

Sorting Investigation

Inventing a sorting algorithm

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Imagine trying to find the word
apple in a dictionary that wasn't
arranged alphabetically!

Which is the largest number?

56

89

62

51

85

32

Which is the largest number?

79 1 2 46 53 20 81 73 14 39

56 74 45 25 94 19 52 24 36 17

15 11 42 3 27 72 87 34 91 54

47 16 9 89 7 28 30 80 76 51

75 58 48 4 31 44 21 17 50 79

92 74 40 70 71 90 5 98 6 43

Which is the largest number?

583 810 777 420 605 962 6 434 657 752 342 288 592 384 471 376 820 284 324 64 630 417 717 213 888 901 871 464 570 302
851 377 766 807 427 465 534 450 266 766 190 662 464 321 100 61 528 767 436 647 373 865 31 89 866 552 783 740 773 421
127 658 838 989 848 629 580 146 959 584 147 410 87 979 744 277 541 459 922 856 170 249 560 836 677 405 879 330 700 960
478 967 527 285 272 369 109 637 493 756 994 239 182 867 380 247 365 566 27 452 179 284 26 558 888 609 691 966 278 142
637 488 443 597 299 463 750 226 954 118 910 356 243 717 340 404 586 236 458 92 580 11 46 517 408 89 985 103 306 348
585 771 52 175 676 658 747 270 498 623 983 991 453 838 793 790 499 635 420 18 972 641 725 154 949 340 165 384 441 519
614 284 76 230 699 528 840 516 171 440 638 614 702 656 418 469 141 346 19 700 127 513 537 519 96 922 442 139 537 168
106 81 826 638 940 257 799 251 112 259 242 949 442 571 162 335 374 997 72 499 826 949 734 484 595 140 842 254 421 355
859 294 360 879 7 970 843 134 506 751 433 446 581 285 274 870 604 402 263 198 789 961 636 137 391 198 214 981 540 604
625 89 569 949 69 150 706 213 308 628 92 640 256 834 825 934 279 498 38 256 15 574 42 398 82 268 342 749 375 328
779 738 648 691 575 120 793 790 463 553 681 750 355 695 290 341 292 972 628 147 811 971 291 812 837 864 797 234 370 803
267 982 59 625 668 974 501 946 533 781 641 986 50 146 843 648 74 128 428 856 703 841 711 294 464 76 811 946 586 710
435 968 383 653 948 522 955 217 954 319 449 247 993 437 181 227 997 92 273 915 668 746 566 582 876 726 927 476 258 521
479 262 372 433 420 807 908 983 328 319 943 509 268 500 36 418 243 188 39 254 663 367 784 436 537 301 127 118 635 9
970 101 517 15 167 639 838 126 764 603 213 7 926 60 577 180 291 188 301 20 627 161 507 28 278 514 921 660 760 300
46 609 826 236 539 61 283 456 108 102 913 996 307 677 784 353 594 117 707 904 510 894 469 919 980 562 660 832 2 143
786 955 150 17 853 433 679 419 794 357 263 869 998 950 193 676 782 790 191 220 139 229 582 556 381 837 684 404 245 739
692 80 920 488 475 853 334 880 800 684 906 824 11 502 229 500 832 336 723 210 145 770 381 424 524 58 715 931 703 507
574 908 57 926 376 143 865 207 49 203 98 649 669 545 403 940 141 970 426 915 352 878 583 905 298 37 877 75 841 623
599 950 559 276 83 248 374 657 938 168 639 785 870 739 730 930 940 280 733 636 186 368 787 453 489 788 404 644 622 333
575 477 808 323 108 99 396 60 361 186 229 922 9 305 687 641 316 665 437 325 279 865 947 302 974 869 649 154 49 566
386 563 894 645 464 374 752 632 426 19 746 933 382 769 583 963 566 949 742 931 447 682 162 778 72 900 463 180 780 110
982 313 793 875 252 374 814 155 64 386 903 321 244 433 204 21 928 584 442 478 591 875 940 600 551 697 598 137 65 590

