

# Pre-Kindergarten – 1<sup>st</sup> Grade Students: Nemeth Code within UEB Contexts and Strategies for Supporting the Student in Building Math Skills

## Lesson 2: Math Problems and Nemeth Code Switch Indicators



University of South Carolina Upstate, Spring 2020

# Lesson 2 Objectives

Participants will be able to:

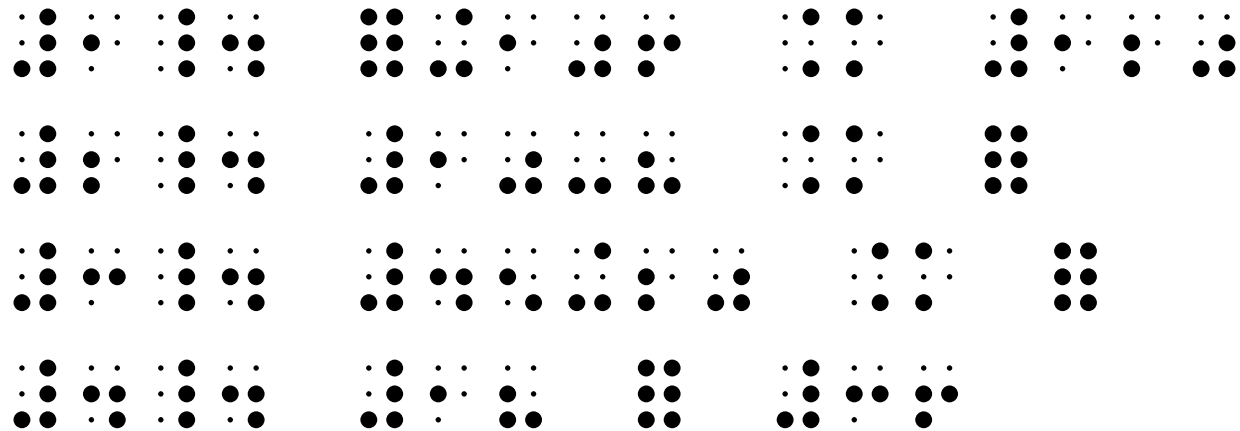
1. Read and write linear math problems using the long dash, general omission symbol, or shape to represent a missing number, sign of operation, or sign of comparison.
2. Read and write math word problems that require use of the opening Nemeth Code indicator, Nemeth Code terminator, and/or one word switch indicator.

# Review of the General Omission Symbol

- The general omission symbol is ∴ (dots 1-2-3-4-5-6).
- The general omission symbol is used when a question mark or blank space in print shows a missing number, sign of operation, or sign of comparison.
- Space the general omission symbol the same way you space what it replaces.

# Activity 2A

Interline the problems. A sign of comparison is missing in the fourth problem.



# Activity 2A: Answer Key

1. ? + 106 = 120

⠠? ⠠+ ⠠106 ⠠= ⠠120

2. 10 - 8 =

⠠10 ⠠- ⠠8 ⠠=

3. 45 + 20 = ?

⠠45 ⠠+ ⠠20 ⠠= ⠠?

4. 18      36

⠠18      ⠠36

# Long Dash

- The long dash is ⠄⠄⠄⠄ (dots 3-6 written four times).
- Generally place a space before and after a long dash unless there is a mark of punctuation next to it.

$$7 + \underline{\quad} = 10$$

⠄⠄⠄⠄ ⠄⠄⠄⠄⠄⠄ ⠄⠄⠄ ⠄⠄⠄⠄

$$\underline{\quad} - 12 < 35$$

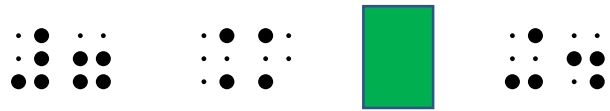
⠄⠄⠄⠄⠄⠄ ⠄⠄⠄⠄ ⠄⠄⠄ ⠄⠄⠄⠄

# Shapes Used for Omission

- First determine if the shape is meaningful for the student (e.g., all odd answers are written in triangles; all even answers are written in circles).
- If shapes are needed, for young students use stickers or other textures to represent shapes such as squares, triangles, or circles.
- It is not best practice to replace the shape with the general omission symbol. At this age, it is essential that students have multiple opportunities to tactually explore shapes.

# Example

$$7 = \square + 4$$



On the print worksheet a rectangle is drawn. The TSVI used a green sticker to represent the rectangle on the braille worksheet as the student has some usable vision.





# Activity 2B

Interline the problems.

Braille problems for interlining. The first row contains four groups of Braille characters, with a green circle in the third group. The second row contains four groups of Braille characters. The third row contains four groups of Braille characters, with a yellow square in the third group. The fourth row contains five groups of Braille characters.

