

# Soroban Technology Lab

## Dan Multiplication (7 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

(Note) Round to 3 decimal places

|    |                            |
|----|----------------------------|
| 1  | $989,187 \times 288 =$     |
| 2  | $803 \times 39,446.2 =$    |
| 3  | $0.00894 \times 3,618 =$   |
| 4  | $952.9 \times 0.00331 =$   |
| 5  | $62,068 \times 4,295 =$    |
| 6  | $35,016 \times 67,241 =$   |
| 7  | $6,880 \times 4,781.38 =$  |
| 8  | $44,298 \times 65.141 =$   |
| 9  | $157,622 \times 5,091 =$   |
| 10 | $15,063 \times 0.04065 =$  |
| 11 | $0.0536244 \times 9,248 =$ |
| 12 | $3,420 \times 5,739,987 =$ |
| 13 | $70,867 \times 880,354 =$  |
| 14 | $488.142 \times 0.12545 =$ |
| 15 | $695,709 \times 0.79748 =$ |

(Note) Round to the nearest integer

|    |                             |
|----|-----------------------------|
| 16 | $208,152 \times 52,233 =$   |
| 17 | $93,152 \times 191,725 =$   |
| 18 | $553.76 \times 500.873 =$   |
| 19 | $2,029 \times 0.0070836 =$  |
| 20 | $977.1845 \times 7,676 =$   |
| 21 | $849,748 \times 0.040573 =$ |
| 22 | $8,191,762 \times 66,019 =$ |
| 23 | $1,432,793 \times 14,295 =$ |
| 24 | $3.64114 \times 356,940 =$  |
| 25 | $912.3367 \times 0.00329 =$ |
| 26 | $64,725.8 \times 562,481 =$ |
| 27 | $57,499 \times 8,790.027 =$ |
| 28 | $599,668 \times 536.451 =$  |
| 29 | $21,844 \times 7,662,253 =$ |
| 30 | $79,749 \times 5,082,173 =$ |

# Soroban Technology Lab

Dan Division (7 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

(Note) Round to 3 decimal places

|    |                                |
|----|--------------------------------|
| 1  | $5,404.798 \div 869.2 =$       |
| 2  | $40,527,762 \div 5,286 =$      |
| 3  | $31,829,592 \div 604 =$        |
| 4  | $61.96993 \div 57.97 =$        |
| 5  | $2.9930889 \div 7.3482 =$      |
| 6  | $308,462.86 \div 3,310 =$      |
| 7  | $1.89987382 \div 0.32456 =$    |
| 8  | $396,852,246 \div 602 =$       |
| 9  | $349,792,128 \div 4,104 =$     |
| 10 | $35.5604844 \div 0.875874 =$   |
| 11 | $26,042.1346 \div 577.13 =$    |
| 12 | $5,266,178,218 \div 728,278 =$ |
| 13 | $137,272,376 \div 3,408.8 =$   |
| 14 | $9,617,101,176 \div 97,017 =$  |
| 15 | $894,138.7759 \div 901.3 =$    |

(Note) Round to the nearest integer

|    |                                   |
|----|-----------------------------------|
| 16 | $76,580,392 \div 2,395.1 =$       |
| 17 | $640,704 \div 0.7378 =$           |
| 18 | $1,159,612,012 \div 16,042 =$     |
| 19 | $1,944,070 \div 398.375 =$        |
| 20 | $1,470,457,620 \div 43,315 =$     |
| 21 | $29,378,161,227 \div 8,691 =$     |
| 22 | $18,178 \div 5.482187 =$          |
| 23 | $24,121,380,352 \div 37,952 =$    |
| 24 | $60,850,563,213 \div 7,715,299 =$ |
| 25 | $425,404 \div 0.83548 =$          |
| 26 | $36,175,150 \div 584.375 =$       |
| 27 | $97,281 \div 1.22953 =$           |
| 28 | $7,494,227,424 \div 4,688 =$      |
| 29 | $109,539 \div 0.84375 =$          |
| 30 | $2,155 \div 0.027362 =$           |

# Soroban Technology Lab

Dan Sums (7 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

| 1       | 2        | 3       | 4        | 5       | 6       | 7        |
|---------|----------|---------|----------|---------|---------|----------|
| 876,053 | 630      | 28,065  | 630,794  | 5,083   | 923,657 | 948,302  |
| 93,820  | -465,028 | 37,280  | -6,439   | 318,549 | 138,024 | -74,625  |
| 657     | 754      | 691     | 82,501   | 50,294  | 25,417  | 69,872   |
| 718,543 | 31,968   | 2,549   | 619      | 108     | 96,520  | -3,150   |
| 280     | -9,531   | 856,137 | 402      | 2,539   | 3,701   | 629,581  |
| 67,439  | 4,270    | 203,514 | 5,378    | 689,074 | 64,893  | 3,740    |
| 659,021 | -89,714  | 692,087 | 942      | 531,426 | 508,972 | 4,091    |
| 408     | 605,342  | 713     | -87,013  | 267     | 2,164   | 67,285   |
| 2,865   | 263      | 5,926   | 403,856  | 348     | 7,038   | 10,423   |
| 3,917   | 897,015  | 408     | -791,265 | 19,705  | 54,619  | -985,637 |
|         |          |         |          |         |         |          |