Computer Sorting

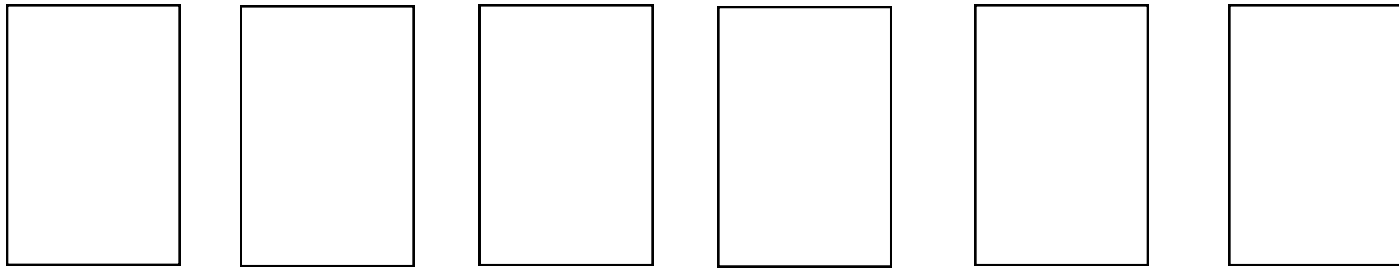
Computers can **only** compare **two**
numbers

They can leave the numbers as
they are or swap their positions

They can work very quickly

Compare Pairs Swap or Not

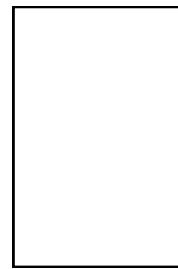
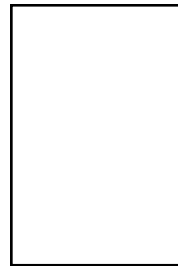
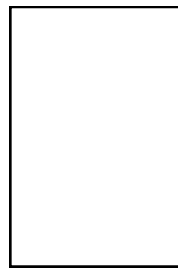
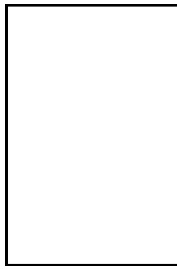
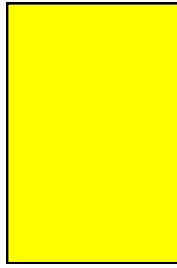
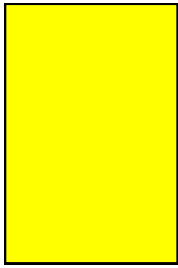
79 1 2 46 53 20 81 73 14 39