# Activity 2B: Answer Key

1. 14  14

2.  $7 - 5 = \underline{\quad}$  

3. 91  83

4.  $10 + \underline{\quad} = 20$  

# Activity 2C

Write the following problems in braille.

$$6. 8 - \underline{\quad} = 3$$

$$7. 4 + 5 = \text{■}$$

$$8. 10 + 0 = \underline{\quad}$$

$$9. \underline{\quad} - 8 = 1$$

# Activity 2C: Answer Key

6.  $8 - \underline{\quad} = 3$

⠠8 ⠤ ⠠3

7.  $4 + 5 =$

⠠4 ⠠5 ⠠

8.  $10 + 0 = \underline{\quad}$

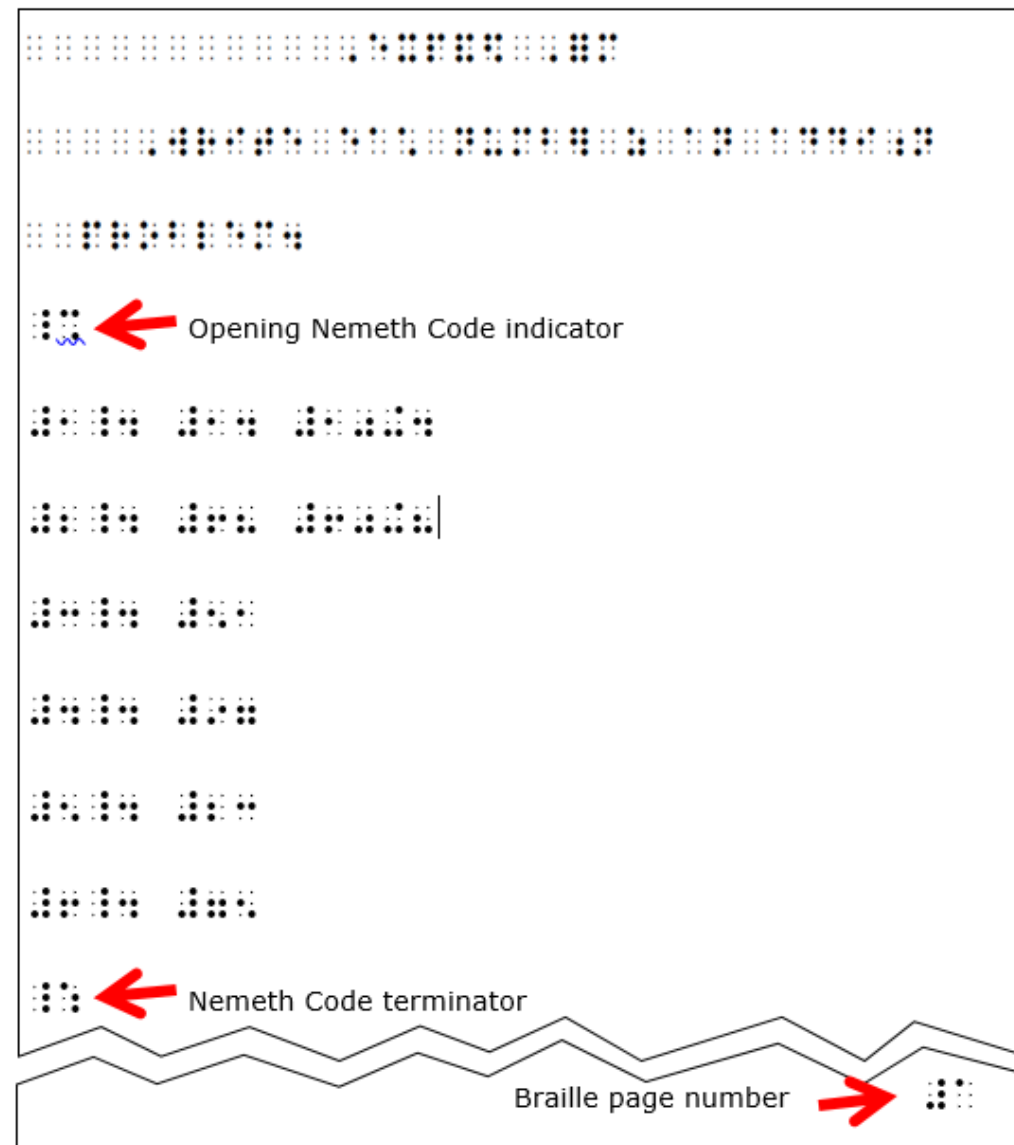
⠠10 ⠠0 ⠠

9.  $\underline{\quad} - 8 = 1$

⠠

# Nemeth Code Switch Indicators

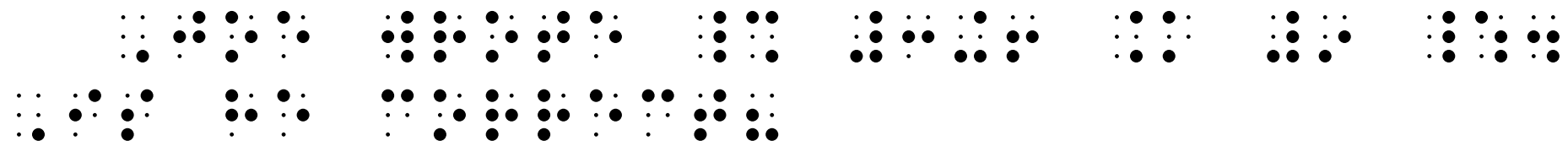
- The opening Nemeth Code indicator ⠠⠠ (dots 4-5-6, dots 1-4-6) opens Nemeth Code.
- The Nemeth Code terminator ⠠⠠ (dots 4-5-6, dots 1-5-6) ends Nemeth Code.