| 8       | 9        | 10      | 11        | 12         | 13        | 14        |
|---------|----------|---------|-----------|------------|-----------|-----------|
| 2,461   | 184,762  | 80,945  | 7,651,980 | 1,682      | 620,598   | 590,831   |
| 89,170  | -932,804 | 46,521  | 173,402   | 8,105      | 9,476     | 5,784     |
| 890,513 | -5,073   | 93,057  | 7,640     | 539,027    | 12,068    | 50,961    |
| 6,347   | 42,691   | 4,625   | 1,968,523 | 90,276     | 9,230,145 | 4,536     |
| 594,126 | 671,258  | 602,589 | 784,106   | 7,641,835  | 781,536   | 79,082    |
| 23,708  | 9,304    | 1,873   | 25,739    | -4,038,592 | 7,684     | 3,106     |
| 61,324  | 3,958    | 45,930  | 5,092,618 | 8,712,653  | 4,261,930 | 148,759   |
| 805,796 | -60,271  | 8,742   | 67,943    | -49,106    | 8,902,745 | 7,392,640 |
| 9,243   | 24,783   | 614,209 | 5,431     | 4,380      | 93,261    | 3,419,852 |
| 17,580  | 10,965   | 573,816 | 8,027     | -967,521   | 7,850     | 8,602,517 |
|         |          |         |           |            |           |           |

| 15         | 16         | 17          | 18         | 19          | 20         |
|------------|------------|-------------|------------|-------------|------------|
| 5,071,289  | 569,371    | 7,823       | 638,027    | 41,725      | 82,564,019 |
| -1,560,327 | 68,375,402 | 461,950     | 53,491     | -8,906,354  | 17,450     |
| 2,460      | 1,590      | 6,845,072   | 84,520,713 | 7,193,280   | 1,642      |
| 18,745     | 7,432      | -9,412,738  | 79,065,184 | 8,632       | 143,296    |
| -291,403   | 60,215     | 36,195      | 953,620    | 5,740       | 7,935,018  |
| 6,539      | 96,032,584 | 850,749     | 8,361,247  | 954,016     | 5,476,209  |
| 7,805      | 8,497,210  | 2,061       | 9,564      | 20,697,138  | 37,182     |
| 7,836,142  | 9,716,385  | 40,356,982  | 2,317,480  | 538,469     | 36,108,954 |
| -25,963    | 459,031    | -14,079,536 | 2,306      | -24,187     | 5,670      |
| 409,178    | 74,628     | -27,183     | 89,715     | -73,152,096 | 843,921    |
|            |            |             |            |             |            |

| 21          | 22           | 23          | 24          | 25           |
|-------------|--------------|-------------|-------------|--------------|
| 56,043      | 9,230        | 9,517,806   | 3,042       | 2,870        |
| 765,349,280 | 845,692      | 20,746,938  | 4,375       | 21,504,963   |
| 47,981,362  | 7,016        | 34,190,786  | 634,251,709 | -89,763,401  |
| 6,107,425   | -74,256,803  | 23,659      | 2,780,356   | 98,752       |
| 807,456,293 | 92,367,510   | 6,017       | 598,167     | 7,830        |
| 85,049      | 4,813,059    | 81,540      | 894,305,216 | -51,296      |
| 123,568     | 489,672,135  | 958,762     | 39,074      | 5,987,124    |
| 4,719       | 21,483       | 263,475,980 | 84,912      | 143,067      |
| 40,361,927  | -90,876      | 640,953,821 | 58,902,763  | 416,508,932  |
| 5,308       | -541,306,297 | 1,437       | 40,351,627  | -263,789,045 |
|             |              |             |             |              |

| 26          | 27           | 28          | 29           | 30          |
|-------------|--------------|-------------|--------------|-------------|
| 3,407,192   | 734,092,581  | 321,570     | 1,043        | 90,635      |
| 940,751     | -26,501,873  | 17,983,405  | 50,684,739   | 3,019       |
| 21,453,960  | -412,069,785 | 2,853       | -39,542,180  | 28,375      |
| 967,318,245 | 153,028      | 798,421,605 | -76,891      | 85,673,210  |
| 79,083      | 4,970        | 94,230      | 945,687      | 43,250,968  |
| 71,285,309  | 98,526       | 913,502,748 | 1,023        | 507,316,294 |
| 9,642       | -24,317      | 1,854,076   | 7,106,492    | 243,109,678 |
| 153,827,406 | 6,479,031    | 17,962      | 83,251       | 5,187       |
| 61,894      | 2,958        | 39,745,286  | 208,934,675  | 146,539     |
| 5,730       | 53,647,810   | 3,018       | -190,863,547 | 9,804,762   |
|             |              |             |              |             |