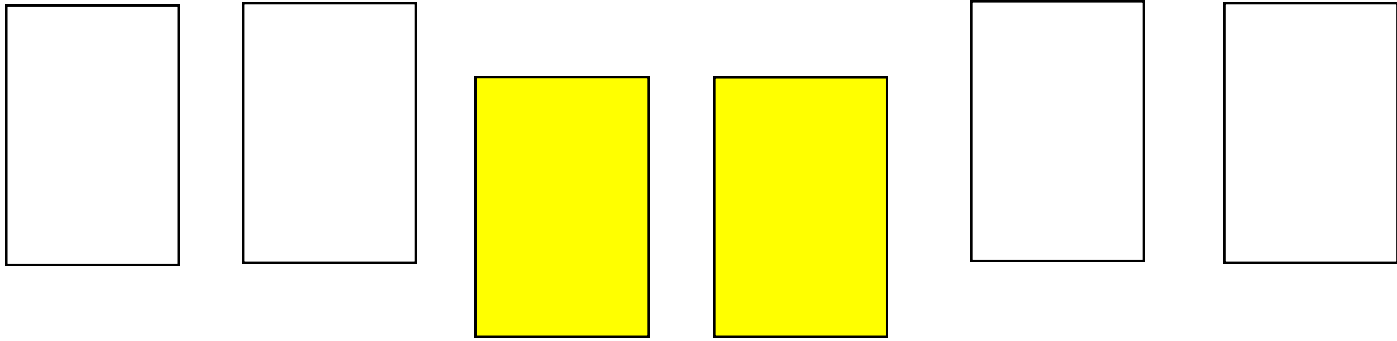
Work in pairs

Deal out 6 number cards face down in
a straight line

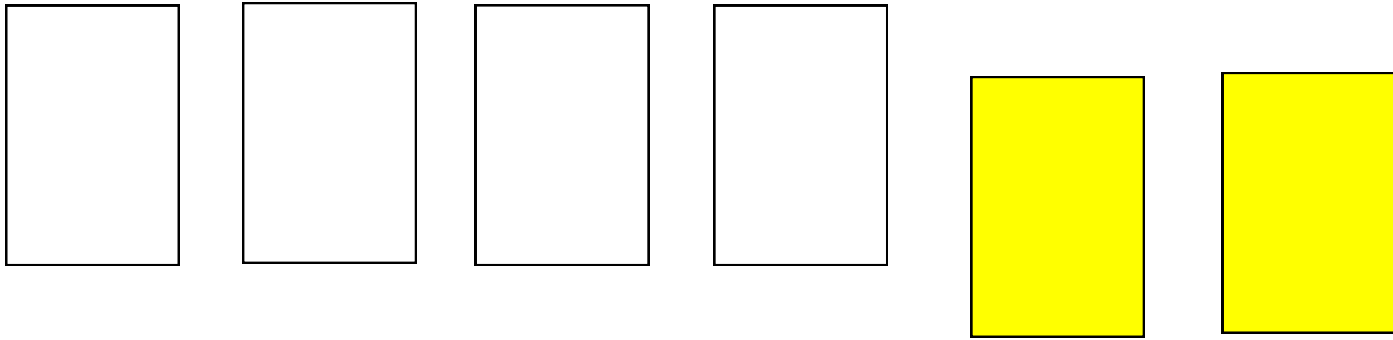
Find as many **different** ways to
compare the cards



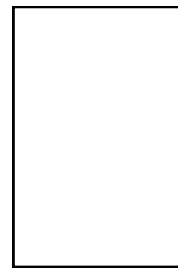
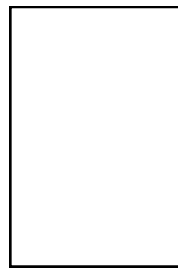
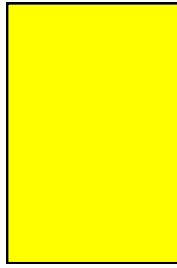
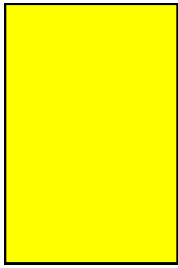
Example Pairs



