).

(133) $\mathrm{digits}(247, 10) = \langle 7, 4, 2\rangle$.

(134) $\sum \mathrm{digits}(247, 10) = 13$. The theorem is a consequence of (133).

(135) 247 is the solution to Sierpiński's problem 36 for 13. The theorem is a consequence of (134), (6), (102), (104), (106), (108), (110), (112), (114), (116), (118), (41), (78), (120), (122), (124), (126), (128), (130), and (132).

7. Problem 36 for $s = 14$

Now we state the propositions:

(136) $\mathrm{digits}(14, 10) = \langle 4, 1\rangle$.

(137) $\sum \mathrm{digits}(14, 10) = 5$. The theorem is a consequence of (136).

(138) $\mathrm{digits}(28, 10) = \langle 8, 2\rangle$.

(139) $\sum \mathrm{digits}(28, 10) = 10$. The theorem is a consequence of (138).

(140) $\mathrm{digits}(42, 10) = \langle 2, 4\rangle$.

(141) $\sum \mathrm{digits}(42, 10) = 6$. The theorem is a consequence of (140).

(142) $\mathrm{digits}(56, 10) = \langle 6, 5\rangle$.

(143) $\sum \mathrm{digits}(56, 10) = 11$. The theorem is a consequence of (142).

(144) $\mathrm{digits}(84, 10) = \langle 4, 8\rangle$.

(145) $\sum \mathrm{digits}(84, 10) = 12$. The theorem is a consequence of (144).

(146) $\mathrm{digits}(98, 10) = \langle 8, 9\rangle$.

(147) $\sum \mathrm{digits}(98, 10) = 17$. The theorem is a consequence of (146).

(148) $\mathrm{digits}(112, 10) = \langle 2, 1, 1\rangle$.

(149) $\sum \mathrm{digits}(112, 10) = 4$. The theorem is a consequence of (148).

(150) $\mathrm{digits}(126, 10) = \langle 6, 2, 1\rangle$.

(151) $\sum \mathrm{digits}(126, 10) = 9$. The theorem is a consequence of (150).

(152) $\mathrm{digits}(168, 10) = \langle 8, 6, 1\rangle$.

(153) $\sum \mathrm{digits}(168, 10) = 15$. The theorem is a consequence of (152).

(154) $\mathrm{digits}(196, 10) = \langle 6, 9, 1\rangle$.

(155) $\sum \mathrm{digits}(196, 10) = 16$. The theorem is a consequence of (154).

(156) $\mathrm{digits}(210, 10) = \langle 0, 1, 2\rangle$.

(157) $\sum \mathrm{digits}(210, 10) = 3$. The theorem is a consequence of (156).

(158) $\mathrm{digits}(224, 10) = \langle 4, 2, 2 \rangle$.

(159) $\sum \mathrm{digits}(224, 10) = 8$. The theorem is a consequence of (158).

(160) $\mathrm{digits}(238, 10) = \langle 8, 3, 2 \rangle$.

(161) $\sum \mathrm{digits}(238, 10) = 13$. The theorem is a consequence of (160).

(162) $\mathrm{digits}(252, 10) = \langle 2, 5, 2 \rangle$.

(163) $\sum \mathrm{digits}(252, 10) = 9$. The theorem is a consequence of (162).

(164) $\mathrm{digits}(266, 10) = \langle 6, 6, 2 \rangle$.

(165) $\sum \mathrm{digits}(266, 10) = 14$. The theorem is a consequence of (164).

(166) 266 is the solution to Sierpiński's problem 36 for 14. The theorem is a consequence of (165), (6), (137), (139), (141), (143), (29), (145), (147), (149), (151), (43), (80), (153), (124), (155), (157), (159), (161), and (163).

8. Problem 36 for $s = 15$

Now we state the propositions:

(167) $\mathrm{digits}(15, 10) = \langle 5, 1 \rangle$.

(168) $\sum \mathrm{digits}(15, 10) = 6$. The theorem is a consequence of (167).

(169) $\mathrm{digits}(45, 10) = \langle 5, 4 \rangle$.

(170) $\sum \mathrm{digits}(45, 10) = 9$. The theorem is a consequence of (169).

(171) $\mathrm{digits}(75, 10) = \langle 5, 7 \rangle$.

(172) $\sum \mathrm{digits}(75, 10) = 12$. The theorem is a consequence of (171).

(173) $\mathrm{digits}(105, 10) = \langle 5, 0, 1 \rangle$.

(174) $\sum \mathrm{digits}(105, 10) = 6$. The theorem is a consequence of (173).

(175) $\mathrm{digits}(135, 10) = \langle 5, 3, 1 \rangle$.

(176) $\sum \mathrm{digits}(135, 10) = 9$. The theorem is a consequence of (175).

(177) 195 is the solution to Sierpiński's problem 36 for 15. The theorem is a consequence of (126), (6), (168), (21), (170), (27), (172), (33), (174), (39), (176), (45), (82), and (51).

9. Problem 36 for $s = 16$

Now we state the propositions:

(178) $\mathrm{digits}(16, 10) = \langle 6, 1 \rangle$.

(179) $\sum \mathrm{digits}(16, 10) = 7$. The theorem is a consequence of (178).

(180) $\mathrm{digits}(32, 10) = \langle 2, 3 \rangle$.

(181) $\sum \mathrm{digits}(32, 10) = 5$. The theorem is a consequence of (180).

(182) $\mathrm{digits}(64, 10) = \langle 4, 6\rangle$.

(183) $\sum \mathrm{digits}(64, 10) = 10$. The theorem is a consequence of (182).

(184) $\mathrm{digits}(96, 10) = \langle 6, 9\rangle$.

(185) $\sum \mathrm{digits}(96, 10) = 15$. The theorem is a consequence of (184).

(186) $\mathrm{digits}(128, 10) = \langle 8, 2, 1\rangle$.

(187) $\sum \mathrm{digits}(128, 10) = 11$. The theorem is a consequence of (186).

(188) $\mathrm{digits}(144, 10) = \langle 4, 4, 1\rangle$.

(189) $\sum \mathrm{digits}(144, 10) = 9$. The theorem is a consequence of (188).

(190) $\mathrm{digits}(192, 10) = \langle 2, 9, 1\rangle$.

(191) $\sum \mathrm{digits}(192, 10) = 12$. The theorem is a consequence of (190).

(192) $\mathrm{digits}(240, 10) = \langle 0, 4, 2\rangle$.

(193) $\sum \mathrm{digits}(240, 10) = 6$. The theorem is a consequence of (192).

(194) $\mathrm{digits}(256, 10) = \langle 6, 5, 2\rangle$.

(195) $\sum \mathrm{digits}(256, 10) = 13$. The theorem is a consequence of (194).

(196) $\mathrm{digits}(272, 10) = \langle 2, 7, 2\rangle$.

(197) $\sum \mathrm{digits}(272, 10) = 11$. The theorem is a consequence of (196).

(198) $\mathrm{digits}(288, 10) = \langle 8, 8, 2\rangle$.

(199) $\sum \mathrm{digits}(288, 10) = 18$. The theorem is a consequence of (198).

(200) $\mathrm{digits}(304, 10) = \langle 4, 0, 3\rangle$.

(201) $\sum \mathrm{digits}(304, 10) = 7$. The theorem is a consequence of (200).

(202) $\mathrm{digits}(320, 10) = \langle 0, 2, 3\rangle$.

(203) $\sum \mathrm{digits}(320, 10) = 5$. The theorem is a consequence of (202).

(204) $\mathrm{digits}(336, 10) = \langle 6, 3, 3\rangle$.

(205) $\sum \mathrm{digits}(336, 10) = 12$. The theorem is a consequence of (204).

(206) $\mathrm{digits}(352, 10) = \langle 2, 5, 3\rangle$.

(207) $\sum \mathrm{digits}(352, 10) = 10$. The theorem is a consequence of (206).

(208) $\mathrm{digits}(368, 10) = \langle 8, 6, 3\rangle$.

(209) $\sum \mathrm{digits}(368, 10) = 17$. The theorem is a consequence of (208).

(210) $\mathrm{digits}(384, 10) = \langle 4, 8, 3\rangle$.

(211) $\sum \mathrm{digits}(384, 10) = 15$. The theorem is a consequence of (210).

(212) $\mathrm{digits}(400, 10) = \langle 0, 0, 4\rangle$.

(213) $\sum \mathrm{digits}(400, 10) = 4$. The theorem is a consequence of (212).

(214) $\mathrm{digits}(416, 10) = \langle 6, 1, 4\rangle$.

(215) $\sum \mathrm{digits}(416, 10) = 11$. The theorem is a consequence of (214).

(216) $\mathrm{digits}(432, 10) = \langle 2, 3, 4\rangle$.

(217) $\sum \mathrm{digits}(432, 10) = 9$. The theorem is a consequence of (216).

(218) $\mathrm{digits}(448, 10) = \langle 8, 4, 4 \rangle$.

(219) $\sum \mathrm{digits}(448, 10) = 16$. The theorem is a consequence of (218).

(220) 448 is the solution to Sierpiński's problem 36 for 16. The theorem is a consequence of (219), (6), (179), (181), (99), (183), (31), (185), (149), (187), (189), (47), (84), (191), (128), (159), (193), (195), (197), (199), (201), (203), (205), (207), (209), (211), (213), (215), and (217).

10. Problem 36 for $s = 17$

Now we state the propositions:

(221) $\mathrm{digits}(17, 10) = \langle 7, 1 \rangle$.

(222) $\sum \mathrm{digits}(17, 10) = 8$. The theorem is a consequence of (221).

(223) $\mathrm{digits}(34, 10) = \langle 4, 3 \rangle$.

(224) $\sum \mathrm{digits}(34, 10) = 7$. The theorem is a consequence of (223).

(225) $\mathrm{digits}(51, 10) = \langle 1, 5 \rangle$.

(226) $\sum \mathrm{digits}(51, 10) = 6$. The theorem is a consequence of (225).

(227) $\mathrm{digits}(68, 10) = \langle 8, 6 \rangle$.

(228) $\sum \mathrm{digits}(68, 10) = 14$. The theorem is a consequence of (227).

(229) $\mathrm{digits}(85, 10) = \langle 5, 8 \rangle$.

(230) $\sum \mathrm{digits}(85, 10) = 13$. The theorem is a consequence of (229).

(231) $\mathrm{digits}(102, 10) = \langle 2, 0, 1 \rangle$.

(232) $\sum \mathrm{digits}(102, 10) = 3$. The theorem is a consequence of (231).

(233) $\mathrm{digits}(119, 10) = \langle 9, 1, 1 \rangle$.

(234) $\sum \mathrm{digits}(119, 10) = 11$. The theorem is a consequence of (233).

(235) $\mathrm{digits}(136, 10) = \langle 6, 3, 1 \rangle$.

(236) $\sum \mathrm{digits}(136, 10) = 10$. The theorem is a consequence of (235).

(237) $\mathrm{digits}(153, 10) = \langle 3, 5, 1 \rangle$.

(238) $\sum \mathrm{digits}(153, 10) = 9$. The theorem is a consequence of (237).

(239) $\mathrm{digits}(204, 10) = \langle 4, 0, 2 \rangle$.

(240) $\sum \mathrm{digits}(204, 10) = 6$. The theorem is a consequence of (239).

(241) $\mathrm{digits}(255, 10) = \langle 5, 5, 2 \rangle$.

(242) $\sum \mathrm{digits}(255, 10) = 12$. The theorem is a consequence of (241).

(243) $\mathrm{digits}(289, 10) = \langle 9, 8, 2 \rangle$.

(244) $\sum \mathrm{digits}(289, 10) = 19$. The theorem is a consequence of (243).

(245) $\mathrm{digits}(306, 10) = \langle 6, 0, 3 \rangle$.

(246) $\sum \mathrm{digits}(306, 10) = 9$. The theorem is a consequence of (245).

(247) $\mathrm{digits}(323, 10) = \langle 3, 2, 3\rangle$.

(248) $\sum \mathrm{digits}(323, 10) = 8$. The theorem is a consequence of (247).

(249) $\mathrm{digits}(340, 10) = \langle 0, 4, 3\rangle$.

(250) $\sum \mathrm{digits}(340, 10) = 7$. The theorem is a consequence of (249).

(251) $\mathrm{digits}(357, 10) = \langle 7, 5, 3\rangle$.

(252) $\sum \mathrm{digits}(357, 10) = 15$. The theorem is a consequence of (251).

(253) $\mathrm{digits}(374, 10) = \langle 4, 7, 3\rangle$.

(254) $\sum \mathrm{digits}(374, 10) = 14$. The theorem is a consequence of (253).

(255) $\mathrm{digits}(391, 10) = \langle 1, 9, 3\rangle$.

(256) $\sum \mathrm{digits}(391, 10) = 13$. The theorem is a consequence of (255).

(257) $\mathrm{digits}(408, 10) = \langle 8, 0, 4\rangle$.

(258) $\sum \mathrm{digits}(408, 10) = 12$. The theorem is a consequence of (257).

(259) $\mathrm{digits}(425, 10) = \langle 5, 2, 4\rangle$.

(260) $\sum \mathrm{digits}(425, 10) = 11$. The theorem is a consequence of (259).

(261) $\mathrm{digits}(442, 10) = \langle 2, 4, 4\rangle$.

(262) $\sum \mathrm{digits}(442, 10) = 10$. The theorem is a consequence of (261).

(263) $\mathrm{digits}(459, 10) = \langle 9, 5, 4\rangle$.

(264) $\sum \mathrm{digits}(459, 10) = 18$. The theorem is a consequence of (263).

(265) $\mathrm{digits}(476, 10) = \langle 6, 7, 4\rangle$.

(266) $\sum \mathrm{digits}(476, 10) = 17$. The theorem is a consequence of (265).

(267) 476 is the solution to Sierpiński's problem 36 for 17. The theorem is a consequence of (266), (6), (222), (224), (226), (228), (230), (232), (234), (236), (238), (49), (86), (240), (130), (161), (242), (197), (244), (246), (248), (250), (252), (254), (256), (258), (260), (262), and (264).

11. Problem 36 for $s = 18$

Now we state the propositions:

(268) $\mathrm{digits}(18, 10) = \langle 8, 1\rangle$.

(269) $\sum \mathrm{digits}(18, 10) = 9$. The theorem is a consequence of (268).

(270) $\mathrm{digits}(54, 10) = \langle 4, 5\rangle$.

(271) $\sum \mathrm{digits}(54, 10) = 9$. The theorem is a consequence of (270).

(272) $\mathrm{digits}(72, 10) = \langle 2, 7\rangle$.

(273) $\sum \mathrm{digits}(72, 10) = 9$. The theorem is a consequence of (272).

(274) $\mathrm{digits}(108, 10) = \langle 8, 0, 1\rangle$.

(275) $\sum \mathrm{digits}(108, 10) = 9$. The theorem is a consequence of (274).

(276) $\mathrm{digits}(162, 10) = \langle 2, 6, 1\rangle$.

(277) $\sum \mathrm{digits}(162, 10) = 9$. The theorem is a consequence of (276).

(278) 198 is the solution to Sierpiński's problem 36 for 18. The theorem is a consequence of (88), (6), (269), (97), (271), (273), (33), (275), (151), (189), (277), and (51).

12. Problem 36 for $s = 19$

Now we state the propositions:

(279) $\mathrm{digits}(19, 10) = \langle 9, 1\rangle$.

(280) $\sum \mathrm{digits}(19, 10) = 10$. The theorem is a consequence of (279).

(281) $\mathrm{digits}(38, 10) = \langle 8, 3\rangle$.

(282) $\sum \mathrm{digits}(38, 10) = 11$. The theorem is a consequence of (281).

(283) $\mathrm{digits}(57, 10) = \langle 7, 5\rangle$.

(284) $\sum \mathrm{digits}(57, 10) = 12$. The theorem is a consequence of (283).

(285) $\mathrm{digits}(76, 10) = \langle 6, 7\rangle$.

(286) $\sum \mathrm{digits}(76, 10) = 13$. The theorem is a consequence of (285).

(287) $\mathrm{digits}(95, 10) = \langle 5, 9\rangle$.

(288) $\sum \mathrm{digits}(95, 10) = 14$. The theorem is a consequence of (287).

(289) $\mathrm{digits}(114, 10) = \langle 4, 1, 1\rangle$.