## Soroban Technology Lab

Dan Receipts (7 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

|    |  |
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| 30 |  |

| Dan Receipts<br>(7 min)                                                                            |                                                                                                    |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <div><div>(1)</div><div><div><div><div></div></div></div><div><div>184,536</div></div></div></div> | <div><div>2</div></div>                                                                            |
| <div><div>(2)</div><div><div><div><div></div></div></div><div><div>1,097</div></div></div></div>   |                                                                                                    |
| <div><div>(3)</div><div><div><div><div></div></div></div><div><div>736,024</div></div></div></div> |                                                                                                    |
| <div><div>(4)</div><div><div><div><div></div></div></div><div><div>510,326</div></div></div></div> |                                                                                                    |
| <div><div>(5)</div><div><div><div><div></div></div></div><div><div>960,145</div></div></div></div> |                                                                                                    |
|                                                                                                    | <div><div>1</div></div>                                                                            |
| <div><div>(1)</div><div><div><div><div></div></div></div><div><div>51,978</div></div></div></div>  | <div><div>(1)</div><div><div><div><div></div></div></div><div><div>6,901</div></div></div></div>   |
| <div><div>(2)</div><div><div><div><div></div></div></div><div><div>72,186</div></div></div></div>  | <div><div>(2)</div><div><div><div><div></div></div></div><div><div>825,179</div></div></div></div> |
| <div><div>(3)</div><div><div><div><div></div></div></div><div><div>9,240</div></div></div></div>   | <div><div>(3)</div><div><div><div><div></div></div></div><div><div>3,852</div></div></div></div>   |
| <div><div>(4)</div><div><div><div><div></div></div></div><div><div>7,862</div></div></div></div>   | <div><div>(4)</div><div><div><div><div></div></div></div><div><div>24,798</div></div></div></div>  |
| <div><div>(5)</div><div><div><div><div></div></div></div><div><div>6,759</div></div></div></div>   | <div><div>(5)</div><div><div><div><div></div></div></div><div><div>12,580</div></div></div></div>  |

Dan Receipts (7 min)

| 6   |                | 4                  |
|-----|----------------|--------------------|
| (1) | <u>2,375</u>   | (1) <u>876,254</u> |
| (2) | <u>3,850</u>   | (2) <u>324,769</u> |
| (3) | <u>926,845</u> | (3) <u>705,124</u> |
| (4) | <u>486,250</u> | (4) <u>108,437</u> |
| (5) | <u>53,914</u>  | (5) <u>4,271</u>   |
| 7   |                | 5                  |
| (1) | <u>706,429</u> | (1) <u>10,823</u>  |
| (2) | <u>50,314</u>  | (2) <u>246,135</u> |
| (3) | <u>39,612</u>  | (3) <u>78,519</u>  |
| (4) | <u>7,495</u>   | (4) <u>59,746</u>  |
| (5) | <u>368,709</u> | (5) <u>2,083</u>   |

|                                                   |         |
|---------------------------------------------------|---------|
|                                                   | 8       |
| (1)                                               | 4,036   |
| (2)                                               | 9,408   |
| (3)                                               | 7,301   |
| (4)                                               | 5,019   |
| (5)                                               | 982,374 |
| <div>The next pages are questions (6)–(10).</div> |         |
|                                                   | 9       |
| (6)                                               | 4,539   |
| (7)                                               | 258,619 |
| (8)                                               | 75,423  |
| (9)                                               | 82,640  |
| (10)                                              | 683,127 |
|                                                   | 10      |
| (6)                                               | 92,681  |
| (7)                                               | 4,532   |
| (8)                                               | 4,806   |
| (9)                                               | 24,798  |
| (10)                                              | 48,539  |

Dan Receipts (7 min)

|      |                |      |                |
|------|----------------|------|----------------|
| 13   |                | 11   |                |
| (6)  | <u>2,709</u>   | (6)  | <u>126,578</u> |
| (7)  | <u>4,761</u>   | (7)  | <u>1,965</u>   |
| (8)  | <u>607,359</u> | (8)  | <u>89,137</u>  |
| (9)  | <u>4,912</u>   | (9)  | <u>509,317</u> |
| (10) | <u>305,764</u> | (10) | <u>6,815</u>   |
| 14   |                | 12   |                |
| (6)  | <u>73,825</u>  | (6)  | <u>345</u>     |
| (7)  | <u>703,254</u> | (7)  | <u>890</u>     |
| (8)  | <u>832</u>     | (8)  | <u>6,041</u>   |
| (9)  | <u>93,065</u>  | (9)  | <u>1,248</u>   |
| (10) | <u>10,829</u>  | (10) | <u>29,147</u>  |