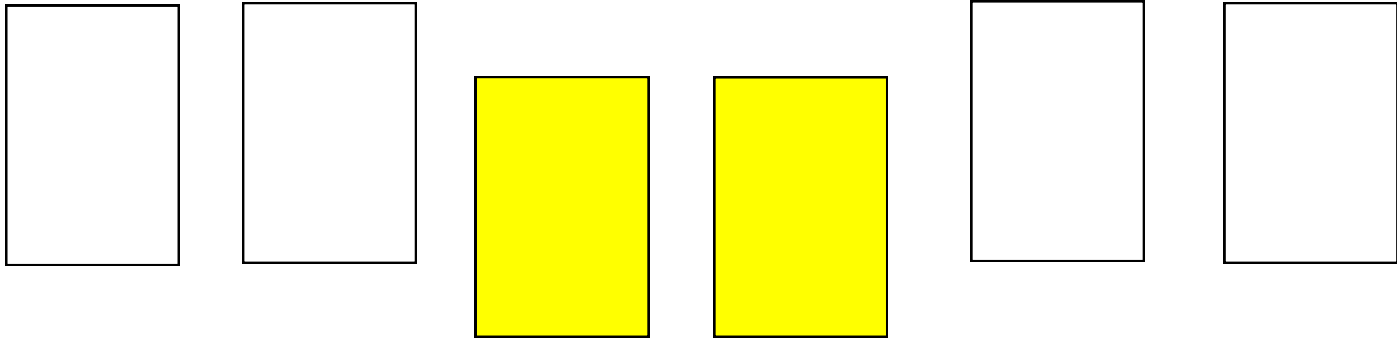
Example Pairs



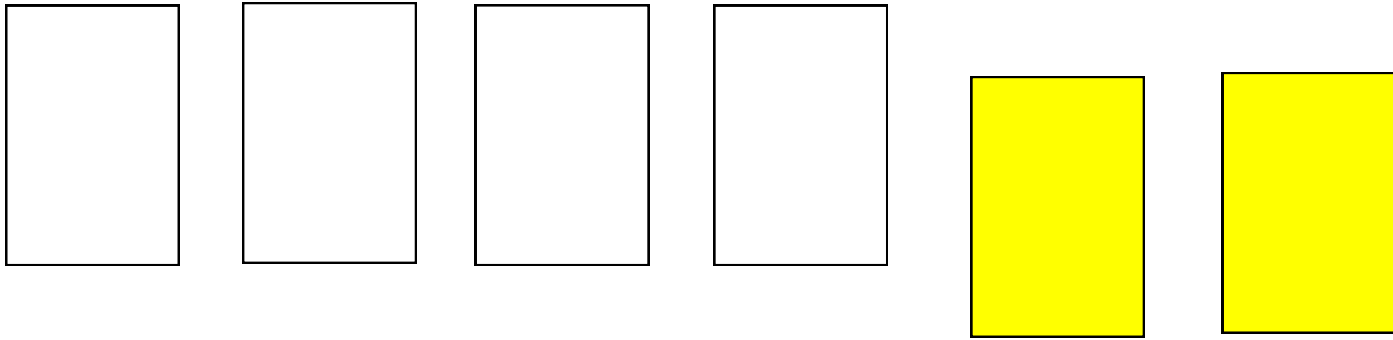
Example Pairs



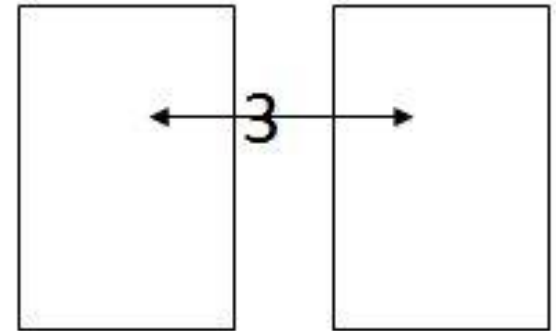
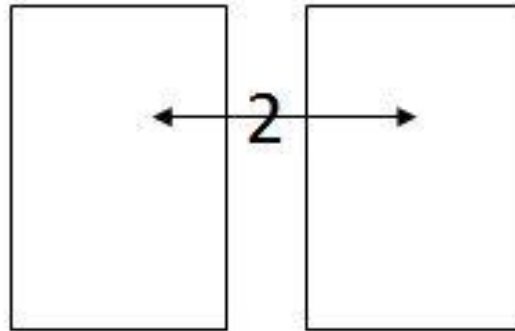
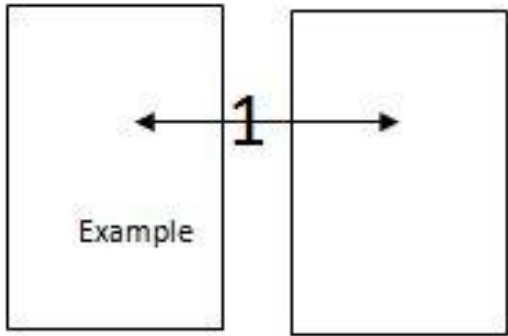
Example Pairs