(290) $\sum \mathrm{digits}(114, 10) = 6$. The theorem is a consequence of (289).

(291) $\mathrm{digits}(133, 10) = \langle 3, 3, 1\rangle$.

(292) $\sum \mathrm{digits}(133, 10) = 7$. The theorem is a consequence of (291).

(293) $\mathrm{digits}(152, 10) = \langle 2, 5, 1\rangle$.

(294) $\sum \mathrm{digits}(152, 10) = 8$. The theorem is a consequence of (293).

(295) $\mathrm{digits}(171, 10) = \langle 1, 7, 1\rangle$.

(296) $\sum \mathrm{digits}(171, 10) = 9$. The theorem is a consequence of (295).

(297) $\mathrm{digits}(228, 10) = \langle 8, 2, 2\rangle$.

(298) $\sum \mathrm{digits}(228, 10) = 12$. The theorem is a consequence of (297).

(299) $\mathrm{digits}(285, 10) = \langle 5, 8, 2\rangle$.

(300) $\sum \mathrm{digits}(285, 10) = 15$. The theorem is a consequence of (299).

(301) $\mathrm{digits}(342, 10) = \langle 2, 4, 3\rangle$.

(302) $\sum \mathrm{digits}(342, 10) = 9$. The theorem is a consequence of (301).

(303) $\mathrm{digits}(361, 10) = \langle 1, 6, 3\rangle$.

(304) $\sum \mathrm{digits}(361, 10) = 10$. The theorem is a consequence of (303).

(305) $\mathrm{digits}(380, 10) = \langle 0, 8, 3\rangle$.

(306) $\sum \mathrm{digits}(380, 10) = 11$. The theorem is a consequence of (305).

(307) $\mathrm{digits}(399, 10) = \langle 9, 9, 3\rangle$.

(308) $\sum \mathrm{digits}(399, 10) = 21$. The theorem is a consequence of (307).

(309) $\mathrm{digits}(418, 10) = \langle 8, 1, 4\rangle$.

(310) $\sum \mathrm{digits}(418, 10) = 13$. The theorem is a consequence of (309).

(311) $\mathrm{digits}(437, 10) = \langle 7, 3, 4\rangle$.

(312) $\sum \mathrm{digits}(437, 10) = 14$. The theorem is a consequence of (311).

(313) $\mathrm{digits}(456, 10) = \langle 6, 5, 4\rangle$.

(314) $\sum \mathrm{digits}(456, 10) = 15$. The theorem is a consequence of (313).

(315) $\mathrm{digits}(475, 10) = \langle 5, 7, 4\rangle$.

(316) $\sum \mathrm{digits}(475, 10) = 16$. The theorem is a consequence of (315).

(317) $\mathrm{digits}(494, 10) = \langle 4, 9, 4\rangle$.

(318) $\sum \mathrm{digits}(494, 10) = 17$. The theorem is a consequence of (317).

(319) $\mathrm{digits}(513, 10) = \langle 3, 1, 5\rangle$.

(320) $\sum \mathrm{digits}(513, 10) = 9$. The theorem is a consequence of (319).

(321) $\mathrm{digits}(532, 10) = \langle 2, 3, 5\rangle$.

(322) $\sum \mathrm{digits}(532, 10) = 10$. The theorem is a consequence of (321).

(323) $\mathrm{digits}(551, 10) = \langle 1, 5, 5\rangle$.

(324) $\sum \mathrm{digits}(551, 10) = 11$. The theorem is a consequence of (323).

(325) $\mathrm{digits}(570, 10) = \langle 0, 7, 5\rangle$.

(326) $\sum \mathrm{digits}(570, 10) = 12$. The theorem is a consequence of (325).

(327) $\mathrm{digits}(589, 10) = \langle 9, 8, 5\rangle$.

(328) $\sum \mathrm{digits}(589, 10) = 22$. The theorem is a consequence of (327).

(329) $\mathrm{digits}(608, 10) = \langle 8, 0, 6\rangle$.

(330) $\sum \mathrm{digits}(608, 10) = 14$. The theorem is a consequence of (329).

(331) $\mathrm{digits}(627, 10) = \langle 7, 2, 6\rangle$.

(332) $\sum \mathrm{digits}(627, 10) = 15$. The theorem is a consequence of (331).

(333) $\mathrm{digits}(646, 10) = \langle 6, 4, 6\rangle$.

(334) $\sum \mathrm{digits}(646, 10) = 16$. The theorem is a consequence of (333).

(335) $\mathrm{digits}(665, 10) = \langle 5, 6, 6\rangle$.

(336) $\sum \mathrm{digits}(665, 10) = 17$. The theorem is a consequence of (335).

(337) $\mathrm{digits}(684, 10) = \langle 4, 8, 6\rangle$.

(338) $\sum \mathrm{digits}(684, 10) = 18$. The theorem is a consequence of (337).

(339) $\mathrm{digits}(703, 10) = \langle 3, 0, 7\rangle$.

(340) $\sum \text{digits}(703, 10) = 10$. The theorem is a consequence of (339).
(341) $\text{digits}(722, 10) = \langle 2, 2, 7 \rangle$.
(342) $\sum \text{digits}(722, 10) = 11$. The theorem is a consequence of (341).
(343) $\text{digits}(741, 10) = \langle 1, 4, 7 \rangle$.
(344) $\sum \text{digits}(741, 10) = 12$. The theorem is a consequence of (343).
(345) $\text{digits}(760, 10) = \langle 0, 6, 7 \rangle$.
(346) $\sum \text{digits}(760, 10) = 13$. The theorem is a consequence of (345).
(347) $\text{digits}(779, 10) = \langle 9, 7, 7 \rangle$.
(348) $\sum \text{digits}(779, 10) = 23$. The theorem is a consequence of (347).
(349) $\text{digits}(798, 10) = \langle 8, 9, 7 \rangle$.
(350) $\sum \text{digits}(798, 10) = 24$. The theorem is a consequence of (349).
(351) $\text{digits}(817, 10) = \langle 7, 1, 8 \rangle$.
(352) $\sum \text{digits}(817, 10) = 16$. The theorem is a consequence of (351).
(353) $\text{digits}(836, 10) = \langle 6, 3, 8 \rangle$.
(354) $\sum \text{digits}(836, 10) = 17$. The theorem is a consequence of (353).
(355) $\text{digits}(855, 10) = \langle 5, 5, 8 \rangle$.
(356) $\sum \text{digits}(855, 10) = 18$. The theorem is a consequence of (355).
(357) $\text{digits}(874, 10) = \langle 4, 7, 8 \rangle$.
(358) $\sum \text{digits}(874, 10) = 19$. The theorem is a consequence of (357).
(359) 874 is the solution to Sierpiński's problem 36 for 19. The theorem is a consequence of (358), (6), (280), (282), (284), (286), (288), (290), (292), (294), (296), (53), (90), (298), (134), (165), (300), (201), (248), (302), (304), (306), (308), (310), (312), (314), (316), (318), (320), (322), (324), (326), (328), (330), (332), (334), (336), (338), (340), (342), (344), (346), (348), (350), (352), (354), and (356).

13. Problem 36 for $s = 20$

Now we state the propositions:

(360) $\text{digits}(200, 10) = \langle 0, 0, 2 \rangle$.
(361) $\sum \text{digits}(200, 10) = 2$. The theorem is a consequence of (360).
(362) $\text{digits}(220, 10) = \langle 0, 2, 2 \rangle$.
(363) $\sum \text{digits}(220, 10) = 4$. The theorem is a consequence of (362).
(364) $\text{digits}(260, 10) = \langle 0, 6, 2 \rangle$.
(365) $\sum \text{digits}(260, 10) = 8$. The theorem is a consequence of (364).
(366) $\text{digits}(280, 10) = \langle 0, 8, 2 \rangle$.

(367) $\sum \mathrm{digits}(280, 10) = 10$. The theorem is a consequence of (366).
(368) $\mathrm{digits}(300, 10) = \langle 0, 0, 3 \rangle$.
(369) $\sum \mathrm{digits}(300, 10) = 3$. The theorem is a consequence of (368).
(370) $\mathrm{digits}(360, 10) = \langle 0, 6, 3 \rangle$.
(371) $\sum \mathrm{digits}(360, 10) = 9$. The theorem is a consequence of (370).
(372) $\mathrm{digits}(420, 10) = \langle 0, 2, 4 \rangle$.
(373) $\sum \mathrm{digits}(420, 10) = 6$. The theorem is a consequence of (372).
(374) $\mathrm{digits}(440, 10) = \langle 0, 4, 4 \rangle$.
(375) $\sum \mathrm{digits}(440, 10) = 8$. The theorem is a consequence of (374).
(376) $\mathrm{digits}(460, 10) = \langle 0, 6, 4 \rangle$.
(377) $\sum \mathrm{digits}(460, 10) = 10$. The theorem is a consequence of (376).
(378) $\mathrm{digits}(480, 10) = \langle 0, 8, 4 \rangle$.
(379) $\sum \mathrm{digits}(480, 10) = 12$. The theorem is a consequence of (378).
(380) $\mathrm{digits}(500, 10) = \langle 0, 0, 5 \rangle$.
(381) $\sum \mathrm{digits}(500, 10) = 5$. The theorem is a consequence of (380).
(382) $\mathrm{digits}(520, 10) = \langle 0, 2, 5 \rangle$.
(383) $\sum \mathrm{digits}(520, 10) = 7$. The theorem is a consequence of (382).
(384) $\mathrm{digits}(540, 10) = \langle 0, 4, 5 \rangle$.
(385) $\sum \mathrm{digits}(540, 10) = 9$. The theorem is a consequence of (384).
(386) $\mathrm{digits}(560, 10) = \langle 0, 6, 5 \rangle$.
(387) $\sum \mathrm{digits}(560, 10) = 11$. The theorem is a consequence of (386).
(388) $\mathrm{digits}(580, 10) = \langle 0, 8, 5 \rangle$.
(389) $\sum \mathrm{digits}(580, 10) = 13$. The theorem is a consequence of (388).
(390) $\mathrm{digits}(600, 10) = \langle 0, 0, 6 \rangle$.
(391) $\sum \mathrm{digits}(600, 10) = 6$. The theorem is a consequence of (390).
(392) $\mathrm{digits}(620, 10) = \langle 0, 2, 6 \rangle$.
(393) $\sum \mathrm{digits}(620, 10) = 8$. The theorem is a consequence of (392).
(394) $\mathrm{digits}(640, 10) = \langle 0, 4, 6 \rangle$.
(395) $\sum \mathrm{digits}(640, 10) = 10$. The theorem is a consequence of (394).
(396) $\mathrm{digits}(660, 10) = \langle 0, 6, 6 \rangle$.
(397) $\sum \mathrm{digits}(660, 10) = 12$. The theorem is a consequence of (396).
(398) $\mathrm{digits}(680, 10) = \langle 0, 8, 6 \rangle$.
(399) $\sum \mathrm{digits}(680, 10) = 14$. The theorem is a consequence of (398).
(400) $\mathrm{digits}(700, 10) = \langle 0, 0, 7 \rangle$.
(401) $\sum \mathrm{digits}(700, 10) = 7$. The theorem is a consequence of (400).

(402) $\mathrm{digits}(720, 10) = \langle 0, 2, 7\rangle$.
(403) $\sum \mathrm{digits}(720, 10) = 9$. The theorem is a consequence of (402).
(404) $\mathrm{digits}(740, 10) = \langle 0, 4, 7\rangle$.
(405) $\sum \mathrm{digits}(740, 10) = 11$. The theorem is a consequence of (404).
(406) $\mathrm{digits}(780, 10) = \langle 0, 8, 7\rangle$.
(407) $\sum \mathrm{digits}(780, 10) = 15$. The theorem is a consequence of (406).
(408) $\mathrm{digits}(800, 10) = \langle 0, 0, 8\rangle$.
(409) $\sum \mathrm{digits}(800, 10) = 8$. The theorem is a consequence of (408).
(410) $\mathrm{digits}(820, 10) = \langle 0, 2, 8\rangle$.
(411) $\sum \mathrm{digits}(820, 10) = 10$. The theorem is a consequence of (410).
(412) $\mathrm{digits}(840, 10) = \langle 0, 4, 8\rangle$.
(413) $\sum \mathrm{digits}(840, 10) = 12$. The theorem is a consequence of (412).
(414) $\mathrm{digits}(860, 10) = \langle 0, 6, 8\rangle$.
(415) $\sum \mathrm{digits}(860, 10) = 14$. The theorem is a consequence of (414).
(416) $\mathrm{digits}(880, 10) = \langle 0, 8, 8\rangle$.
(417) $\sum \mathrm{digits}(880, 10) = 16$. The theorem is a consequence of (416).
(418) $\mathrm{digits}(900, 10) = \langle 0, 0, 9\rangle$.
(419) $\sum \mathrm{digits}(900, 10) = 9$. The theorem is a consequence of (418).
(420) $\mathrm{digits}(920, 10) = \langle 0, 2, 9\rangle$.
(421) $\sum \mathrm{digits}(920, 10) = 11$. The theorem is a consequence of (420).
(422) $\mathrm{digits}(940, 10) = \langle 0, 4, 9\rangle$.
(423) $\sum \mathrm{digits}(940, 10) = 13$. The theorem is a consequence of (422).
(424) $\mathrm{digits}(960, 10) = \langle 0, 6, 9\rangle$.
(425) $\sum \mathrm{digits}(960, 10) = 15$. The theorem is a consequence of (424).
(426) $\mathrm{digits}(980, 10) = \langle 0, 8, 9\rangle$.
(427) $\sum \mathrm{digits}(980, 10) = 17$. The theorem is a consequence of (426).
(428) $\mathrm{digits}(1000, 10) = \langle 0, 0, 0, 1\rangle$.
(429) $\sum \mathrm{digits}(1000, 10) = 1$. The theorem is a consequence of (428).
(430) $\mathrm{digits}(1020, 10) = \langle 0, 2, 0, 1\rangle$.
(431) $\sum \mathrm{digits}(1020, 10) = 3$. The theorem is a consequence of (430).
(432) $\mathrm{digits}(1040, 10) = \langle 0, 4, 0, 1\rangle$.
(433) $\sum \mathrm{digits}(1040, 10) = 5$. The theorem is a consequence of (432).
(434) $\mathrm{digits}(1060, 10) = \langle 0, 6, 0, 1\rangle$.
(435) $\sum \mathrm{digits}(1060, 10) = 7$. The theorem is a consequence of (434).
(436) $\mathrm{digits}(1080, 10) = \langle 0, 8, 0, 1\rangle$.