Dan Receipts (7 min)

|      |               |      |                |
|------|---------------|------|----------------|
| 17   |               | 15   |                |
| (6)  | <u>6,045</u>  | (6)  | <u>80,341</u>  |
| (7)  | <u>26,089</u> | (7)  | <u>871</u>     |
| (8)  | <u>9,650</u>  | (8)  | <u>874,695</u> |
| (9)  | <u>658</u>    | (9)  | <u>730,658</u> |
| (10) | <u>6,730</u>  | (10) | <u>904</u>     |
| 18   |               | 16   |                |
| (6)  | <u>650</u>    | (6)  | <u>401,763</u> |
| (7)  | <u>63,902</u> | (7)  | <u>50,738</u>  |
| (8)  | <u>341</u>    | (8)  | <u>30,126</u>  |
| (9)  | <u>503</u>    | (9)  | <u>3,476</u>   |
| (10) | <u>1,079</u>  | (10) | <u>583</u>     |

|      |                                                       |                                                     |
|------|-------------------------------------------------------|-----------------------------------------------------|
| 20   |                                                       | <div>The next pages are questions (11)–(15).</div>  |
| (11) | <div><div></div><div>17,245</div><div></div></div>    |                                                     |
| (12) | <div><div></div><div>2,934,786</div><div></div></div> |                                                     |
| (13) | <div><div></div><div>75,180</div><div></div></div>    |                                                     |
| (14) | <div><div></div><div>50,418</div><div></div></div>    |                                                     |
| (15) | <div><div></div><div>4,871,603</div><div></div></div> |                                                     |
| 21   |                                                       | 19                                                  |
| (11) | <div><div></div><div>836,154</div><div></div></div>   | <div><div></div><div>35,408</div><div></div></div>  |
| (12) | <div><div></div><div>8,354</div><div></div></div>     | <div><div></div><div>657,423</div><div></div></div> |
| (13) | <div><div></div><div>526</div><div></div></div>       | <div><div></div><div>523</div><div></div></div>     |
| (14) | <div><div></div><div>9,013,286</div><div></div></div> | <div><div></div><div>72,945</div><div></div></div>  |
| (15) | <div><div></div><div>59,164</div><div></div></div>    | <div><div></div><div>571</div><div></div></div>     |

Dan Receipts (7 min)

|      |                  |      |                |
|------|------------------|------|----------------|
| 24   |                  | 22   |                |
| (11) | <u>8,071,953</u> | (11) | <u>762</u>     |
| (12) | <u>98,072</u>    | (12) | <u>891</u>     |
| (13) | <u>123,407</u>   | (13) | <u>921,083</u> |
| (14) | <u>415</u>       | (14) | <u>472</u>     |
| (15) | <u>63,074</u>    | (15) | <u>902,746</u> |
| 25   |                  | 23   |                |
| (11) | <u>9,860</u>     | (11) | <u>591</u>     |
| (12) | <u>120</u>       | (12) | <u>501,268</u> |
| (13) | <u>2,639</u>     | (13) | <u>4,758</u>   |
| (14) | <u>3,872</u>     | (14) | <u>486,503</u> |
| (15) | <u>5,670,923</u> | (15) | <u>435</u>     |

|                                                    |                  |                       |
|----------------------------------------------------|------------------|-----------------------|
| 28                                                 |                  | 26                    |
| (11)                                               | <u>4,056</u>     | (11) <u>9,310,728</u> |
| (12)                                               | <u>4,960,715</u> | (12) <u>7,501</u>     |
| (13)                                               | <u>8,709,146</u> | (13) <u>94,261</u>    |
| (14)                                               | <u>956,014</u>   | (14) <u>1,267</u>     |
| (15)                                               | <u>4,280</u>     | (15) <u>238,197</u>   |
| <div>The next pages are questions (16)–(20).</div> |                  | 27                    |
|                                                    |                  | (11) <u>146,879</u>   |
|                                                    |                  | (12) <u>94,362</u>    |
|                                                    |                  | (13) <u>2,035,619</u> |
|                                                    |                  | (14) <u>5,319,640</u> |
|                                                    |                  | (15) <u>2,915</u>     |