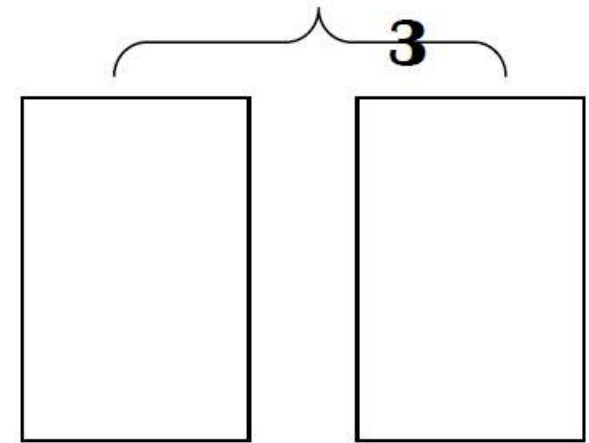
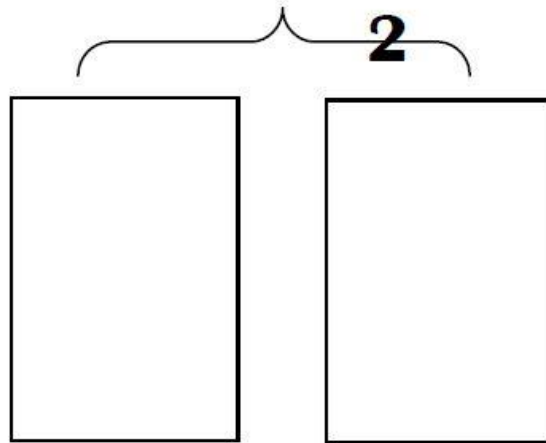
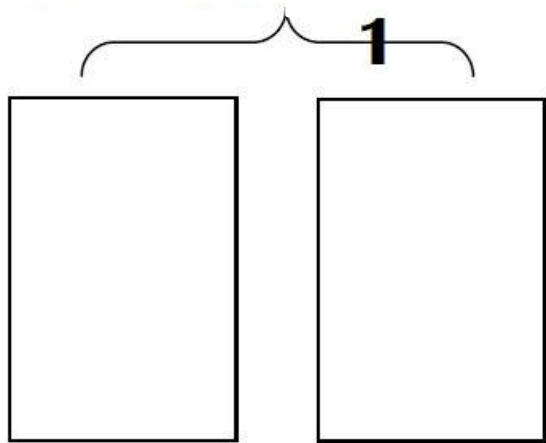
Example Pairs



Example Pairs



Ways to record

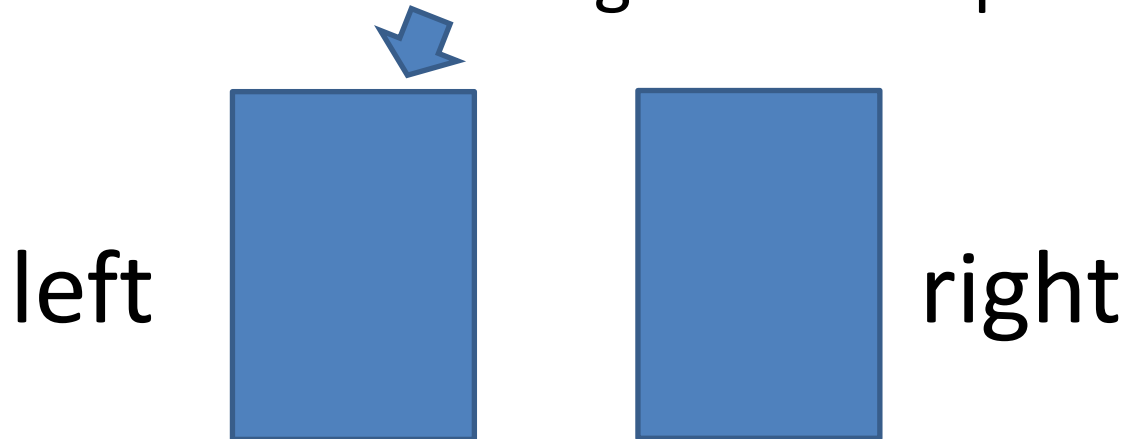


You can use same card more than once
You can do more than three compares
Card patterns can overlap

Sorting Rule

Rule

If the number on the left is greater swap the cards



Test each pattern on the sheet until it has sorted the numbers or looks like it will never sort the numbers. Record your findings on the sheet.