# Positioning of Nemeth Code Switch Indicators and Consistency

- The opening Nemeth Code indicator can be placed at the end of a line of literary text or on its own line.
- The Nemeth code terminator can also be placed after the math it ends or on its own line.
- When deciding where to place indicators, consider consistency and clarity for the braille reader.

Joe wrote  $3 + 6 = 9$ . Is he correct?



# Single Words in Nemeth Code Within UEB Contexts

- There are two different ways to indicate a single word within Nemeth Code.
  - Braille the word with no contractions **OR**
  - Use a single word switch indicator  $\cdot\cdot\cdot$  (dot 6, dot 3).
- Be consistent in preparing materials. (Do not mix and match!)
- Ensure students are familiar with both ways to transcribe single words within Nemeth Code.

3 + 4 and 2 + 5 are equal.

$\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$  or  
 $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$   $\cdot\cdot\cdot$

# Non-Use of Nemeth Code Switch Indicators

When there are whole numbers (e.g., 82, 7, 109) in a word problem use UEB numbers.

5. Ricardo has 19 marbles and Tiffany has 13 marbles. Who has more marbles?

⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠ ⠠⠠ ⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠

⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠ ⠠⠠⠠⠠⠠⠠ ⠠⠠ ⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠⠠



# Activity 2D

Do you need Nemeth Code switch indicators?

1. How many tens are in 45?
2. What is the sum of 5, 10, and 15?
3. Which is more,  $9 - 6$  or  $11 - 5$ ?
4. Marcella wrote the answer 6 for  $7 + ? = 13$ . Is she right?

# Activity 2D: Answer Key

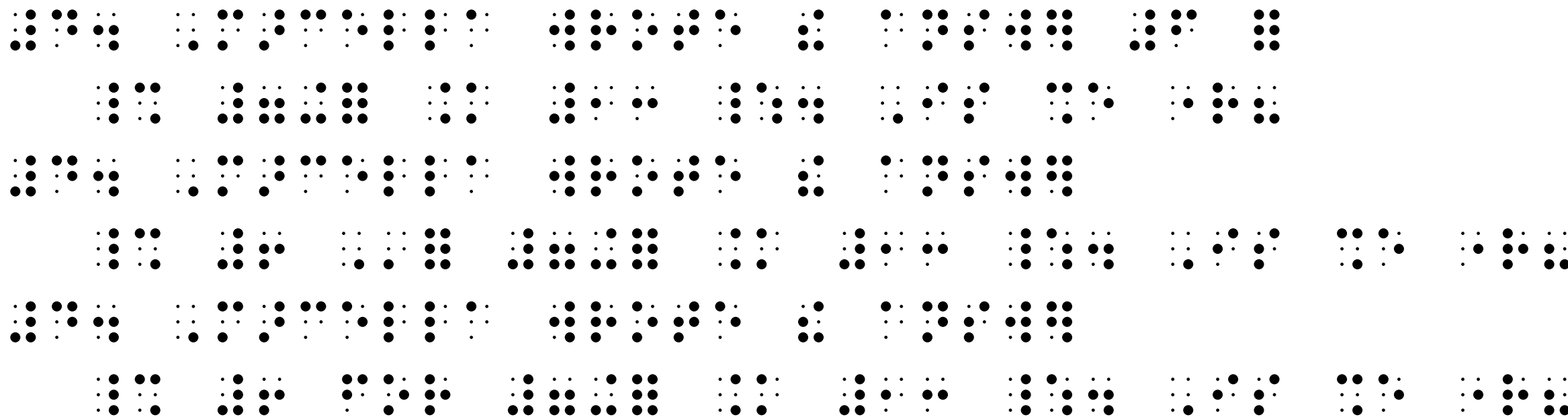
1. How many tens are in 45?  
No Nemeth Code switch indicators
2. What is the sum of 5, 10, and 15?  
No Nemeth Code switch indicators
3. Which is more,  $9 - 6$  or  $11 - 5$ ?  
Yes Nemeth Code switch indicators
4. Marcella wrote the answer 6 for  $7 + ? = 13$ . Is she right?  
Yes Nemeth Code switch indicators



# Correct Way to Braille (continued)

4. Marcella wrote the answer 6 for  $7 + ? = 13$ . Is she right?

The Guidance gives us flexibility to braille this word problem in 3 different ways.



## Activity 2E

1. If  $8 - 4 = 4$ , then what is  $8 - 3$ ?
2. If there are 3 cats in the house and 2 more come in, how many cats are in the house altogether?
3. One way to make twelve is  $6 + 6$ . What is another way to make 12?
4. You have 7 cookies, and you ate 2 of them. How many do you have left?

# Activity 2E: Answer Key

1. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.  
 11. 12. 13. 14.  
 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.