Dan Receipts (7 min)

|      |                  |      |                  |
|------|------------------|------|------------------|
| 31   |                  | 29   |                  |
| (16) | <u>3,860,714</u> | (16) | <u>64,902</u>    |
| (17) | <u>2,406</u>     | (17) | <u>7,283</u>     |
| (18) | <u>1,580,439</u> | (18) | <u>983,524</u>   |
| (19) | <u>6,718,429</u> | (19) | <u>87,260</u>    |
| (20) | <u>4,609,852</u> | (20) | <u>37,926</u>    |
| 32   |                  | 30   |                  |
| (16) | <u>7,456</u>     | (16) | <u>301,578</u>   |
| (17) | <u>7,684,012</u> | (17) | <u>84,392</u>    |
| (18) | <u>471,906</u>   | (18) | <u>8,372</u>     |
| (19) | <u>5,079,346</u> | (19) | <u>8,502,631</u> |
| (20) | <u>5,028,417</u> | (20) | <u>920,473</u>   |

Dan Receipts (7 min)

|      |                  |      |                  |
|------|------------------|------|------------------|
| 35   |                  | 33   |                  |
| (16) | <u>264,087</u>   | (16) | <u>96,385</u>    |
| (17) | <u>940,671</u>   | (17) | <u>6,028,594</u> |
| (18) | <u>85,471</u>    | (18) | <u>7,028,695</u> |
| (19) | <u>928,106</u>   | (19) | <u>5,132</u>     |
| (20) | <u>5,901</u>     | (20) | <u>843,761</u>   |
| 36   |                  | 34   |                  |
| (16) | <u>2,058,491</u> | (16) | <u>8,231</u>     |
| (17) | <u>57,814</u>    | (17) | <u>5,719</u>     |
| (18) | <u>8,240</u>     | (18) | <u>3,904,167</u> |
| (19) | <u>560,927</u>   | (19) | <u>1,845</u>     |
| (20) | <u>4,219,786</u> | (20) | <u>9,015</u>     |

|                                                                                     |  |    |                        |
|-------------------------------------------------------------------------------------|--|----|------------------------|
| <div><div></div><div>The next pages are questions (21)–(25).</div><div></div></div> |  | 37 | (16) <u>7,145,630</u>  |
|                                                                                     |  |    | (17) <u>5,632,980</u>  |
|                                                                                     |  |    | (18) <u>5,624</u>      |
|                                                                                     |  |    | (19) <u>14,078</u>     |
|                                                                                     |  |    | (20) <u>1,348</u>      |
|                                                                                     |  | 38 | (16) <u>3,925</u>      |
|                                                                                     |  |    | (17) <u>105,763</u>    |
|                                                                                     |  |    | (18) <u>31,065</u>     |
|                                                                                     |  |    | (19) <u>5,947</u>      |
|                                                                                     |  |    | (20) <u>35,180</u>     |
|                                                                                     |  | 39 | (21) <u>8,349</u>      |
|                                                                                     |  |    | (22) <u>6,354</u>      |
|                                                                                     |  |    | (23) <u>63,408,795</u> |
|                                                                                     |  |    | (24) <u>28,470,631</u> |
|                                                                                     |  |    | (25) <u>20,596,418</u> |

Dan Receipts (7 min)

|      |                   |      |                   |
|------|-------------------|------|-------------------|
| 42   |                   | 40   |                   |
| (21) | <u>3,079</u>      | (21) | <u>57,601,824</u> |
| (22) | <u>69,104</u>     | (22) | <u>6,981,423</u>  |
| (23) | <u>7,814</u>      | (23) | <u>7,095,314</u>  |
| (24) | <u>352,094</u>    | (24) | <u>38,957</u>     |
| (25) | <u>8,514</u>      | (25) | <u>5,389</u>      |
| 43   |                   | 41   |                   |
| (21) | <u>856,134</u>    | (21) | <u>30,975,641</u> |
| (22) | <u>90,854,631</u> | (22) | <u>18,302,675</u> |
| (23) | <u>5,948,607</u>  | (23) | <u>478,263</u>    |
| (24) | <u>8,047,259</u>  | (24) | <u>4,861,529</u>  |
| (25) | <u>873,690</u>    | (25) | <u>783,246</u>    |