(437) $\sum \mathrm{digits}(1080, 10) = 9$. The theorem is a consequence of (436).
(438) $\mathrm{digits}(1100, 10) = \langle 0, 0, 1, 1\rangle$.
(439) $\sum \mathrm{digits}(1100, 10) = 2$. The theorem is a consequence of (438).
(440) $\mathrm{digits}(1120, 10) = \langle 0, 2, 1, 1\rangle$.
(441) $\sum \mathrm{digits}(1120, 10) = 4$. The theorem is a consequence of (440).
(442) $\mathrm{digits}(1140, 10) = \langle 0, 4, 1, 1\rangle$.
(443) $\sum \mathrm{digits}(1140, 10) = 6$. The theorem is a consequence of (442).
(444) $\mathrm{digits}(1160, 10) = \langle 0, 6, 1, 1\rangle$.
(445) $\sum \mathrm{digits}(1160, 10) = 8$. The theorem is a consequence of (444).
(446) $\mathrm{digits}(1180, 10) = \langle 0, 8, 1, 1\rangle$.
(447) $\sum \mathrm{digits}(1180, 10) = 10$. The theorem is a consequence of (446).
(448) $\mathrm{digits}(1200, 10) = \langle 0, 0, 2, 1\rangle$.
(449) $\sum \mathrm{digits}(1200, 10) = 3$. The theorem is a consequence of (448).
(450) $\mathrm{digits}(1220, 10) = \langle 0, 2, 2, 1\rangle$.
(451) $\sum \mathrm{digits}(1220, 10) = 5$. The theorem is a consequence of (450).
(452) $\mathrm{digits}(1240, 10) = \langle 0, 4, 2, 1\rangle$.
(453) $\sum \mathrm{digits}(1240, 10) = 7$. The theorem is a consequence of (452).
(454) $\mathrm{digits}(1260, 10) = \langle 0, 6, 2, 1\rangle$.
(455) $\sum \mathrm{digits}(1260, 10) = 9$. The theorem is a consequence of (454).
(456) $\mathrm{digits}(1280, 10) = \langle 0, 8, 2, 1\rangle$.
(457) $\sum \mathrm{digits}(1280, 10) = 11$. The theorem is a consequence of (456).
(458) $\mathrm{digits}(1300, 10) = \langle 0, 0, 3, 1\rangle$.
(459) $\sum \mathrm{digits}(1300, 10) = 4$. The theorem is a consequence of (458).
(460) $\mathrm{digits}(1320, 10) = \langle 0, 2, 3, 1\rangle$.
(461) $\sum \mathrm{digits}(1320, 10) = 6$. The theorem is a consequence of (460).
(462) $\mathrm{digits}(1340, 10) = \langle 0, 4, 3, 1\rangle$.
(463) $\sum \mathrm{digits}(1340, 10) = 8$. The theorem is a consequence of (462).
(464) $\mathrm{digits}(1360, 10) = \langle 0, 6, 3, 1\rangle$.
(465) $\sum \mathrm{digits}(1360, 10) = 10$. The theorem is a consequence of (464).
(466) $\mathrm{digits}(1380, 10) = \langle 0, 8, 3, 1\rangle$.
(467) $\sum \mathrm{digits}(1380, 10) = 12$. The theorem is a consequence of (466).
(468) $\mathrm{digits}(1400, 10) = \langle 0, 0, 4, 1\rangle$.
(469) $\sum \mathrm{digits}(1400, 10) = 5$. The theorem is a consequence of (468).
(470) $\mathrm{digits}(1420, 10) = \langle 0, 2, 4, 1\rangle$.
(471) $\sum \mathrm{digits}(1420, 10) = 7$. The theorem is a consequence of (470).

(472) $\text{digits}(1440, 10) = \langle 0, 4, 4, 1\rangle$.
(473) $\sum \text{digits}(1440, 10) = 9$. The theorem is a consequence of (472).
(474) $\text{digits}(1460, 10) = \langle 0, 6, 4, 1\rangle$.
(475) $\sum \text{digits}(1460, 10) = 11$. The theorem is a consequence of (474).
(476) $\text{digits}(1480, 10) = \langle 0, 8, 4, 1\rangle$.
(477) $\sum \text{digits}(1480, 10) = 13$. The theorem is a consequence of (476).
(478) $\text{digits}(1500, 10) = \langle 0, 0, 5, 1\rangle$.
(479) $\sum \text{digits}(1500, 10) = 6$. The theorem is a consequence of (478).
(480) $\text{digits}(1520, 10) = \langle 0, 2, 5, 1\rangle$.
(481) $\sum \text{digits}(1520, 10) = 8$. The theorem is a consequence of (480).
(482) $\text{digits}(1540, 10) = \langle 0, 4, 5, 1\rangle$.
(483) $\sum \text{digits}(1540, 10) = 10$. The theorem is a consequence of (482).
(484) $\text{digits}(1560, 10) = \langle 0, 6, 5, 1\rangle$.
(485) $\sum \text{digits}(1560, 10) = 12$. The theorem is a consequence of (484).
(486) $\text{digits}(1580, 10) = \langle 0, 8, 5, 1\rangle$.
(487) $\sum \text{digits}(1580, 10) = 14$. The theorem is a consequence of (486).
(488) $\text{digits}(1600, 10) = \langle 0, 0, 6, 1\rangle$.
(489) $\sum \text{digits}(1600, 10) = 7$. The theorem is a consequence of (488).
(490) $\text{digits}(1620, 10) = \langle 0, 2, 6, 1\rangle$.
(491) $\sum \text{digits}(1620, 10) = 9$. The theorem is a consequence of (490).
(492) $\text{digits}(1640, 10) = \langle 0, 4, 6, 1\rangle$.
(493) $\sum \text{digits}(1640, 10) = 11$. The theorem is a consequence of (492).
(494) $\text{digits}(1660, 10) = \langle 0, 6, 6, 1\rangle$.
(495) $\sum \text{digits}(1660, 10) = 13$. The theorem is a consequence of (494).
(496) $\text{digits}(1680, 10) = \langle 0, 8, 6, 1\rangle$.
(497) $\sum \text{digits}(1680, 10) = 15$. The theorem is a consequence of (496).
(498) $\text{digits}(1700, 10) = \langle 0, 0, 7, 1\rangle$.
(499) $\sum \text{digits}(1700, 10) = 8$. The theorem is a consequence of (498).
(500) $\text{digits}(1720, 10) = \langle 0, 2, 7, 1\rangle$.
(501) $\sum \text{digits}(1720, 10) = 10$. The theorem is a consequence of (500).
(502) $\text{digits}(1740, 10) = \langle 0, 4, 7, 1\rangle$.
(503) $\sum \text{digits}(1740, 10) = 12$. The theorem is a consequence of (502).
(504) $\text{digits}(1760, 10) = \langle 0, 6, 7, 1\rangle$.
(505) $\sum \text{digits}(1760, 10) = 14$. The theorem is a consequence of (504).
(506) $\text{digits}(1780, 10) = \langle 0, 8, 7, 1\rangle$.

(507) $\sum \mathrm{digits}(1780, 10) = 16$. The theorem is a consequence of (506).
(508) $\mathrm{digits}(1800, 10) = \langle 0, 0, 8, 1\rangle$.
(509) $\sum \mathrm{digits}(1800, 10) = 9$. The theorem is a consequence of (508).
(510) $\mathrm{digits}(1820, 10) = \langle 0, 2, 8, 1\rangle$.
(511) $\sum \mathrm{digits}(1820, 10) = 11$. The theorem is a consequence of (510).
(512) $\mathrm{digits}(1840, 10) = \langle 0, 4, 8, 1\rangle$.
(513) $\sum \mathrm{digits}(1840, 10) = 13$. The theorem is a consequence of (512).
(514) $\mathrm{digits}(1860, 10) = \langle 0, 6, 8, 1\rangle$.
(515) $\sum \mathrm{digits}(1860, 10) = 15$. The theorem is a consequence of (514).
(516) $\mathrm{digits}(1880, 10) = \langle 0, 8, 8, 1\rangle$.
(517) $\sum \mathrm{digits}(1880, 10) = 17$. The theorem is a consequence of (516).
(518) $\mathrm{digits}(1900, 10) = \langle 0, 0, 9, 1\rangle$.
(519) $\sum \mathrm{digits}(1900, 10) = 10$. The theorem is a consequence of (518).
(520) $\mathrm{digits}(1920, 10) = \langle 0, 2, 9, 1\rangle$.
(521) $\sum \mathrm{digits}(1920, 10) = 12$. The theorem is a consequence of (520).
(522) $\mathrm{digits}(1940, 10) = \langle 0, 4, 9, 1\rangle$.
(523) $\sum \mathrm{digits}(1940, 10) = 14$. The theorem is a consequence of (522).
(524) $\mathrm{digits}(1960, 10) = \langle 0, 6, 9, 1\rangle$.
(525) $\sum \mathrm{digits}(1960, 10) = 16$. The theorem is a consequence of (524).
(526) $\mathrm{digits}(1980, 10) = \langle 0, 8, 9, 1\rangle$.
(527) $\sum \mathrm{digits}(1980, 10) = 18$. The theorem is a consequence of (526).
(528) $\mathrm{digits}(2000, 10) = \langle 0, 0, 0, 2\rangle$.
(529) $\sum \mathrm{digits}(2000, 10) = 2$. The theorem is a consequence of (528).
(530) $\mathrm{digits}(2020, 10) = \langle 0, 2, 0, 2\rangle$.
(531) $\sum \mathrm{digits}(2020, 10) = 4$. The theorem is a consequence of (530).
(532) $\mathrm{digits}(2040, 10) = \langle 0, 4, 0, 2\rangle$.
(533) $\sum \mathrm{digits}(2040, 10) = 6$. The theorem is a consequence of (532).
(534) $\mathrm{digits}(2060, 10) = \langle 0, 6, 0, 2\rangle$.
(535) $\sum \mathrm{digits}(2060, 10) = 8$. The theorem is a consequence of (534).
(536) $\mathrm{digits}(2080, 10) = \langle 0, 8, 0, 2\rangle$.
(537) $\sum \mathrm{digits}(2080, 10) = 10$. The theorem is a consequence of (536).
(538) $\mathrm{digits}(2100, 10) = \langle 0, 0, 1, 2\rangle$.
(539) $\sum \mathrm{digits}(2100, 10) = 3$. The theorem is a consequence of (538).
(540) $\mathrm{digits}(2120, 10) = \langle 0, 2, 1, 2\rangle$.
(541) $\sum \mathrm{digits}(2120, 10) = 5$. The theorem is a consequence of (540).

(542) $\text{digits}(2140, 10) = \langle 0, 4, 1, 2\rangle$.
(543) $\sum \text{digits}(2140, 10) = 7$. The theorem is a consequence of (542).
(544) $\text{digits}(2160, 10) = \langle 0, 6, 1, 2\rangle$.
(545) $\sum \text{digits}(2160, 10) = 9$. The theorem is a consequence of (544).
(546) $\text{digits}(2180, 10) = \langle 0, 8, 1, 2\rangle$.
(547) $\sum \text{digits}(2180, 10) = 11$. The theorem is a consequence of (546).
(548) $\text{digits}(2200, 10) = \langle 0, 0, 2, 2\rangle$.
(549) $\sum \text{digits}(2200, 10) = 4$. The theorem is a consequence of (548).
(550) $\text{digits}(2220, 10) = \langle 0, 2, 2, 2\rangle$.
(551) $\sum \text{digits}(2220, 10) = 6$. The theorem is a consequence of (550).
(552) $\text{digits}(2240, 10) = \langle 0, 4, 2, 2\rangle$.
(553) $\sum \text{digits}(2240, 10) = 8$. The theorem is a consequence of (552).
(554) $\text{digits}(2260, 10) = \langle 0, 6, 2, 2\rangle$.
(555) $\sum \text{digits}(2260, 10) = 10$. The theorem is a consequence of (554).
(556) $\text{digits}(2280, 10) = \langle 0, 8, 2, 2\rangle$.
(557) $\sum \text{digits}(2280, 10) = 12$. The theorem is a consequence of (556).
(558) $\text{digits}(2300, 10) = \langle 0, 0, 3, 2\rangle$.
(559) $\sum \text{digits}(2300, 10) = 5$. The theorem is a consequence of (558).
(560) $\text{digits}(2320, 10) = \langle 0, 2, 3, 2\rangle$.
(561) $\sum \text{digits}(2320, 10) = 7$. The theorem is a consequence of (560).
(562) $\text{digits}(2340, 10) = \langle 0, 4, 3, 2\rangle$.
(563) $\sum \text{digits}(2340, 10) = 9$. The theorem is a consequence of (562).
(564) $\text{digits}(2360, 10) = \langle 0, 6, 3, 2\rangle$.
(565) $\sum \text{digits}(2360, 10) = 11$. The theorem is a consequence of (564).
(566) $\text{digits}(2380, 10) = \langle 0, 8, 3, 2\rangle$.
(567) $\sum \text{digits}(2380, 10) = 13$. The theorem is a consequence of (566).
(568) $\text{digits}(2400, 10) = \langle 0, 0, 4, 2\rangle$.
(569) $\sum \text{digits}(2400, 10) = 6$. The theorem is a consequence of (568).
(570) $\text{digits}(2420, 10) = \langle 0, 2, 4, 2\rangle$.
(571) $\sum \text{digits}(2420, 10) = 8$. The theorem is a consequence of (570).
(572) $\text{digits}(2440, 10) = \langle 0, 4, 4, 2\rangle$.
(573) $\sum \text{digits}(2440, 10) = 10$. The theorem is a consequence of (572).
(574) $\text{digits}(2460, 10) = \langle 0, 6, 4, 2\rangle$.
(575) $\sum \text{digits}(2460, 10) = 12$. The theorem is a consequence of (574).
(576) $\text{digits}(2480, 10) = \langle 0, 8, 4, 2\rangle$.

(577) $\sum \mathrm{digits}(2480, 10) = 14$. The theorem is a consequence of (576).
(578) $\mathrm{digits}(2500, 10) = \langle 0, 0, 5, 2\rangle$.
(579) $\sum \mathrm{digits}(2500, 10) = 7$. The theorem is a consequence of (578).
(580) $\mathrm{digits}(2520, 10) = \langle 0, 2, 5, 2\rangle$.
(581) $\sum \mathrm{digits}(2520, 10) = 9$. The theorem is a consequence of (580).
(582) $\mathrm{digits}(2540, 10) = \langle 0, 4, 5, 2\rangle$.
(583) $\sum \mathrm{digits}(2540, 10) = 11$. The theorem is a consequence of (582).
(584) $\mathrm{digits}(2560, 10) = \langle 0, 6, 5, 2\rangle$.
(585) $\sum \mathrm{digits}(2560, 10) = 13$. The theorem is a consequence of (584).
(586) $\mathrm{digits}(2580, 10) = \langle 0, 8, 5, 2\rangle$.
(587) $\sum \mathrm{digits}(2580, 10) = 15$. The theorem is a consequence of (586).
(588) $\mathrm{digits}(2600, 10) = \langle 0, 0, 6, 2\rangle$.
(589) $\sum \mathrm{digits}(2600, 10) = 8$. The theorem is a consequence of (588).
(590) $\mathrm{digits}(2620, 10) = \langle 0, 2, 6, 2\rangle$.
(591) $\sum \mathrm{digits}(2620, 10) = 10$. The theorem is a consequence of (590).
(592) $\mathrm{digits}(2640, 10) = \langle 0, 4, 6, 2\rangle$.
(593) $\sum \mathrm{digits}(2640, 10) = 12$. The theorem is a consequence of (592).
(594) $\mathrm{digits}(2660, 10) = \langle 0, 6, 6, 2\rangle$.
(595) $\sum \mathrm{digits}(2660, 10) = 14$. The theorem is a consequence of (594).
(596) $\mathrm{digits}(2680, 10) = \langle 0, 8, 6, 2\rangle$.
(597) $\sum \mathrm{digits}(2680, 10) = 16$. The theorem is a consequence of (596).
(598) $\mathrm{digits}(2700, 10) = \langle 0, 0, 7, 2\rangle$.
(599) $\sum \mathrm{digits}(2700, 10) = 9$. The theorem is a consequence of (598).
(600) $\mathrm{digits}(2720, 10) = \langle 0, 2, 7, 2\rangle$.
(601) $\sum \mathrm{digits}(2720, 10) = 11$. The theorem is a consequence of (600).
(602) $\mathrm{digits}(2740, 10) = \langle 0, 4, 7, 2\rangle$.
(603) $\sum \mathrm{digits}(2740, 10) = 13$. The theorem is a consequence of (602).
(604) $\mathrm{digits}(2760, 10) = \langle 0, 6, 7, 2\rangle$.
(605) $\sum \mathrm{digits}(2760, 10) = 15$. The theorem is a consequence of (604).
(606) $\mathrm{digits}(2780, 10) = \langle 0, 8, 7, 2\rangle$.
(607) $\sum \mathrm{digits}(2780, 10) = 17$. The theorem is a consequence of (606).
(608) $\mathrm{digits}(2800, 10) = \langle 0, 0, 8, 2\rangle$.
(609) $\sum \mathrm{digits}(2800, 10) = 10$. The theorem is a consequence of (608).
(610) $\mathrm{digits}(2820, 10) = \langle 0, 2, 8, 2\rangle$.
(611) $\sum \mathrm{digits}(2820, 10) = 12$. The theorem is a consequence of (610).