Dan Receipts (7 min)

|      |                  |      |                   |
|------|------------------|------|-------------------|
| 46   |                  | 44   |                   |
| (21) | <u>7,430,825</u> | (21) | <u>67,201</u>     |
| (22) | <u>247,615</u>   | (22) | <u>2,079,354</u>  |
| (23) | <u>692,350</u>   | (23) | <u>10,782</u>     |
| (24) | <u>7,638</u>     | (24) | <u>615,903</u>    |
| (25) | <u>97,301</u>    | (25) | <u>96,045,721</u> |
| 47   |                  | 45   |                   |
| (21) | <u>5,062,198</u> | (21) | <u>614,392</u>    |
| (22) | <u>391,782</u>   | (22) | <u>1,580</u>      |
| (23) | <u>51,432</u>    | (23) | <u>87,436,521</u> |
| (24) | <u>78,145</u>    | (24) | <u>78,306,419</u> |
| (25) | <u>9,136,427</u> | (25) | <u>5,603,198</u>  |

|      |                   |                                                    |               |
|------|-------------------|----------------------------------------------------|---------------|
| 49   |                   | 48                                                 |               |
| (26) | <u>83,659,270</u> | (21)                                               | <u>27,935</u> |
| (27) | <u>890,467</u>    | (22)                                               | <u>89,027</u> |
| (28) | <u>8,120,659</u>  | (23)                                               | <u>3,085</u>  |
| (29) | <u>84,176</u>     | (24)                                               | <u>6,410</u>  |
| (30) | <u>75,693,841</u> | (25)                                               | <u>70,294</u> |
| 50   |                   | <div>The next pages are questions (26)–(30).</div> |               |
| (26) | <u>9,108,523</u>  |                                                    |               |
| (27) | <u>3,914</u>      |                                                    |               |
| (28) | <u>589,174</u>    |                                                    |               |
| (29) | <u>1,653</u>      |                                                    |               |
| (30) | <u>3,905,684</u>  |                                                    |               |

Dan Receipts (7 min)

|      |                   |      |                   |
|------|-------------------|------|-------------------|
| 53   |                   | 51   |                   |
| (26) | <u>3,857</u>      | (26) | <u>12,087</u>     |
| (27) | <u>2,905,637</u>  | (27) | <u>846,371</u>    |
| (28) | <u>4,082</u>      | (28) | <u>62,340</u>     |
| (29) | <u>157,469</u>    | (29) | <u>12,793,045</u> |
| (30) | <u>479,162</u>    | (30) | <u>90,346</u>     |
| 54   |                   | 52   |                   |
| (26) | <u>16,025,439</u> | (26) | <u>364,721</u>    |
| (27) | <u>48,901</u>     | (27) | <u>29,013,758</u> |
| (28) | <u>26,107,359</u> | (28) | <u>8,976,154</u>  |
| (29) | <u>279,108</u>    | (29) | <u>60,923</u>     |
| (30) | <u>725,081</u>    | (30) | <u>5,218,637</u>  |

Dan Receipts (7 min)

|      |                   |      |                   |
|------|-------------------|------|-------------------|
| 57   |                   | 55   |                   |
| (26) | <u>1,849,605</u>  | (26) | <u>3,546</u>      |
| (27) | <u>53,216</u>     | (27) | <u>80,576,234</u> |
| (28) | <u>70,348,125</u> | (28) | <u>63,917</u>     |
| (29) | <u>8,402,536</u>  | (29) | <u>8,697,342</u>  |
| (30) | <u>85,170</u>     | (30) | <u>9,206</u>      |
| 58   |                   | 56   |                   |
| (26) | <u>680,347</u>    | (26) | <u>16,427</u>     |
| (27) | <u>2,058</u>      | (27) | <u>9,367,452</u>  |
| (28) | <u>9,536</u>      | (28) | <u>785,403</u>    |
| (29) | <u>5,240</u>      | (29) | <u>80,175,923</u> |
| (30) | <u>4,325</u>      | (30) | <u>23,061,789</u> |

## Soroban Technology Lab

Dan Mental Calculation (3 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

### (A) Mental Sums

| 1     | 2     | 3     | 4      | 5     | 6      | 7     |
|-------|-------|-------|--------|-------|--------|-------|
| 598   | 7,864 | 189   | 1,620  | 1,486 | 7,406  | 8,629 |
| 3,206 | -359  | 647   | 956    | 860   | 654    | 315   |
| 914   | 710   | 320   | 347    | 327   | -1,870 | 7,098 |
| 879   | -867  | 8,603 | -2,476 | 8,491 | -2,936 | 6,243 |
| 365   | 904   | 125   | -398   | 4,685 | 617    | 480   |
| 2,104 | 3,521 | 4,987 | 510    | 317   | -2,059 | 635   |
|       |       |       |        | 5,290 | 438    | 2,179 |
|       |       |       |        |       |        |       |

| 8      | 9     | 10    | 11     | 12     | 13     | 14      |
|--------|-------|-------|--------|--------|--------|---------|
| 9,657  | 2,319 | 2,963 | 598    | 428    | 926    | 79,321  |
| 8,426  | 4,580 | 8,752 | 817    | -374   | 1,462  | -6,038  |
| 901    | 926   | 419   | 984    | 2,965  | 20,816 | 513     |
| -7,345 | 9,860 | 2,753 | 7,563  | 180    | 7,598  | -60,894 |
| -6,218 | 5,174 | 1,840 | 1,807  | 84,036 | 634    | -2,357  |
| 190    | 302   | 695   | 25,631 | -9,342 | 16,082 | 791     |
| 8,435  | 3,681 | 8,130 | 46,095 | 3,175  | 5,709  | 34,206  |
| -2,670 | 4,597 | 7,264 | 3,712  | -8,754 | 4,230  | 628     |
|        |       |       | 8,904  | 21,690 | 173    | 4,903   |
|        |       |       |        |        | 56,498 | 8,175   |
|        |       |       |        |        |        |         |

### (B) Mental Multiplication

(Note) Round down to the nearest integer

|    |                        |
|----|------------------------|
| 15 | $19 \times 92 =$       |
| 16 | $31 \times 14 =$       |
| 17 | $0.21 \times 413 =$    |
| 18 | $948 \times 73 =$      |
| 19 | $406 \times 8.52 =$    |
| 20 | $748 \times 374 =$     |
| 21 | $8,647 \times 0.374 =$ |
| 22 | $7,826 \times 4,630 =$ |

### (C) Mental Division

(Note) Round down to the nearest integer

|    |                        |
|----|------------------------|
| 23 | $1,917 \div 27 =$      |
| 24 | $7,980 \div 84 =$      |
| 25 | $16,744 \div 92 =$     |
| 26 | $23.6 \div 0.843 =$    |
| 27 | $737,408 \div 823 =$   |
| 28 | $3,071 \div 4.08 =$    |
| 29 | $1,828,485 \div 537 =$ |
| 30 | $13,389 \div 3.175 =$  |

## Soroban Technology Lab

Dan Roots (7 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

### Square Root

(Note) Round to the place shown at the right

|    |                          |            |
|----|--------------------------|------------|
| 1  | $\sqrt{3,710,393,569} =$ | Integer    |
| 2  | $\sqrt{0.00444889} =$    | 4 decimals |
| 3  | $\sqrt{21.9961} =$       | 3 decimals |
| 4  | $\sqrt{93,026,025} =$    | Integer    |
| 5  | $\sqrt{83,521} =$        | Integer    |
| 6  | $\sqrt{19,598,329} =$    | Integer    |
| 7  | $\sqrt{576} =$           | 1 decimals |
| 8  | $\sqrt{126,736} =$       | Integer    |
| 9  | $\sqrt{33,558,849} =$    | Integer    |
| 10 | $\sqrt{12.3201} =$       | 2 decimals |
| 11 | $\sqrt{4,405,801} =$     | Integer    |
| 12 | $\sqrt{3,271.958424} =$  | 3 decimals |
| 13 | $\sqrt{1,088,661,117} =$ | Integer    |
| 14 | $\sqrt{2,379,449,950} =$ | Integer    |
| 15 | $\sqrt{0.19758025} =$    | 5 decimals |
| 16 | $\sqrt{253,331.0224} =$  | 2 decimals |
| 17 | $\sqrt{15.24199681} =$   | 4 decimals |
| 18 | $\sqrt{0.5736244644} =$  | 5 decimals |
| 19 | $\sqrt{44,638,632.66} =$ | 1 decimals |
| 20 | $\sqrt{1,479,708,051} =$ | Integer    |

### Cube Root

(Note) Round to the place shown at the right

|    |                               |            |
|----|-------------------------------|------------|
| 21 | $\sqrt[3]{539,428,520} =$     | Integer    |
| 22 | $\sqrt[3]{319,732.872472} =$  | 2 decimals |
| 23 | $\sqrt[3]{864,574,909.078} =$ | 1 decimals |
| 24 | $\sqrt[3]{957.519340096} =$   | 3 decimals |
| 25 | $\sqrt[3]{19,042,103} =$      | Integer    |
| 26 | $\sqrt[3]{116,930,169} =$     | Integer    |
| 27 | $\sqrt[3]{0.037933056} =$     | 3 decimals |
| 28 | $\sqrt[3]{0.000001124864} =$  | 4 decimals |
| 29 | $\sqrt[3]{54,010.152} =$      | 1 decimals |
| 30 | $\sqrt[3]{258,718.390848} =$  | 2 decimals |

# Soroban Technology Lab

## Dan Applied Calculation (10 min)

|      |  |       |  |
|------|--|-------|--|
| No.  |  | Name  |  |
| Date |  | Score |  |

- (1) Find the missing number.

$$291,500 \div (826 + 549) \times 150 = \square$$

Answer

- (2) Find the missing number.

$$125,736 \div \square - 250 = 153$$

Answer

Fill in the blanks in the table below. The consumption tax rate is 10%. (Round the selling price and the price with tax down to the nearest yen.)

| List price (yen) | Discount rate (%) | Selling price (yen) | Price with tax (yen) |
|------------------|-------------------|---------------------|----------------------|
| 701,780          | 44                | /                   | (3)                  |
| 560,260          | 17                | (4)                 | /                    |
| 194,500          | (5)               | /                   | 145,486              |
| (6)              | 28                | /                   | 403,920              |

- (7) 14,000 shares were sold at ¥286 per share. What are the net proceeds? A commission of 0.700% of the gross amount plus ¥12,500 is paid.