(612) $\text{digits}(2840, 10) = \langle 0, 4, 8, 2\rangle$.
(613) $\sum \text{digits}(2840, 10) = 14$. The theorem is a consequence of (612).
(614) $\text{digits}(2860, 10) = \langle 0, 6, 8, 2\rangle$.
(615) $\sum \text{digits}(2860, 10) = 16$. The theorem is a consequence of (614).
(616) $\text{digits}(2880, 10) = \langle 0, 8, 8, 2\rangle$.
(617) $\sum \text{digits}(2880, 10) = 18$. The theorem is a consequence of (616).
(618) $\text{digits}(2900, 10) = \langle 0, 0, 9, 2\rangle$.
(619) $\sum \text{digits}(2900, 10) = 11$. The theorem is a consequence of (618).
(620) $\text{digits}(2920, 10) = \langle 0, 2, 9, 2\rangle$.
(621) $\sum \text{digits}(2920, 10) = 13$. The theorem is a consequence of (620).
(622) $\text{digits}(2940, 10) = \langle 0, 4, 9, 2\rangle$.
(623) $\sum \text{digits}(2940, 10) = 15$. The theorem is a consequence of (622).
(624) $\text{digits}(2960, 10) = \langle 0, 6, 9, 2\rangle$.
(625) $\sum \text{digits}(2960, 10) = 17$. The theorem is a consequence of (624).
(626) $\text{digits}(2980, 10) = \langle 0, 8, 9, 2\rangle$.
(627) $\sum \text{digits}(2980, 10) = 19$. The theorem is a consequence of (626).
(628) $\text{digits}(3000, 10) = \langle 0, 0, 0, 3\rangle$.
(629) $\sum \text{digits}(3000, 10) = 3$. The theorem is a consequence of (628).
(630) $\text{digits}(3020, 10) = \langle 0, 2, 0, 3\rangle$.
(631) $\sum \text{digits}(3020, 10) = 5$. The theorem is a consequence of (630).
(632) $\text{digits}(3040, 10) = \langle 0, 4, 0, 3\rangle$.
(633) $\sum \text{digits}(3040, 10) = 7$. The theorem is a consequence of (632).
(634) $\text{digits}(3060, 10) = \langle 0, 6, 0, 3\rangle$.
(635) $\sum \text{digits}(3060, 10) = 9$. The theorem is a consequence of (634).
(636) $\text{digits}(3080, 10) = \langle 0, 8, 0, 3\rangle$.
(637) $\sum \text{digits}(3080, 10) = 11$. The theorem is a consequence of (636).
(638) $\text{digits}(3100, 10) = \langle 0, 0, 1, 3\rangle$.
(639) $\sum \text{digits}(3100, 10) = 4$. The theorem is a consequence of (638).
(640) $\text{digits}(3120, 10) = \langle 0, 2, 1, 3\rangle$.
(641) $\sum \text{digits}(3120, 10) = 6$. The theorem is a consequence of (640).
(642) $\text{digits}(3140, 10) = \langle 0, 4, 1, 3\rangle$.
(643) $\sum \text{digits}(3140, 10) = 8$. The theorem is a consequence of (642).
(644) $\text{digits}(3160, 10) = \langle 0, 6, 1, 3\rangle$.
(645) $\sum \text{digits}(3160, 10) = 10$. The theorem is a consequence of (644).
(646) $\text{digits}(3180, 10) = \langle 0, 8, 1, 3\rangle$.

(647) $\sum \mathrm{digits}(3180, 10) = 12$. The theorem is a consequence of (646).
(648) $\mathrm{digits}(3200, 10) = \langle 0, 0, 2, 3\rangle$.
(649) $\sum \mathrm{digits}(3200, 10) = 5$. The theorem is a consequence of (648).
(650) $\mathrm{digits}(3220, 10) = \langle 0, 2, 2, 3\rangle$.
(651) $\sum \mathrm{digits}(3220, 10) = 7$. The theorem is a consequence of (650).
(652) $\mathrm{digits}(3240, 10) = \langle 0, 4, 2, 3\rangle$.
(653) $\sum \mathrm{digits}(3240, 10) = 9$. The theorem is a consequence of (652).
(654) $\mathrm{digits}(3260, 10) = \langle 0, 6, 2, 3\rangle$.
(655) $\sum \mathrm{digits}(3260, 10) = 11$. The theorem is a consequence of (654).
(656) $\mathrm{digits}(3280, 10) = \langle 0, 8, 2, 3\rangle$.
(657) $\sum \mathrm{digits}(3280, 10) = 13$. The theorem is a consequence of (656).
(658) $\mathrm{digits}(3300, 10) = \langle 0, 0, 3, 3\rangle$.
(659) $\sum \mathrm{digits}(3300, 10) = 6$. The theorem is a consequence of (658).
(660) $\mathrm{digits}(3320, 10) = \langle 0, 2, 3, 3\rangle$.
(661) $\sum \mathrm{digits}(3320, 10) = 8$. The theorem is a consequence of (660).
(662) $\mathrm{digits}(3340, 10) = \langle 0, 4, 3, 3\rangle$.
(663) $\sum \mathrm{digits}(3340, 10) = 10$. The theorem is a consequence of (662).
(664) $\mathrm{digits}(3360, 10) = \langle 0, 6, 3, 3\rangle$.
(665) $\sum \mathrm{digits}(3360, 10) = 12$. The theorem is a consequence of (664).
(666) $\mathrm{digits}(3380, 10) = \langle 0, 8, 3, 3\rangle$.
(667) $\sum \mathrm{digits}(3380, 10) = 14$. The theorem is a consequence of (666).
(668) $\mathrm{digits}(3400, 10) = \langle 0, 0, 4, 3\rangle$.
(669) $\sum \mathrm{digits}(3400, 10) = 7$. The theorem is a consequence of (668).
(670) $\mathrm{digits}(3420, 10) = \langle 0, 2, 4, 3\rangle$.
(671) $\sum \mathrm{digits}(3420, 10) = 9$. The theorem is a consequence of (670).
(672) $\mathrm{digits}(3440, 10) = \langle 0, 4, 4, 3\rangle$.
(673) $\sum \mathrm{digits}(3440, 10) = 11$. The theorem is a consequence of (672).
(674) $\mathrm{digits}(3460, 10) = \langle 0, 6, 4, 3\rangle$.
(675) $\sum \mathrm{digits}(3460, 10) = 13$. The theorem is a consequence of (674).
(676) $\mathrm{digits}(3480, 10) = \langle 0, 8, 4, 3\rangle$.
(677) $\sum \mathrm{digits}(3480, 10) = 15$. The theorem is a consequence of (676).
(678) $\mathrm{digits}(3500, 10) = \langle 0, 0, 5, 3\rangle$.
(679) $\sum \mathrm{digits}(3500, 10) = 8$. The theorem is a consequence of (678).
(680) $\mathrm{digits}(3520, 10) = \langle 0, 2, 5, 3\rangle$.
(681) $\sum \mathrm{digits}(3520, 10) = 10$. The theorem is a consequence of (680).

(682) $\text{digits}(3540, 10) = \langle 0, 4, 5, 3\rangle$.
(683) $\sum \text{digits}(3540, 10) = 12$. The theorem is a consequence of (682).
(684) $\text{digits}(3560, 10) = \langle 0, 6, 5, 3\rangle$.
(685) $\sum \text{digits}(3560, 10) = 14$. The theorem is a consequence of (684).
(686) $\text{digits}(3580, 10) = \langle 0, 8, 5, 3\rangle$.
(687) $\sum \text{digits}(3580, 10) = 16$. The theorem is a consequence of (686).
(688) $\text{digits}(3600, 10) = \langle 0, 0, 6, 3\rangle$.
(689) $\sum \text{digits}(3600, 10) = 9$. The theorem is a consequence of (688).
(690) $\text{digits}(3620, 10) = \langle 0, 2, 6, 3\rangle$.
(691) $\sum \text{digits}(3620, 10) = 11$. The theorem is a consequence of (690).
(692) $\text{digits}(3640, 10) = \langle 0, 4, 6, 3\rangle$.
(693) $\sum \text{digits}(3640, 10) = 13$. The theorem is a consequence of (692).
(694) $\text{digits}(3660, 10) = \langle 0, 6, 6, 3\rangle$.
(695) $\sum \text{digits}(3660, 10) = 15$. The theorem is a consequence of (694).
(696) $\text{digits}(3680, 10) = \langle 0, 8, 6, 3\rangle$.
(697) $\sum \text{digits}(3680, 10) = 17$. The theorem is a consequence of (696).
(698) $\text{digits}(3700, 10) = \langle 0, 0, 7, 3\rangle$.
(699) $\sum \text{digits}(3700, 10) = 10$. The theorem is a consequence of (698).
(700) $\text{digits}(3720, 10) = \langle 0, 2, 7, 3\rangle$.
(701) $\sum \text{digits}(3720, 10) = 12$. The theorem is a consequence of (700).
(702) $\text{digits}(3740, 10) = \langle 0, 4, 7, 3\rangle$.
(703) $\sum \text{digits}(3740, 10) = 14$. The theorem is a consequence of (702).
(704) $\text{digits}(3760, 10) = \langle 0, 6, 7, 3\rangle$.
(705) $\sum \text{digits}(3760, 10) = 16$. The theorem is a consequence of (704).
(706) $\text{digits}(3780, 10) = \langle 0, 8, 7, 3\rangle$.
(707) $\sum \text{digits}(3780, 10) = 18$. The theorem is a consequence of (706).
(708) $\text{digits}(3800, 10) = \langle 0, 0, 8, 3\rangle$.
(709) $\sum \text{digits}(3800, 10) = 11$. The theorem is a consequence of (708).
(710) $\text{digits}(3820, 10) = \langle 0, 2, 8, 3\rangle$.
(711) $\sum \text{digits}(3820, 10) = 13$. The theorem is a consequence of (710).
(712) $\text{digits}(3840, 10) = \langle 0, 4, 8, 3\rangle$.
(713) $\sum \text{digits}(3840, 10) = 15$. The theorem is a consequence of (712).
(714) $\text{digits}(3860, 10) = \langle 0, 6, 8, 3\rangle$.
(715) $\sum \text{digits}(3860, 10) = 17$. The theorem is a consequence of (714).
(716) $\text{digits}(3880, 10) = \langle 0, 8, 8, 3\rangle$.

(717) $\sum \mathrm{digits}(3880, 10) = 19$. The theorem is a consequence of (716).

(718) $\mathrm{digits}(3900, 10) = \langle 0, 0, 9, 3 \rangle$.

(719) $\sum \mathrm{digits}(3900, 10) = 12$. The theorem is a consequence of (718).

(720) $\mathrm{digits}(3920, 10) = \langle 0, 2, 9, 3 \rangle$.

(721) $\sum \mathrm{digits}(3920, 10) = 14$. The theorem is a consequence of (720).

(722) $\mathrm{digits}(3940, 10) = \langle 0, 4, 9, 3 \rangle$.

(723) $\sum \mathrm{digits}(3940, 10) = 16$. The theorem is a consequence of (722).

(724) $\mathrm{digits}(3960, 10) = \langle 0, 6, 9, 3 \rangle$.

(725) $\sum \mathrm{digits}(3960, 10) = 18$. The theorem is a consequence of (724).

(726) $\mathrm{digits}(3980, 10) = \langle 0, 8, 9, 3 \rangle$.

(727) $\sum \mathrm{digits}(3980, 10) = 20$. The theorem is a consequence of (726).

(728) 3980 is the solution to Sierpiński's problem 36 for 20. The theorem is a consequence of (727), (6), (19), (23), (27), (31), (35), (39), (43), (47), (51), (361), (363), (193), (365), (367), (369), (203), (250), (371), (306), (213), (373), (375), (377), (379), (381), (383), (385), (387), (389), (391), (393), (395), (397), (399), (401), (403), (405), (346), (407), (409), (411), (413), (415), (417), (419), (421), (423), (425), (427), (429), (431), (433), (435), (437), (439), (441), (443), (445), (447), (449), (451), (453), (455), (457), (459), (461), (463), (465), (467), (469), (471), (473), (475), (477), (479), (481), (483), (485), (487), (489), (491), (493), (495), (497), (499), (501), (503), (505), (507), (509), (511), (513), (515), (517), (519), (521), (523), (525), (527), (529), (531), (533), (535), (537), (539), (541), (543), (545), (547), (549), (551), (553), (555), (557), (559), (561), (563), (565), (567), (569), (571), (573), (575), (577), (579), (581), (583), (585), (587), (589), (591), (593), (595), (597), (599), (601), (603), (605), (607), (609), (611), (613), (615), (617), (619), (621), (623), (625), (627), (629), (631), (633), (635), (637), (639), (641), (643), (645), (647), (649), (651), (653), (655), (657), (659), (661), (663), (665), (667), (669), (671), (673), (675), (677), (679), (681), (683), (685), (687), (689), (691), (693), (695), (697), (699), (701), (703), (705), (707), (709), (711), (713), (715), (717), (719), (721), (723), and (725).

14. PROBLEM 36 FOR $s = 21$

Now we state the propositions:

(729) $\mathrm{digits}(21, 10) = \langle 1, 2\rangle$.

(730) $\sum \mathrm{digits}(21, 10) = 3$. The theorem is a consequence of (729).

(731) $\mathrm{digits}(63, 10) = \langle 3, 6\rangle$.

(732) $\sum \mathrm{digits}(63, 10) = 9$. The theorem is a consequence of (731).

(733) $\mathrm{digits}(147, 10) = \langle 7, 4, 1\rangle$.

(734) $\sum \mathrm{digits}(147, 10) = 12$. The theorem is a consequence of (733).

(735) $\mathrm{digits}(189, 10) = \langle 9, 8, 1\rangle$.

(736) $\sum \mathrm{digits}(189, 10) = 18$. The theorem is a consequence of (735).

(737) $\mathrm{digits}(231, 10) = \langle 1, 3, 2\rangle$.

(738) $\sum \mathrm{digits}(231, 10) = 6$. The theorem is a consequence of (737).

(739) $\mathrm{digits}(273, 10) = \langle 3, 7, 2\rangle$.

(740) $\sum \mathrm{digits}(273, 10) = 12$. The theorem is a consequence of (739).

(741) $\mathrm{digits}(294, 10) = \langle 4, 9, 2\rangle$.

(742) $\sum \mathrm{digits}(294, 10) = 15$. The theorem is a consequence of (741).

(743) $\mathrm{digits}(315, 10) = \langle 5, 1, 3\rangle$.

(744) $\sum \mathrm{digits}(315, 10) = 9$. The theorem is a consequence of (743).

(745) $\mathrm{digits}(378, 10) = \langle 8, 7, 3\rangle$.

(746) $\sum \mathrm{digits}(378, 10) = 18$. The theorem is a consequence of (745).

(747) 399 is the solution to Sierpiński's problem 36 for 21. The theorem is a consequence of (308), (6), (730), (141), (732), (145), (174), (151), (734), (153), (736), (157), (738), (163), (740), (742), (744), (205), (252), and (746).

15. PROBLEM 36 FOR $s = 22$

Now we state the propositions:

(748) $\mathrm{digits}(242, 10) = \langle 2, 4, 2\rangle$.

(749) $\sum \mathrm{digits}(242, 10) = 8$. The theorem is a consequence of (748).

(750) $\mathrm{digits}(264, 10) = \langle 4, 6, 2\rangle$.

(751) $\sum \mathrm{digits}(264, 10) = 12$. The theorem is a consequence of (750).

(752) $\mathrm{digits}(286, 10) = \langle 6, 8, 2\rangle$.

(753) $\sum \mathrm{digits}(286, 10) = 16$. The theorem is a consequence of (752).

(754) $\mathrm{digits}(308, 10) = \langle 8, 0, 3\rangle$.

(755) $\sum \mathrm{digits}(308, 10) = 11$. The theorem is a consequence of (754).
(756) $\mathrm{digits}(330, 10) = \langle 0, 3, 3\rangle$.
(757) $\sum \mathrm{digits}(330, 10) = 6$. The theorem is a consequence of (756).
(758) $\mathrm{digits}(396, 10) = \langle 6, 9, 3\rangle$.
(759) $\sum \mathrm{digits}(396, 10) = 18$. The theorem is a consequence of (758).
(760) $\mathrm{digits}(462, 10) = \langle 2, 6, 4\rangle$.
(761) $\sum \mathrm{digits}(462, 10) = 12$. The theorem is a consequence of (760).
(762) $\mathrm{digits}(484, 10) = \langle 4, 8, 4\rangle$.
(763) $\sum \mathrm{digits}(484, 10) = 16$. The theorem is a consequence of (762).
(764) $\mathrm{digits}(506, 10) = \langle 6, 0, 5\rangle$.
(765) $\sum \mathrm{digits}(506, 10) = 11$. The theorem is a consequence of (764).
(766) $\mathrm{digits}(528, 10) = \langle 8, 2, 5\rangle$.
(767) $\sum \mathrm{digits}(528, 10) = 15$. The theorem is a consequence of (766).
(768) $\mathrm{digits}(550, 10) = \langle 0, 5, 5\rangle$.
(769) $\sum \mathrm{digits}(550, 10) = 10$. The theorem is a consequence of (768).
(770) $\mathrm{digits}(572, 10) = \langle 2, 7, 5\rangle$.
(771) $\sum \mathrm{digits}(572, 10) = 14$. The theorem is a consequence of (770).
(772) $\mathrm{digits}(594, 10) = \langle 4, 9, 5\rangle$.
(773) $\sum \mathrm{digits}(594, 10) = 18$. The theorem is a consequence of (772).
(774) $\mathrm{digits}(616, 10) = \langle 6, 1, 6\rangle$.
(775) $\sum \mathrm{digits}(616, 10) = 13$. The theorem is a consequence of (774).
(776) $\mathrm{digits}(638, 10) = \langle 8, 3, 6\rangle$.
(777) $\sum \mathrm{digits}(638, 10) = 17$. The theorem is a consequence of (776).
(778) $\mathrm{digits}(682, 10) = \langle 2, 8, 6\rangle$.
(779) $\sum \mathrm{digits}(682, 10) = 16$. The theorem is a consequence of (778).
(780) $\mathrm{digits}(704, 10) = \langle 4, 0, 7\rangle$.
(781) $\sum \mathrm{digits}(704, 10) = 11$. The theorem is a consequence of (780).
(782) $\mathrm{digits}(726, 10) = \langle 6, 2, 7\rangle$.
(783) $\sum \mathrm{digits}(726, 10) = 15$. The theorem is a consequence of (782).
(784) $\mathrm{digits}(748, 10) = \langle 8, 4, 7\rangle$.
(785) $\sum \mathrm{digits}(748, 10) = 19$. The theorem is a consequence of (784).
(786) $\mathrm{digits}(770, 10) = \langle 0, 7, 7\rangle$.
(787) $\sum \mathrm{digits}(770, 10) = 14$. The theorem is a consequence of (786).
(788) $\mathrm{digits}(792, 10) = \langle 2, 9, 7\rangle$.
(789) $\sum \mathrm{digits}(792, 10) = 18$. The theorem is a consequence of (788).

(790) $\text{digits}(814, 10) = \langle 4, 1, 8\rangle$.

(791) $\sum \text{digits}(814, 10) = 13$. The theorem is a consequence of (790).

(792) $\text{digits}(858, 10) = \langle 8, 5, 8\rangle$.

(793) $\sum \text{digits}(858, 10) = 21$. The theorem is a consequence of (792).

(794) $\text{digits}(902, 10) = \langle 2, 0, 9\rangle$.

(795) $\sum \text{digits}(902, 10) = 11$. The theorem is a consequence of (794).

(796) $\text{digits}(924, 10) = \langle 4, 2, 9\rangle$.

(797) $\sum \text{digits}(924, 10) = 15$. The theorem is a consequence of (796).

(798) $\text{digits}(946, 10) = \langle 6, 4, 9\rangle$.

(799) $\sum \text{digits}(946, 10) = 19$. The theorem is a consequence of (798).

(800) $\text{digits}(968, 10) = \langle 8, 6, 9\rangle$.

(801) $\sum \text{digits}(968, 10) = 23$. The theorem is a consequence of (800).

(802) $\text{digits}(990, 10) = \langle 0, 9, 9\rangle$.

(803) $\sum \text{digits}(990, 10) = 18$. The theorem is a consequence of (802).

(804) $\text{digits}(1012, 10) = \langle 2, 1, 0, 1\rangle$.

(805) $\sum \text{digits}(1012, 10) = 4$. The theorem is a consequence of (804).

(806) $\text{digits}(1034, 10) = \langle 4, 3, 0, 1\rangle$.

(807) $\sum \text{digits}(1034, 10) = 8$. The theorem is a consequence of (806).

(808) $\text{digits}(1056, 10) = \langle 6, 5, 0, 1\rangle$.

(809) $\sum \text{digits}(1056, 10) = 12$. The theorem is a consequence of (808).

(810) $\text{digits}(1078, 10) = \langle 8, 7, 0, 1\rangle$.

(811) $\sum \text{digits}(1078, 10) = 16$. The theorem is a consequence of (810).

(812) $\text{digits}(1122, 10) = \langle 2, 2, 1, 1\rangle$.

(813) $\sum \text{digits}(1122, 10) = 6$. The theorem is a consequence of (812).

(814) $\text{digits}(1144, 10) = \langle 4, 4, 1, 1\rangle$.

(815) $\sum \text{digits}(1144, 10) = 10$. The theorem is a consequence of (814).

(816) $\text{digits}(1166, 10) = \langle 6, 6, 1, 1\rangle$.

(817) $\sum \text{digits}(1166, 10) = 14$. The theorem is a consequence of (816).

(818) $\text{digits}(1188, 10) = \langle 8, 8, 1, 1\rangle$.

(819) $\sum \text{digits}(1188, 10) = 18$. The theorem is a consequence of (818).

(820) $\text{digits}(1210, 10) = \langle 0, 1, 2, 1\rangle$.

(821) $\sum \text{digits}(1210, 10) = 4$. The theorem is a consequence of (820).

(822) $\text{digits}(1232, 10) = \langle 2, 3, 2, 1\rangle$.

(823) $\sum \text{digits}(1232, 10) = 8$. The theorem is a consequence of (822).

(824) $\text{digits}(1254, 10) = \langle 4, 5, 2, 1\rangle$.

(825) $\sum \mathrm{digits}(1254, 10) = 12$. The theorem is a consequence of (824).
(826) $\mathrm{digits}(1276, 10) = \langle 6, 7, 2, 1\rangle$.
(827) $\sum \mathrm{digits}(1276, 10) = 16$. The theorem is a consequence of (826).
(828) $\mathrm{digits}(1298, 10) = \langle 8, 9, 2, 1\rangle$.
(829) $\sum \mathrm{digits}(1298, 10) = 20$. The theorem is a consequence of (828).
(830) $\mathrm{digits}(1342, 10) = \langle 2, 4, 3, 1\rangle$.
(831) $\sum \mathrm{digits}(1342, 10) = 10$. The theorem is a consequence of (830).
(832) $\mathrm{digits}(1364, 10) = \langle 4, 6, 3, 1\rangle$.
(833) $\sum \mathrm{digits}(1364, 10) = 14$. The theorem is a consequence of (832).
(834) $\mathrm{digits}(1386, 10) = \langle 6, 8, 3, 1\rangle$.
(835) $\sum \mathrm{digits}(1386, 10) = 18$. The theorem is a consequence of (834).
(836) $\mathrm{digits}(1408, 10) = \langle 8, 0, 4, 1\rangle$.
(837) $\sum \mathrm{digits}(1408, 10) = 13$. The theorem is a consequence of (836).
(838) $\mathrm{digits}(1430, 10) = \langle 0, 3, 4, 1\rangle$.
(839) $\sum \mathrm{digits}(1430, 10) = 8$. The theorem is a consequence of (838).
(840) $\mathrm{digits}(1452, 10) = \langle 2, 5, 4, 1\rangle$.
(841) $\sum \mathrm{digits}(1452, 10) = 12$. The theorem is a consequence of (840).
(842) $\mathrm{digits}(1474, 10) = \langle 4, 7, 4, 1\rangle$.
(843) $\sum \mathrm{digits}(1474, 10) = 16$. The theorem is a consequence of (842).
(844) $\mathrm{digits}(1496, 10) = \langle 6, 9, 4, 1\rangle$.
(845) $\sum \mathrm{digits}(1496, 10) = 20$. The theorem is a consequence of (844).
(846) $\mathrm{digits}(1518, 10) = \langle 8, 1, 5, 1\rangle$.
(847) $\sum \mathrm{digits}(1518, 10) = 15$. The theorem is a consequence of (846).
(848) $\mathrm{digits}(1562, 10) = \langle 2, 6, 5, 1\rangle$.
(849) $\sum \mathrm{digits}(1562, 10) = 14$. The theorem is a consequence of (848).
(850) $\mathrm{digits}(1584, 10) = \langle 4, 8, 5, 1\rangle$.
(851) $\sum \mathrm{digits}(1584, 10) = 18$. The theorem is a consequence of (850).
(852) $\mathrm{digits}(1606, 10) = \langle 6, 0, 6, 1\rangle$.
(853) $\sum \mathrm{digits}(1606, 10) = 13$. The theorem is a consequence of (852).
(854) $\mathrm{digits}(1628, 10) = \langle 8, 2, 6, 1\rangle$.
(855) $\sum \mathrm{digits}(1628, 10) = 17$. The theorem is a consequence of (854).
(856) $\mathrm{digits}(1650, 10) = \langle 0, 5, 6, 1\rangle$.
(857) $\sum \mathrm{digits}(1650, 10) = 12$. The theorem is a consequence of (856).
(858) $\mathrm{digits}(1672, 10) = \langle 2, 7, 6, 1\rangle$.
(859) $\sum \mathrm{digits}(1672, 10) = 16$. The theorem is a consequence of (858).

(860) $\text{digits}(1694, 10) = \langle 4, 9, 6, 1\rangle$.
(861) $\sum \text{digits}(1694, 10) = 20$. The theorem is a consequence of (860).
(862) $\text{digits}(1716, 10) = \langle 6, 1, 7, 1\rangle$.
(863) $\sum \text{digits}(1716, 10) = 15$. The theorem is a consequence of (862).
(864) $\text{digits}(1738, 10) = \langle 8, 3, 7, 1\rangle$.
(865) $\sum \text{digits}(1738, 10) = 19$. The theorem is a consequence of (864).
(866) $\text{digits}(1782, 10) = \langle 2, 8, 7, 1\rangle$.
(867) $\sum \text{digits}(1782, 10) = 18$. The theorem is a consequence of (866).
(868) $\text{digits}(1804, 10) = \langle 4, 0, 8, 1\rangle$.
(869) $\sum \text{digits}(1804, 10) = 13$. The theorem is a consequence of (868).
(870) $\text{digits}(1826, 10) = \langle 6, 2, 8, 1\rangle$.
(871) $\sum \text{digits}(1826, 10) = 17$. The theorem is a consequence of (870).
(872) $\text{digits}(1848, 10) = \langle 8, 4, 8, 1\rangle$.
(873) $\sum \text{digits}(1848, 10) = 21$. The theorem is a consequence of (872).
(874) $\text{digits}(1870, 10) = \langle 0, 7, 8, 1\rangle$.
(875) $\sum \text{digits}(1870, 10) = 16$. The theorem is a consequence of (874).
(876) $\text{digits}(1892, 10) = \langle 2, 9, 8, 1\rangle$.
(877) $\sum \text{digits}(1892, 10) = 20$. The theorem is a consequence of (876).
(878) $\text{digits}(1914, 10) = \langle 4, 1, 9, 1\rangle$.
(879) $\sum \text{digits}(1914, 10) = 15$. The theorem is a consequence of (878).
(880) $\text{digits}(1936, 10) = \langle 6, 3, 9, 1\rangle$.
(881) $\sum \text{digits}(1936, 10) = 19$. The theorem is a consequence of (880).
(882) $\text{digits}(1958, 10) = \langle 8, 5, 9, 1\rangle$.
(883) $\sum \text{digits}(1958, 10) = 23$. The theorem is a consequence of (882).
(884) $\text{digits}(2002, 10) = \langle 2, 0, 0, 2\rangle$.
(885) $\sum \text{digits}(2002, 10) = 4$. The theorem is a consequence of (884).
(886) $\text{digits}(2024, 10) = \langle 4, 2, 0, 2\rangle$.
(887) $\sum \text{digits}(2024, 10) = 8$. The theorem is a consequence of (886).
(888) $\text{digits}(2046, 10) = \langle 6, 4, 0, 2\rangle$.
(889) $\sum \text{digits}(2046, 10) = 12$. The theorem is a consequence of (888).
(890) $\text{digits}(2068, 10) = \langle 8, 6, 0, 2\rangle$.
(891) $\sum \text{digits}(2068, 10) = 16$. The theorem is a consequence of (890).
(892) $\text{digits}(2090, 10) = \langle 0, 9, 0, 2\rangle$.
(893) $\sum \text{digits}(2090, 10) = 11$. The theorem is a consequence of (892).
(894) $\text{digits}(2112, 10) = \langle 2, 1, 1, 2\rangle$.

(895) $\sum \mathrm{digits}(2112, 10) = 6$. The theorem is a consequence of (894).

(896) $\mathrm{digits}(2134, 10) = \langle 4, 3, 1, 2 \rangle$.

(897) $\sum \mathrm{digits}(2134, 10) = 10$. The theorem is a consequence of (896).

(898) $\mathrm{digits}(2156, 10) = \langle 6, 5, 1, 2 \rangle$.

(899) $\sum \mathrm{digits}(2156, 10) = 14$. The theorem is a consequence of (898).

(900) $\mathrm{digits}(2178, 10) = \langle 8, 7, 1, 2 \rangle$.

(901) $\sum \mathrm{digits}(2178, 10) = 18$. The theorem is a consequence of (900).

(902) $\mathrm{digits}(2222, 10) = \langle 2, 2, 2, 2 \rangle$.

(903) $\sum \mathrm{digits}(2222, 10) = 8$. The theorem is a consequence of (902).

(904) $\mathrm{digits}(2244, 10) = \langle 4, 4, 2, 2 \rangle$.

(905) $\sum \mathrm{digits}(2244, 10) = 12$. The theorem is a consequence of (904).

(906) $\mathrm{digits}(2266, 10) = \langle 6, 6, 2, 2 \rangle$.

(907) $\sum \mathrm{digits}(2266, 10) = 16$. The theorem is a consequence of (906).

(908) $\mathrm{digits}(2288, 10) = \langle 8, 8, 2, 2 \rangle$.

(909) $\sum \mathrm{digits}(2288, 10) = 20$. The theorem is a consequence of (908).

(910) $\mathrm{digits}(2310, 10) = \langle 0, 1, 3, 2 \rangle$.

(911) $\sum \mathrm{digits}(2310, 10) = 6$. The theorem is a consequence of (910).

(912) $\mathrm{digits}(2332, 10) = \langle 2, 3, 3, 2 \rangle$.

(913) $\sum \mathrm{digits}(2332, 10) = 10$. The theorem is a consequence of (912).

(914) $\mathrm{digits}(2354, 10) = \langle 4, 5, 3, 2 \rangle$.

(915) $\sum \mathrm{digits}(2354, 10) = 14$. The theorem is a consequence of (914).

(916) $\mathrm{digits}(2376, 10) = \langle 6, 7, 3, 2 \rangle$.

(917) $\sum \mathrm{digits}(2376, 10) = 18$. The theorem is a consequence of (916).

(918) $\mathrm{digits}(2398, 10) = \langle 8, 9, 3, 2 \rangle$.

(919) $\sum \mathrm{digits}(2398, 10) = 22$. The theorem is a consequence of (918).

(920) 2398 is the solution to Sierpiński's problem 36 for 22. The theorem is a consequence of (919), (6), (58), (62), (66), (70), (37), (76), (80), (84), (88), (363), (749), (751), (753), (755), (757), (207), (254), (759), (310), (375), (761), (763), (765), (767), (769), (771), (773), (775), (777), (397), (779), (781), (783), (785), (787), (789), (791), (354), (793), (417), (795), (797), (799), (801), (803), (805), (807), (809), (811), (439), (813), (815), (817), (819), (821), (823), (825), (827), (829), (461), (831), (833), (835), (837), (839), (841), (843), (845), (847), (483), (849), (851), (853), (855), (857), (859), (861), (863), (865), (505), (867), (869), (871), (873), (875), (877), (879), (881), (883), (527), (885), (887), (889), (891), (893), (895),

(897), (899), (901), (549), (903), (905), (907), (909), (911), (913), (915), and (917).

16. PROBLEM 36 FOR $s = 23$

Now we state the propositions:

(921) $\text{digits}(23, 10) = \langle 3, 2\rangle$.

(922) $\sum \text{digits}(23, 10) = 5$. The theorem is a consequence of (921).

(923) $\text{digits}(46, 10) = \langle 6, 4\rangle$.

(924) $\sum \text{digits}(46, 10) = 10$. The theorem is a consequence of (923).

(925) $\text{digits}(69, 10) = \langle 9, 6\rangle$.

(926) $\sum \text{digits}(69, 10) = 15$. The theorem is a consequence of (925).

(927) $\text{digits}(92, 10) = \langle 2, 9\rangle$.

(928) $\sum \text{digits}(92, 10) = 11$. The theorem is a consequence of (927).

(929) $\text{digits}(115, 10) = \langle 5, 1, 1\rangle$.

(930) $\sum \text{digits}(115, 10) = 7$. The theorem is a consequence of (929).

(931) $\text{digits}(138, 10) = \langle 8, 3, 1\rangle$.

(932) $\sum \text{digits}(138, 10) = 12$. The theorem is a consequence of (931).

(933) $\text{digits}(161, 10) = \langle 1, 6, 1\rangle$.

(934) $\sum \text{digits}(161, 10) = 8$. The theorem is a consequence of (933).

(935) $\text{digits}(184, 10) = \langle 4, 8, 1\rangle$.

(936) $\sum \text{digits}(184, 10) = 13$. The theorem is a consequence of (935).

(937) $\text{digits}(207, 10) = \langle 7, 0, 2\rangle$.

(938) $\sum \text{digits}(207, 10) = 9$. The theorem is a consequence of (937).

(939) $\text{digits}(230, 10) = \langle 0, 3, 2\rangle$.

(940) $\sum \text{digits}(230, 10) = 5$. The theorem is a consequence of (939).

(941) $\text{digits}(253, 10) = \langle 3, 5, 2\rangle$.

(942) $\sum \text{digits}(253, 10) = 10$. The theorem is a consequence of (941).

(943) $\text{digits}(276, 10) = \langle 6, 7, 2\rangle$.

(944) $\sum \text{digits}(276, 10) = 15$. The theorem is a consequence of (943).

(945) $\text{digits}(299, 10) = \langle 9, 9, 2\rangle$.

(946) $\sum \text{digits}(299, 10) = 20$. The theorem is a consequence of (945).

(947) $\text{digits}(322, 10) = \langle 2, 2, 3\rangle$.

(948) $\sum \text{digits}(322, 10) = 7$. The theorem is a consequence of (947).

(949) $\text{digits}(345, 10) = \langle 5, 4, 3\rangle$.

(950) $\sum \mathrm{digits}(345, 10) = 12$. The theorem is a consequence of (949).
(951) $\mathrm{digits}(414, 10) = \langle 4, 1, 4 \rangle$.
(952) $\sum \mathrm{digits}(414, 10) = 9$. The theorem is a consequence of (951).
(953) $\mathrm{digits}(483, 10) = \langle 3, 8, 4 \rangle$.
(954) $\sum \mathrm{digits}(483, 10) = 15$. The theorem is a consequence of (953).
(955) $\mathrm{digits}(529, 10) = \langle 9, 2, 5 \rangle$.
(956) $\sum \mathrm{digits}(529, 10) = 16$. The theorem is a consequence of (955).
(957) $\mathrm{digits}(552, 10) = \langle 2, 5, 5 \rangle$.
(958) $\sum \mathrm{digits}(552, 10) = 12$. The theorem is a consequence of (957).
(959) $\mathrm{digits}(575, 10) = \langle 5, 7, 5 \rangle$.
(960) $\sum \mathrm{digits}(575, 10) = 17$. The theorem is a consequence of (959).
(961) $\mathrm{digits}(598, 10) = \langle 8, 9, 5 \rangle$.
(962) $\sum \mathrm{digits}(598, 10) = 22$. The theorem is a consequence of (961).
(963) $\mathrm{digits}(621, 10) = \langle 1, 2, 6 \rangle$.
(964) $\sum \mathrm{digits}(621, 10) = 9$. The theorem is a consequence of (963).
(965) $\mathrm{digits}(644, 10) = \langle 4, 4, 6 \rangle$.
(966) $\sum \mathrm{digits}(644, 10) = 14$. The theorem is a consequence of (965).
(967) $\mathrm{digits}(667, 10) = \langle 7, 6, 6 \rangle$.
(968) $\sum \mathrm{digits}(667, 10) = 19$. The theorem is a consequence of (967).
(969) $\mathrm{digits}(690, 10) = \langle 0, 9, 6 \rangle$.
(970) $\sum \mathrm{digits}(690, 10) = 15$. The theorem is a consequence of (969).
(971) $\mathrm{digits}(713, 10) = \langle 3, 1, 7 \rangle$.
(972) $\sum \mathrm{digits}(713, 10) = 11$. The theorem is a consequence of (971).
(973) $\mathrm{digits}(736, 10) = \langle 6, 3, 7 \rangle$.
(974) $\sum \mathrm{digits}(736, 10) = 16$. The theorem is a consequence of (973).
(975) $\mathrm{digits}(759, 10) = \langle 9, 5, 7 \rangle$.
(976) $\sum \mathrm{digits}(759, 10) = 21$. The theorem is a consequence of (975).
(977) $\mathrm{digits}(782, 10) = \langle 2, 8, 7 \rangle$.
(978) $\sum \mathrm{digits}(782, 10) = 17$. The theorem is a consequence of (977).
(979) $\mathrm{digits}(805, 10) = \langle 5, 0, 8 \rangle$.
(980) $\sum \mathrm{digits}(805, 10) = 13$. The theorem is a consequence of (979).
(981) $\mathrm{digits}(828, 10) = \langle 8, 2, 8 \rangle$.
(982) $\sum \mathrm{digits}(828, 10) = 18$. The theorem is a consequence of (981).
(983) $\mathrm{digits}(851, 10) = \langle 1, 5, 8 \rangle$.
(984) $\sum \mathrm{digits}(851, 10) = 14$. The theorem is a consequence of (983).

(985) $\text{digits}(897, 10) = \langle 7, 9, 8\rangle$.
(986) $\sum \text{digits}(897, 10) = 24$. The theorem is a consequence of (985).
(987) $\text{digits}(943, 10) = \langle 3, 4, 9\rangle$.
(988) $\sum \text{digits}(943, 10) = 16$. The theorem is a consequence of (987).
(989) $\text{digits}(966, 10) = \langle 6, 6, 9\rangle$.
(990) $\sum \text{digits}(966, 10) = 21$. The theorem is a consequence of (989).
(991) $\text{digits}(989, 10) = \langle 9, 8, 9\rangle$.
(992) $\sum \text{digits}(989, 10) = 26$. The theorem is a consequence of (991).
(993) $\text{digits}(1035, 10) = \langle 5, 3, 0, 1\rangle$.
(994) $\sum \text{digits}(1035, 10) = 9$. The theorem is a consequence of (993).
(995) $\text{digits}(1058, 10) = \langle 8, 5, 0, 1\rangle$.
(996) $\sum \text{digits}(1058, 10) = 14$. The theorem is a consequence of (995).
(997) $\text{digits}(1081, 10) = \langle 1, 8, 0, 1\rangle$.
(998) $\sum \text{digits}(1081, 10) = 10$. The theorem is a consequence of (997).
(999) $\text{digits}(1104, 10) = \langle 4, 0, 1, 1\rangle$.
(1000) $\sum \text{digits}(1104, 10) = 6$. The theorem is a consequence of (999).
(1001) $\text{digits}(1127, 10) = \langle 7, 2, 1, 1\rangle$.
(1002) $\sum \text{digits}(1127, 10) = 11$. The theorem is a consequence of (1001).
(1003) $\text{digits}(1150, 10) = \langle 0, 5, 1, 1\rangle$.
(1004) $\sum \text{digits}(1150, 10) = 7$. The theorem is a consequence of (1003).
(1005) $\text{digits}(1173, 10) = \langle 3, 7, 1, 1\rangle$.
(1006) $\sum \text{digits}(1173, 10) = 12$. The theorem is a consequence of (1005).
(1007) $\text{digits}(1196, 10) = \langle 6, 9, 1, 1\rangle$.
(1008) $\sum \text{digits}(1196, 10) = 17$. The theorem is a consequence of (1007).
(1009) $\text{digits}(1219, 10) = \langle 9, 1, 2, 1\rangle$.
(1010) $\sum \text{digits}(1219, 10) = 13$. The theorem is a consequence of (1009).
(1011) $\text{digits}(1242, 10) = \langle 2, 4, 2, 1\rangle$.
(1012) $\sum \text{digits}(1242, 10) = 9$. The theorem is a consequence of (1011).
(1013) $\text{digits}(1265, 10) = \langle 5, 6, 2, 1\rangle$.
(1014) $\sum \text{digits}(1265, 10) = 14$. The theorem is a consequence of (1013).
(1015) $\text{digits}(1288, 10) = \langle 8, 8, 2, 1\rangle$.
(1016) $\sum \text{digits}(1288, 10) = 19$. The theorem is a consequence of (1015).
(1017) $\text{digits}(1311, 10) = \langle 1, 1, 3, 1\rangle$.
(1018) $\sum \text{digits}(1311, 10) = 6$. The theorem is a consequence of (1017).
(1019) $\text{digits}(1334, 10) = \langle 4, 3, 3, 1\rangle$.

(1020) $\sum \mathrm{digits}(1334, 10) = 11$. The theorem is a consequence of (1019).

(1021) $\mathrm{digits}(1357, 10) = \langle 7, 5, 3, 1\rangle$.

(1022) $\sum \mathrm{digits}(1357, 10) = 16$. The theorem is a consequence of (1021).

(1023) $\mathrm{digits}(1403, 10) = \langle 3, 0, 4, 1\rangle$.

(1024) $\sum \mathrm{digits}(1403, 10) = 8$. The theorem is a consequence of (1023).

(1025) $\mathrm{digits}(1426, 10) = \langle 6, 2, 4, 1\rangle$.

(1026) $\sum \mathrm{digits}(1426, 10) = 13$. The theorem is a consequence of (1025).

(1027) $\mathrm{digits}(1449, 10) = \langle 9, 4, 4, 1\rangle$.

(1028) $\sum \mathrm{digits}(1449, 10) = 18$. The theorem is a consequence of (1027).

(1029) $\mathrm{digits}(1472, 10) = \langle 2, 7, 4, 1\rangle$.

(1030) $\sum \mathrm{digits}(1472, 10) = 14$. The theorem is a consequence of (1029).

(1031) $\mathrm{digits}(1495, 10) = \langle 5, 9, 4, 1\rangle$.

(1032) $\sum \mathrm{digits}(1495, 10) = 19$. The theorem is a consequence of (1031).

(1033) $\mathrm{digits}(1541, 10) = \langle 1, 4, 5, 1\rangle$.

(1034) $\sum \mathrm{digits}(1541, 10) = 11$. The theorem is a consequence of (1033).

(1035) $\mathrm{digits}(1564, 10) = \langle 4, 6, 5, 1\rangle$.

(1036) $\sum \mathrm{digits}(1564, 10) = 16$. The theorem is a consequence of (1035).

(1037) $\mathrm{digits}(1587, 10) = \langle 7, 8, 5, 1\rangle$.

(1038) $\sum \mathrm{digits}(1587, 10) = 21$. The theorem is a consequence of (1037).

(1039) $\mathrm{digits}(1610, 10) = \langle 0, 1, 6, 1\rangle$.

(1040) $\sum \mathrm{digits}(1610, 10) = 8$. The theorem is a consequence of (1039).

(1041) $\mathrm{digits}(1633, 10) = \langle 3, 3, 6, 1\rangle$.

(1042) $\sum \mathrm{digits}(1633, 10) = 13$. The theorem is a consequence of (1041).

(1043) $\mathrm{digits}(1656, 10) = \langle 6, 5, 6, 1\rangle$.

(1044) $\sum \mathrm{digits}(1656, 10) = 18$. The theorem is a consequence of (1043).

(1045) $\mathrm{digits}(1679, 10) = \langle 9, 7, 6, 1\rangle$.

(1046) $\sum \mathrm{digits}(1679, 10) = 23$. The theorem is a consequence of (1045).

(1047) 1679 is the solution to Sierpiński's problem 36 for 23. The theorem is a consequence of (1046), (6), (922), (924), (926), (928), (930), (932), (934), (936), (938), (940), (942), (944), (946), (948), (950), (209), (256), (952), (312), (377), (954), (765), (956), (958), (960), (962), (964), (966), (968), (970), (972), (974), (976), (978), (980), (982), (984), (358), (986), (421), (988), (990), (992), (805), (994), (996), (998), (1000), (1002), (1004), (1006), (1008), (1010), (1012), (1014), (1016), (1018), (1020), (1022), (467), (1024), (1026), (1028), (1030), (1032), (847), (1034), (1036), (1038), (1040), (1042), and (1044).

17. PROBLEM 36 FOR $s = 24$

Now we state the propositions:

(1048) $\text{digits}(216, 10) = \langle 6, 1, 2\rangle$.

(1049) $\sum \text{digits}(216, 10) = 9$. The theorem is a consequence of (1048).

(1050) $\text{digits}(312, 10) = \langle 2, 1, 3\rangle$.

(1051) $\sum \text{digits}(312, 10) = 6$. The theorem is a consequence of (1050).

(1052) $\text{digits}(504, 10) = \langle 4, 0, 5\rangle$.

(1053) $\sum \text{digits}(504, 10) = 9$. The theorem is a consequence of (1052).

(1054) $\text{digits}(576, 10) = \langle 6, 7, 5\rangle$.

(1055) $\sum \text{digits}(576, 10) = 18$. The theorem is a consequence of (1054).

(1056) $\text{digits}(624, 10) = \langle 4, 2, 6\rangle$.

(1057) $\sum \text{digits}(624, 10) = 12$. The theorem is a consequence of (1056).

(1058) $\text{digits}(648, 10) = \langle 8, 4, 6\rangle$.

(1059) $\sum \text{digits}(648, 10) = 18$. The theorem is a consequence of (1058).

(1060) $\text{digits}(672, 10) = \langle 2, 7, 6\rangle$.

(1061) $\sum \text{digits}(672, 10) = 15$. The theorem is a consequence of (1060).

(1062) $\text{digits}(696, 10) = \langle 6, 9, 6\rangle$.

(1063) $\sum \text{digits}(696, 10) = 21$. The theorem is a consequence of (1062).

(1064) $\text{digits}(744, 10) = \langle 4, 4, 7\rangle$.

(1065) $\sum \text{digits}(744, 10) = 15$. The theorem is a consequence of (1064).

(1066) $\text{digits}(768, 10) = \langle 8, 6, 7\rangle$.

(1067) $\sum \text{digits}(768, 10) = 21$. The theorem is a consequence of (1066).

(1068) $\text{digits}(816, 10) = \langle 6, 1, 8\rangle$.

(1069) $\sum \text{digits}(816, 10) = 15$. The theorem is a consequence of (1068).

(1070) $\text{digits}(864, 10) = \langle 4, 6, 8\rangle$.

(1071) $\sum \text{digits}(864, 10) = 18$. The theorem is a consequence of (1070).

(1072) $\text{digits}(888, 10) = \langle 8, 8, 8\rangle$.

(1073) $\sum \text{digits}(888, 10) = 24$. The theorem is a consequence of (1072).

(1074) 888 is the solution to Sierpiński's problem 36 for 24. The theorem is a consequence of (1073), (6), (95), (99), (273), (185), (39), (189), (153), (191), (1049), (193), (751), (199), (1051), (205), (371), (211), (258), (217), (314), (379), (1053), (767), (958), (1055), (391), (1057), (1059), (1061), (1063), (403), (1065), (1067), (789), (1069), (413), and (1071).

18. Problem 36 for $s = 25$

Now we state the propositions:

(1075) $\mathrm{digits}(25, 10) = \langle 5, 2 \rangle$.

(1076) $\sum \mathrm{digits}(25, 10) = 7$. The theorem is a consequence of (1075).

(1077) $\mathrm{digits}(125, 10) = \langle 5, 2, 1 \rangle$.

(1078) $\sum \mathrm{digits}(125, 10) = 8$. The theorem is a consequence of (1077).

(1079) $\mathrm{digits}(175, 10) = \langle 5, 7, 1 \rangle$.

(1080) $\sum \mathrm{digits}(175, 10) = 13$. The theorem is a consequence of (1079).

(1081) $\mathrm{digits}(225, 10) = \langle 5, 2, 2 \rangle$.

(1082) $\sum \mathrm{digits}(225, 10) = 9$. The theorem is a consequence of (1081).

(1083) $\mathrm{digits}(250, 10) = \langle 0, 5, 2 \rangle$.

(1084) $\sum \mathrm{digits}(250, 10) = 7$. The theorem is a consequence of (1083).

(1085) $\mathrm{digits}(275, 10) = \langle 5, 7, 2 \rangle$.

(1086) $\sum \mathrm{digits}(275, 10) = 14$. The theorem is a consequence of (1085).

(1087) $\mathrm{digits}(325, 10) = \langle 5, 2, 3 \rangle$.

(1088) $\sum \mathrm{digits}(325, 10) = 10$. The theorem is a consequence of (1087).

(1089) $\mathrm{digits}(350, 10) = \langle 0, 5, 3 \rangle$.

(1090) $\sum \mathrm{digits}(350, 10) = 8$. The theorem is a consequence of (1089).

(1091) $\mathrm{digits}(375, 10) = \langle 5, 7, 3 \rangle$.

(1092) $\sum \mathrm{digits}(375, 10) = 15$. The theorem is a consequence of (1091).

(1093) $\mathrm{digits}(450, 10) = \langle 0, 5, 4 \rangle$.

(1094) $\sum \mathrm{digits}(450, 10) = 9$. The theorem is a consequence of (1093).

(1095) $\mathrm{digits}(525, 10) = \langle 5, 2, 5 \rangle$.

(1096) $\sum \mathrm{digits}(525, 10) = 12$. The theorem is a consequence of (1095).

(1097) $\mathrm{digits}(625, 10) = \langle 5, 2, 6 \rangle$.

(1098) $\sum \mathrm{digits}(625, 10) = 13$. The theorem is a consequence of (1097).

(1099) $\mathrm{digits}(650, 10) = \langle 0, 5, 6 \rangle$.

(1100) $\sum \mathrm{digits}(650, 10) = 11$. The theorem is a consequence of (1099).

(1101) $\mathrm{digits}(675, 10) = \langle 5, 7, 6 \rangle$.

(1102) $\sum \mathrm{digits}(675, 10) = 18$. The theorem is a consequence of (1101).

(1103) $\mathrm{digits}(725, 10) = \langle 5, 2, 7 \rangle$.

(1104) $\sum \mathrm{digits}(725, 10) = 14$. The theorem is a consequence of (1103).

(1105) $\mathrm{digits}(750, 10) = \langle 0, 5, 7 \rangle$.

(1106) $\sum \mathrm{digits}(750, 10) = 12$. The theorem is a consequence of (1105).

(1107) $\mathrm{digits}(775, 10) = \langle 5, 7, 7 \rangle$.

(1108) $\sum \text{digits}(775, 10) = 19$. The theorem is a consequence of (1107).
(1109) $\text{digits}(825, 10) = \langle 5, 2, 8 \rangle$.
(1110) $\sum \text{digits}(825, 10) = 15$. The theorem is a consequence of (1109).
(1111) $\text{digits}(850, 10) = \langle 0, 5, 8 \rangle$.
(1112) $\sum \text{digits}(850, 10) = 13$. The theorem is a consequence of (1111).
(1113) $\text{digits}(875, 10) = \langle 5, 7, 8 \rangle$.
(1114) $\sum \text{digits}(875, 10) = 20$. The theorem is a consequence of (1113).
(1115) $\text{digits}(925, 10) = \langle 5, 2, 9 \rangle$.
(1116) $\sum \text{digits}(925, 10) = 16$. The theorem is a consequence of (1115).
(1117) $\text{digits}(950, 10) = \langle 0, 5, 9 \rangle$.
(1118) $\sum \text{digits}(950, 10) = 14$. The theorem is a consequence of (1117).
(1119) $\text{digits}(975, 10) = \langle 5, 7, 9 \rangle$.
(1120) $\sum \text{digits}(975, 10) = 21$. The theorem is a consequence of (1119).
(1121) $\text{digits}(1025, 10) = \langle 5, 2, 0, 1 \rangle$.
(1122) $\sum \text{digits}(1025, 10) = 8$. The theorem is a consequence of (1121).
(1123) $\text{digits}(1050, 10) = \langle 0, 5, 0, 1 \rangle$.
(1124) $\sum \text{digits}(1050, 10) = 6$. The theorem is a consequence of (1123).
(1125) $\text{digits}(1075, 10) = \langle 5, 7, 0, 1 \rangle$.
(1126) $\sum \text{digits}(1075, 10) = 13$. The theorem is a consequence of (1125).
(1127) $\text{digits}(1125, 10) = \langle 5, 2, 1, 1 \rangle$.
(1128) $\sum \text{digits}(1125, 10) = 9$. The theorem is a consequence of (1127).
(1129) $\text{digits}(1175, 10) = \langle 5, 7, 1, 1 \rangle$.
(1130) $\sum \text{digits}(1175, 10) = 14$. The theorem is a consequence of (1129).
(1131) $\text{digits}(1225, 10) = \langle 5, 2, 2, 1 \rangle$.
(1132) $\sum \text{digits}(1225, 10) = 10$. The theorem is a consequence of (1131).
(1133) $\text{digits}(1250, 10) = \langle 0, 5, 2, 1 \rangle$.
(1134) $\sum \text{digits}(1250, 10) = 8$. The theorem is a consequence of (1133).
(1135) $\text{digits}(1275, 10) = \langle 5, 7, 2, 1 \rangle$.
(1136) $\sum \text{digits}(1275, 10) = 15$. The theorem is a consequence of (1135).
(1137) $\text{digits}(1325, 10) = \langle 5, 2, 3, 1 \rangle$.
(1138) $\sum \text{digits}(1325, 10) = 11$. The theorem is a consequence of (1137).
(1139) $\text{digits}(1350, 10) = \langle 0, 5, 3, 1 \rangle$.
(1140) $\sum \text{digits}(1350, 10) = 9$. The theorem is a consequence of (1139).
(1141) $\text{digits}(1375, 10) = \langle 5, 7, 3, 1 \rangle$.
(1142) $\sum \text{digits}(1375, 10) = 16$. The theorem is a consequence of (1141).

(1143) $\mathrm{digits}(1425, 10) = \langle 5, 2, 4, 1\rangle$.

(1144) $\sum \mathrm{digits}(1425, 10) = 12$. The theorem is a consequence of (1143).

(1145) $\mathrm{digits}(1450, 10) = \langle 0, 5, 4, 1\rangle$.

(1146) $\sum \mathrm{digits}(1450, 10) = 10$. The theorem is a consequence of (1145).

(1147) $\mathrm{digits}(1475, 10) = \langle 5, 7, 4, 1\rangle$.

(1148) $\sum \mathrm{digits}(1475, 10) = 17$. The theorem is a consequence of (1147).

(1149) $\mathrm{digits}(1525, 10) = \langle 5, 2, 5, 1\rangle$.

(1150) $\sum \mathrm{digits}(1525, 10) = 13$. The theorem is a consequence of (1149).

(1151) $\mathrm{digits}(1550, 10) = \langle 0, 5, 5, 1\rangle$.

(1152) $\sum \mathrm{digits}(1550, 10) = 11$. The theorem is a consequence of (1151).

(1153) $\mathrm{digits}(1575, 10) = \langle 5, 7, 5, 1\rangle$.

(1154) $\sum \mathrm{digits}(1575, 10) = 18$. The theorem is a consequence of (1153).

(1155) $\mathrm{digits}(1625, 10) = \langle 5, 2, 6, 1\rangle$.

(1156) $\sum \mathrm{digits}(1625, 10) = 14$. The theorem is a consequence of (1155).

(1157) $\mathrm{digits}(1675, 10) = \langle 5, 7, 6, 1\rangle$.

(1158) $\sum \mathrm{digits}(1675, 10) = 19$. The theorem is a consequence of (1157).

(1159) $\mathrm{digits}(1725, 10) = \langle 5, 2, 7, 1\rangle$.

(1160) $\sum \mathrm{digits}(1725, 10) = 15$. The theorem is a consequence of (1159).

(1161) $\mathrm{digits}(1750, 10) = \langle 0, 5, 7, 1\rangle$.

(1162) $\sum \mathrm{digits}(1750, 10) = 13$. The theorem is a consequence of (1161).

(1163) $\mathrm{digits}(1775, 10) = \langle 5, 7, 7, 1\rangle$.

(1164) $\sum \mathrm{digits}(1775, 10) = 20$. The theorem is a consequence of (1163).

(1165) $\mathrm{digits}(1825, 10) = \langle 5, 2, 8, 1\rangle$.

(1166) $\sum \mathrm{digits}(1825, 10) = 16$. The theorem is a consequence of (1165).

(1167) $\mathrm{digits}(1850, 10) = \langle 0, 5, 8, 1\rangle$.

(1168) $\sum \mathrm{digits}(1850, 10) = 14$. The theorem is a consequence of (1167).

(1169) $\mathrm{digits}(1875, 10) = \langle 5, 7, 8, 1\rangle$.

(1170) $\sum \mathrm{digits}(1875, 10) = 21$. The theorem is a consequence of (1169).

(1171) $\mathrm{digits}(1925, 10) = \langle 5, 2, 9, 1\rangle$.

(1172) $\sum \mathrm{digits}(1925, 10) = 17$. The theorem is a consequence of (1171).

(1173) $\mathrm{digits}(1950, 10) = \langle 0, 5, 9, 1\rangle$.

(1174) $\sum \mathrm{digits}(1950, 10) = 15$. The theorem is a consequence of (1173).

(1175) $\mathrm{digits}(1975, 10) = \langle 5, 7, 9, 1\rangle$.

(1176) $\sum \mathrm{digits}(1975, 10) = 22$. The theorem is a consequence of (1175).

(1177) $\mathrm{digits}(2025, 10) = \langle 5, 2, 0, 2\rangle$.

(1178) $\sum \text{digits}(2025, 10) = 9$. The theorem is a consequence of (1177).
(1179) $\text{digits}(2050, 10) = \langle 0, 5, 0, 2 \rangle$.
(1180) $\sum \text{digits}(2050, 10) = 7$. The theorem is a consequence of (1179).
(1181) $\text{digits}(2075, 10) = \langle 5, 7, 0, 2 \rangle$.
(1182) $\sum \text{digits}(2075, 10) = 14$. The theorem is a consequence of (1181).
(1183) $\text{digits}(2125, 10) = \langle 5, 2, 1, 2 \rangle$.
(1184) $\sum \text{digits}(2125, 10) = 10$. The theorem is a consequence of (1183).
(1185) $\text{digits}(2150, 10) = \langle 0, 5, 1, 2 \rangle$.
(1186) $\sum \text{digits}(2150, 10) = 8$. The theorem is a consequence of (1185).
(1187) $\text{digits}(2175, 10) = \langle 5, 7, 1, 2 \rangle$.
(1188) $\sum \text{digits}(2175, 10) = 15$. The theorem is a consequence of (1187).
(1189) $\text{digits}(2225, 10) = \langle 5, 2, 2, 2 \rangle$.
(1190) $\sum \text{digits}(2225, 10) = 11$. The theorem is a consequence of (1189).
(1191) $\text{digits}(2250, 10) = \langle 0, 5, 2, 2 \rangle$.
(1192) $\sum \text{digits}(2250, 10) = 9$. The theorem is a consequence of (1191).
(1193) $\text{digits}(2275, 10) = \langle 5, 7, 2, 2 \rangle$.
(1194) $\sum \text{digits}(2275, 10) = 16$. The theorem is a consequence of (1193).
(1195) $\text{digits}(2325, 10) = \langle 5, 2, 3, 2 \rangle$.
(1196) $\sum \text{digits}(2325, 10) = 12$. The theorem is a consequence of (1195).
(1197) $\text{digits}(2350, 10) = \langle 0, 5, 3, 2 \rangle$.
(1198) $\sum \text{digits}(2350, 10) = 10$. The theorem is a consequence of (1197).
(1199) $\text{digits}(2375, 10) = \langle 5, 7, 3, 2 \rangle$.
(1200) $\sum \text{digits}(2375, 10) = 17$. The theorem is a consequence of (1199).
(1201) $\text{digits}(2425, 10) = \langle 5, 2, 4, 2 \rangle$.
(1202) $\sum \text{digits}(2425, 10) = 13$. The theorem is a consequence of (1201).
(1203) $\text{digits}(2450, 10) = \langle 0, 5, 4, 2 \rangle$.
(1204) $\sum \text{digits}(2450, 10) = 11$. The theorem is a consequence of (1203).
(1205) $\text{digits}(2475, 10) = \langle 5, 7, 4, 2 \rangle$.
(1206) $\sum \text{digits}(2475, 10) = 18$. The theorem is a consequence of (1205).
(1207) $\text{digits}(2525, 10) = \langle 5, 2, 5, 2 \rangle$.
(1208) $\sum \text{digits}(2525, 10) = 14$. The theorem is a consequence of (1207).
(1209) $\text{digits}(2550, 10) = \langle 0, 5, 5, 2 \rangle$.
(1210) $\sum \text{digits}(2550, 10) = 12$. The theorem is a consequence of (1209).
(1211) $\text{digits}(2575, 10) = \langle 5, 7, 5, 2 \rangle$.
(1212) $\sum \text{digits}(2575, 10) = 19$. The theorem is a consequence of (1211).

(1213) $\mathrm{digits}(2625, 10) = \langle 5, 2, 6, 2\rangle$.
(1214) $\sum \mathrm{digits}(2625, 10) = 15$. The theorem is a consequence of (1213).
(1215) $\mathrm{digits}(2650, 10) = \langle 0, 5, 6, 2\rangle$.
(1216) $\sum \mathrm{digits}(2650, 10) = 13$. The theorem is a consequence of (1215).
(1217) $\mathrm{digits}(2675, 10) = \langle 5, 7, 6, 2\rangle$.
(1218) $\sum \mathrm{digits}(2675, 10) = 20$. The theorem is a consequence of (1217).
(1219) $\mathrm{digits}(2725, 10) = \langle 5, 2, 7, 2\rangle$.
(1220) $\sum \mathrm{digits}(2725, 10) = 16$. The theorem is a consequence of (1219).
(1221) $\mathrm{digits}(2750, 10) = \langle 0, 5, 7, 2\rangle$.
(1222) $\sum \mathrm{digits}(2750, 10) = 14$. The theorem is a consequence of (1221).
(1223) $\mathrm{digits}(2775, 10) = \langle 5, 7, 7, 2\rangle$.
(1224) $\sum \mathrm{digits}(2775, 10) = 21$. The theorem is a consequence of (1223).
(1225) $\mathrm{digits}(2825, 10) = \langle 5, 2, 8, 2\rangle$.
(1226) $\sum \mathrm{digits}(2825, 10) = 17$. The theorem is a consequence of (1225).
(1227) $\mathrm{digits}(2850, 10) = \langle 0, 5, 8, 2\rangle$.
(1228) $\sum \mathrm{digits}(2850, 10) = 15$. The theorem is a consequence of (1227).
(1229) $\mathrm{digits}(2875, 10) = \langle 5, 7, 8, 2\rangle$.
(1230) $\sum \mathrm{digits}(2875, 10) = 22$. The theorem is a consequence of (1229).
(1231) $\mathrm{digits}(2925, 10) = \langle 5, 2, 9, 2\rangle$.
(1232) $\sum \mathrm{digits}(2925, 10) = 18$. The theorem is a consequence of (1231).
(1233) $\mathrm{digits}(2950, 10) = \langle 0, 5, 9, 2\rangle$.
(1234) $\sum \mathrm{digits}(2950, 10) = 16$. The theorem is a consequence of (1233).
(1235) $\mathrm{digits}(2975, 10) = \langle 5, 7, 9, 2\rangle$.
(1236) $\sum \mathrm{digits}(2975, 10) = 23$. The theorem is a consequence of (1235).
(1237) $\mathrm{digits}(3025, 10) = \langle 5, 2, 0, 3\rangle$.
(1238) $\sum \mathrm{digits}(3025, 10) = 10$. The theorem is a consequence of (1237).
(1239) $\mathrm{digits}(3050, 10) = \langle 0, 5, 0, 3\rangle$.
(1240) $\sum \mathrm{digits}(3050, 10) = 8$. The theorem is a consequence of (1239).
(1241) $\mathrm{digits}(3075, 10) = \langle 5, 7, 0, 3\rangle$.
(1242) $\sum \mathrm{digits}(3075, 10) = 15$. The theorem is a consequence of (1241).
(1243) $\mathrm{digits}(3125, 10) = \langle 5, 2, 1, 3\rangle$.
(1244) $\sum \mathrm{digits}(3125, 10) = 11$. The theorem is a consequence of (1243).
(1245) $\mathrm{digits}(3150, 10) = \langle 0, 5, 1, 3\rangle$.
(1246) $\sum \mathrm{digits}(3150, 10) = 9$. The theorem is a consequence of (1245).
(1247) $\mathrm{digits}(3175, 10) = \langle 5, 7, 1, 3\rangle$.

(1248) $\sum \text{digits}(3175, 10) = 16$. The theorem is a consequence of (1247).
(1249) $\text{digits}(3225, 10) = \langle 5, 2, 2, 3 \rangle$.
(1250) $\sum \text{digits}(3225, 10) = 12$. The theorem is a consequence of (1249).
(1251) $\text{digits}(3250, 10) = \langle 0, 5, 2, 3 \rangle$.
(1252) $\sum \text{digits}(3250, 10) = 10$. The theorem is a consequence of (1251).
(1253) $\text{digits}(3275, 10) = \langle 5, 7, 2, 3 \rangle$.
(1254) $\sum \text{digits}(3275, 10) = 17$. The theorem is a consequence of (1253).
(1255) $\text{digits}(3325, 10) = \langle 5, 2, 3, 3 \rangle$.
(1256) $\sum \text{digits}(3325, 10) = 13$. The theorem is a consequence of (1255).
(1257) $\text{digits}(3350, 10) = \langle 0, 5, 3, 3 \rangle$.
(1258) $\sum \text{digits}(3350, 10) = 11$. The theorem is a consequence of (1257).
(1259) $\text{digits}(3375, 10) = \langle 5, 7, 3, 3 \rangle$.
(1260) $\sum \text{digits}(3375, 10) = 18$. The theorem is a consequence of (1259).
(1261) $\text{digits}(3425, 10) = \langle 5, 2, 4, 3 \rangle$.
(1262) $\sum \text{digits}(3425, 10) = 14$. The theorem is a consequence of (1261).
(1263) $\text{digits}(3450, 10) = \langle 0, 5, 4, 3 \rangle$.
(1264) $\sum \text{digits}(3450, 10) = 12$. The theorem is a consequence of (1263).
(1265) $\text{digits}(3475, 10) = \langle 5, 7, 4, 3 \rangle$.
(1266) $\sum \text{digits}(3475, 10) = 19$. The theorem is a consequence of (1265).
(1267) $\text{digits}(3525, 10) = \langle 5, 2, 5, 3 \rangle$.
(1268) $\sum \text{digits}(3525, 10) = 15$. The theorem is a consequence of (1267).
(1269) $\text{digits}(3550, 10) = \langle 0, 5, 5, 3 \rangle$.
(1270) $\sum \text{digits}(3550, 10) = 13$. The theorem is a consequence of (1269).
(1271) $\text{digits}(3575, 10) = \langle 5, 7, 5, 3 \rangle$.
(1272) $\sum \text{digits}(3575, 10) = 20$. The theorem is a consequence of (1271).
(1273) $\text{digits}(3625, 10) = \langle 5, 2, 6, 3 \rangle$.
(1274) $\sum \text{digits}(3625, 10) = 16$. The theorem is a consequence of (1273).
(1275) $\text{digits}(3650, 10) = \langle 0, 5, 6, 3 \rangle$.
(1276) $\sum \text{digits}(3650, 10) = 14$. The theorem is a consequence of (1275).
(1277) $\text{digits}(3675, 10) = \langle 5, 7, 6, 3 \rangle$.
(1278) $\sum \text{digits}(3675, 10) = 21$. The theorem is a consequence of (1277).
(1279) $\text{digits}(3725, 10) = \langle 5, 2, 7, 3 \rangle$.
(1280) $\sum \text{digits}(3725, 10) = 17$. The theorem is a consequence of (1279).
(1281) $\text{digits}(3750, 10) = \langle 0, 5, 7, 3 \rangle$.
(1282) $\sum \text{digits}(3750, 10) = 15$. The theorem is a consequence of (1281).

(1283) $\mathrm{digits}(3775, 10) = \langle 5, 7, 7, 3\rangle$.

(1284) $\sum \mathrm{digits}(3775, 10) = 22$. The theorem is a consequence of (1283).

(1285) $\mathrm{digits}(3825, 10) = \langle 5, 2, 8, 3\rangle$.

(1286) $\sum \mathrm{digits}(3825, 10) = 18$. The theorem is a consequence of (1285).

(1287) $\mathrm{digits}(3850, 10) = \langle 0, 5, 8, 3\rangle$.

(1288) $\sum \mathrm{digits}(3850, 10) = 16$. The theorem is a consequence of (1287).

(1289) $\mathrm{digits}(3875, 10) = \langle 5, 7, 8, 3\rangle$.

(1290) $\sum \mathrm{digits}(3875, 10) = 23$. The theorem is a consequence of (1289).

(1291) $\mathrm{digits}(3925, 10) = \langle 5, 2, 9, 3\rangle$.

(1292) $\sum \mathrm{digits}(3925, 10) = 19$. The theorem is a consequence of (1291).

(1293) $\mathrm{digits}(3950, 10) = \langle 0, 5, 9, 3\rangle$.

(1294) $\sum \mathrm{digits}(3950, 10) = 17$. The theorem is a consequence of (1293).

(1295) $\mathrm{digits}(3975, 10) = \langle 5, 7, 9, 3\rangle$.

(1296) $\sum \mathrm{digits}(3975, 10) = 24$. The theorem is a consequence of (1295).

(1297) $\mathrm{digits}(4000, 10) = \langle 0, 0, 0, 4\rangle$.

(1298) $\sum \mathrm{digits}(4000, 10) = 4$. The theorem is a consequence of (1297).

(1299) $\mathrm{digits}(4025, 10) = \langle 5, 2, 0, 4\rangle$.

(1300) $\sum \mathrm{digits}(4025, 10) = 11$. The theorem is a consequence of (1299).

(1301) $\mathrm{digits}(4050, 10) = \langle 0, 5, 0, 4\rangle$.

(1302) $\sum \mathrm{digits}(4050, 10) = 9$. The theorem is a consequence of (1301).

(1303) $\mathrm{digits}(4075, 10) = \langle 5, 7, 0, 4\rangle$.

(1304) $\sum \mathrm{digits}(4075, 10) = 16$. The theorem is a consequence of (1303).

(1305) $\mathrm{digits}(4100, 10) = \langle 0, 0, 1, 4\rangle$.

(1306) $\sum \mathrm{digits}(4100, 10) = 5$. The theorem is a consequence of (1305).

(1307) $\mathrm{digits}(4125, 10) = \langle 5, 2, 1, 4\rangle$.

(1308) $\sum \mathrm{digits}(4125, 10) = 12$. The theorem is a consequence of (1307).

(1309) $\mathrm{digits}(4150, 10) = \langle 0, 5, 1, 4\rangle$.

(1310) $\sum \mathrm{digits}(4150, 10) = 10$. The theorem is a consequence of (1309).

(1311) $\mathrm{digits}(4175, 10) = \langle 5, 7, 1, 4\rangle$.

(1312) $\sum \mathrm{digits}(4175, 10) = 17$. The theorem is a consequence of (1311).

(1313) $\mathrm{digits}(4200, 10) = \langle 0, 0, 2, 4\rangle$.

(1314) $\sum \mathrm{digits}(4200, 10) = 6$. The theorem is a consequence of (1313).

(1315) $\mathrm{digits}(4225, 10) = \langle 5, 2, 2, 4\rangle$.

(1316) $\sum \mathrm{digits}(4225, 10) = 13$. The theorem is a consequence of (1315).

(1317) $\mathrm{digits}(4250, 10) = \langle 0, 5, 2, 4\rangle$.

(1318) $\sum \text{digits}(4250, 10) = 11$. The theorem is a consequence of (1317).
(1319) $\text{digits}(4275, 10) = \langle 5, 7, 2, 4 \rangle$.
(1320) $\sum \text{digits}(4275, 10) = 18$. The theorem is a consequence of (1319).
(1321) $\text{digits}(4300, 10) = \langle 0, 0, 3, 4 \rangle$.
(1322) $\sum \text{digits}(4300, 10) = 7$. The theorem is a consequence of (1321).
(1323) $\text{digits}(4325, 10) = \langle 5, 2, 3, 4 \rangle$.
(1324) $\sum \text{digits}(4325, 10) = 14$. The theorem is a consequence of (1323).
(1325) $\text{digits}(4350, 10) = \langle 0, 5, 3, 4 \rangle$.
(1326) $\sum \text{digits}(4350, 10) = 12$. The theorem is a consequence of (1325).
(1327) $\text{digits}(4375, 10) = \langle 5, 7, 3, 4 \rangle$.
(1328) $\sum \text{digits}(4375, 10) = 19$. The theorem is a consequence of (1327).
(1329) $\text{digits}(4400, 10) = \langle 0, 0, 4, 4 \rangle$.
(1330) $\sum \text{digits}(4400, 10) = 8$. The theorem is a consequence of (1329).
(1331) $\text{digits}(4425, 10) = \langle 5, 2, 4, 4 \rangle$.
(1332) $\sum \text{digits}(4425, 10) = 15$. The theorem is a consequence of (1331).
(1333) $\text{digits}(4450, 10) = \langle 0, 5, 4, 4 \rangle$.
(1334) $\sum \text{digits}(4450, 10) = 13$. The theorem is a consequence of (1333).
(1335) $\text{digits}(4475, 10) = \langle 5, 7, 4, 4 \rangle$.
(1336) $\sum \text{digits}(4475, 10) = 20$. The theorem is a consequence of (1335).
(1337) $\text{digits}(4500, 10) = \langle 0, 0, 5, 4 \rangle$.
(1338) $\sum \text{digits}(4500, 10) = 9$. The theorem is a consequence of (1337).
(1339) $\text{digits}(4525, 10) = \langle 5, 2, 5, 4 \rangle$.
(1340) $\sum \text{digits}(4525, 10) = 16$. The theorem is a consequence of (1339).
(1341) $\text{digits}(4550, 10) = \langle 0, 5, 5, 4 \rangle$.
(1342) $\sum \text{digits}(4550, 10) = 14$. The theorem is a consequence of (1341).
(1343) $\text{digits}(4575, 10) = \langle 5, 7, 5, 4 \rangle$.
(1344) $\sum \text{digits}(4575, 10) = 21$. The theorem is a consequence of (1343).
(1345) $\text{digits}(4600, 10) = \langle 0, 0, 6, 4 \rangle$.
(1346) $\sum \text{digits}(4600, 10) = 10$. The theorem is a consequence of (1345).
(1347) $\text{digits}(4625, 10) = \langle 5, 2, 6, 4 \rangle$.
(1348) $\sum \text{digits}(4625, 10) = 17$. The theorem is a consequence of (1347).
(1349) $\text{digits}(4650, 10) = \langle 0, 5, 6, 4 \rangle$.
(1350) $\sum \text{digits}(4650, 10) = 15$. The theorem is a consequence of (1349).
(1351) $\text{digits}(4675, 10) = \langle 5, 7, 6, 4 \rangle$.
(1352) $\sum \text{digits}(4675, 10) = 22$. The theorem is a consequence of (1351).

(1353) $\mathrm{digits}(4700, 10) = \langle 0, 0, 7, 4\rangle$.

(1354) $\sum \mathrm{digits}(4700, 10) = 11$. The theorem is a consequence of (1353).

(1355) $\mathrm{digits}(4725, 10) = \langle 5, 2, 7, 4\rangle$.

(1356) $\sum \mathrm{digits}(4725, 10) = 18$. The theorem is a consequence of (1355).

(1357) $\mathrm{digits}(4750, 10) = \langle 0, 5, 7, 4\rangle$.

(1358) $\sum \mathrm{digits}(4750, 10) = 16$. The theorem is a consequence of (1357).

(1359) $\mathrm{digits}(4775, 10) = \langle 5, 7, 7, 4\rangle$.

(1360) $\sum \mathrm{digits}(4775, 10) = 23$. The theorem is a consequence of (1359).

(1361) $\mathrm{digits}(4800, 10) = \langle 0, 0, 8, 4\rangle$.

(1362) $\sum \mathrm{digits}(4800, 10) = 12$. The theorem is a consequence of (1361).

(1363) $\mathrm{digits}(4825, 10) = \langle 5, 2, 8, 4\rangle$.

(1364) $\sum \mathrm{digits}(4825, 10) = 19$. The theorem is a consequence of (1363).

(1365) $\mathrm{digits}(4850, 10) = \langle 0, 5, 8, 4\rangle$.

(1366) $\sum \mathrm{digits}(4850, 10) = 17$. The theorem is a consequence of (1365).

(1367) $\mathrm{digits}(4875, 10) = \langle 5, 7, 8, 4\rangle$.

(1368) $\sum \mathrm{digits}(4875, 10) = 24$. The theorem is a consequence of (1367).

(1369) $\mathrm{digits}(4900, 10) = \langle 0, 0, 9, 4\rangle$.

(1370) $\sum \mathrm{digits}(4900, 10) = 13$. The theorem is a consequence of (1369).

(1371) $\mathrm{digits}(4925, 10) = \langle 5, 2, 9, 4\rangle$.

(1372) $\sum \mathrm{digits}(4925, 10) = 20$. The theorem is a consequence of (1371).

(1373) $\mathrm{digits}(4950, 10) = \langle 0, 5, 9, 4\rangle$.

(1374) $\sum \mathrm{digits}(4950, 10) = 18$. The theorem is a consequence of (1373).

(1375) $\mathrm{digits}(4975, 10) = \langle 5, 7, 9, 4\rangle$.

(1376) $\sum \mathrm{digits}(4975, 10) = 25$. The theorem is a consequence of (1375).

(1377) 4975 is the solution to Sierpiński's problem 36 for 25. The theorem is a consequence of (1376), (6), (1076), (25), (172), (35), (1078), (45), (1080), (361), (1082), (1084), (1086), (369), (1088), (1090), (1092), (213), (260), (1094), (316), (381), (1096), (769), (960), (391), (1098), (1100), (1102), (401), (1104), (1106), (1108), (409), (1110), (1112), (1114), (419), (1116), (1118), (1120), (429), (1122), (1124), (1126), (439), (1128), (1004), (1130), (449), (1132), (1134), (1136), (459), (1138), (1140), (1142), (469), (1144), (1146), (1148), (479), (1150), (1152), (1154), (489), (1156), (857), (1158), (499), (1160), (1162), (1164), (509), (1166), (1168), (1170), (519), (1172), (1174), (1176), (529), (1178), (1180), (1182), (539), (1184), (1186), (1188), (549), (1190), (1192), (1194), (559), (1196), (1198), (1200), (569), (1202), (1204), (1206), (579), (1208), (1210), (1212), (589), (1214), (1216), (1218), (599), (1220), (1222), (1224), (609), (1226), (1228), (1230), (619), (1232),

(1234), (1236), (629), (1238), (1240), (1242), (639), (1244), (1246), (1248), (649), (1250), (1252), (1254), (659), (1256), (1258), (1260), (669), (1262), (1264), (1266), (679), (1268), (1270), (1272), (689), (1274), (1276), (1278), (699), (1280), (1282), (1284), (709), (1286), (1288), (1290), (719), (1292), (1294), (1296), (1298), (1300), (1302), (1304), (1306), (1308), (1310), (1312), (1314), (1316), (1318), (1320), (1322), (1324), (1326), (1328), (1330), (1332), (1334), (1336), (1338), (1340), (1342), (1344), (1346), (1348), (1350), (1352), (1354), (1356), (1358), (1360), (1362), (1364), (1366), (1368), (1370), (1372), and (1374).

19. Problem 36 for $s = 100$

Now we state the proposition:

(1378) value$((\langle 0,0\rangle^\frown(11 \longmapsto 9))^\frown\langle 1\rangle, 10)$ is the solution to Sierpiński's problem 36 for 100. The theorem is a consequence of (5), (13), (12), and (14).

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