Answer

- (8) Melon juice and carbonated water are mixed in the ratio 20:6 to make melon soda. If 368 mL of carbonated water is used, how many mL of melon juice are needed?

Answer

- (9) ¥740,000 is borrowed for 8 years 8 months. At 8.1% simple interest per year, how much is the interest? (Round to the nearest yen.)

Answer

- (10) At station A, trains leave every 14 minutes and buses every 8 minutes. A train and a bus left at 8 a.m. At what time will a train and a bus next leave together?

Answer

- (11) Product A's output was 35,700 units last year and 28,410 units this year. What percentage of last year's output is this year's? (Round the percentage to one decimal place.)

Answer

- (12) A 2.9% coupon bond with a face value of ¥600,000 is bought at a market price of ¥101.40. What is the amount paid? The accrued interest covers 33 days. (Round the accrued interest down to the nearest yen.)

Answer

- (13) What is the area, in cm<sup>2</sup>, of a trapezium whose parallel sides are 58 cm and 34 cm and whose height is 6 cm?

Answer

## Dan Applied Calculation (10 min)

- (14) An item listed at ¥45,900 was sold at 35% off the list price. What is the total price including consumption tax? The consumption tax rate is 10%. (Round the tax down to the nearest yen.)

Answer

- (20) Last month a product had sales of ¥71,400, and this month's sales were a decrease of 16.8% on that. What were this month's sales? (Round the decrease to the nearest yen.)

Answer

- (15) ¥560,000 is borrowed for 5 years 3 months. At 3.4% simple interest per year, how much is repaid in principal and interest? (Round the interest to the nearest yen.)

Answer

- (21) ¥840,000 is borrowed for 72 days. At 5.8% simple interest per year, how much is the interest? (Round to the nearest yen.)

Answer

- (16) Goods bought for ¥523,600 are to be sold at 23% off the list price and still yield a profit of 45% of the cost. What should the list price be?

Answer

- (22) ¥830,000 is borrowed for 12 years at 8% per year, compounded annually. What is the maturity value? (Round to the nearest yen.)

From the Compound Amount table

8%, 12 periods 2.51817012

From the Present Value table

8%, 12 periods 0.39711376

Answer

- (17) 42/.5 km/h is how many metres per second? (Round the metres to one decimal place.)

Answer

- (23) A debt of ¥620,000 due in 3 years is discounted at 3.5% per year, compounded annually. How much is it if paid now? (Round up to the nearest ¥100.)

From the Compound Amount table

3.5%, 3 periods 1.10871788

From the Present Value table

3.5%, 3 periods 0.90194271

Answer

- (18) An item was given a list price with a profit of 32% on the cost, then sold at 35% off the list price, giving a loss of ¥91,732. What was the cost of the item?

Answer

- (19) 39 items at \$8.66 each were bought. Paying in yen, how much is it? Take \$1 = ¥102. (Round up to the nearest yen.)

Answer

## Dan Applied Calculation (10 min)

- (24) A fixed asset costing ¥637,000, with a useful life of 8 years, is depreciated by the straight-line method. What is the accumulated depreciation at the end of period 6? (The accounts are closed once a year and a residual book value of ¥/ is kept. Round each period's depreciation limit down to the nearest yen.)

From the straight-line depreciation rate table (acquired on or after / April 2007)

Useful life 8 years 0.056

Answer

- (25) ¥4,978,000 is borrowed at 7% per year, compounded semiannually, and repaid in equal instalments at the end of each half-year over 4 years. What is the annuity payment for each period? (Round to the nearest yen.)

From the Annuity Payment table

7%, 4 periods 0.295228/2

3.5%, 8 periods 0.14547665

Answer

- (26) ¥309,000 is deposited for 3 years / month at 3% per year, compounded annually. What is the maturity value? The fractional period earns simple interest, and amounts under ¥/00 earn no interest in any period.

Answer

- (27) A debt is repaid by ¥950,000 at the end of each half-year for 5 years. How much would settle it in one payment now? Interest is 5% per year, compounded semiannually. (Round to the nearest yen.)

From the Present Value of an Annuity table

2.5%, 9 periods 7.97086553

2.5%, 10 periods 8.75206393

2.5%, 11 periods 9.51420871

Answer

- (28) ¥2,400,000 is borrowed for 4 years at 4% per year, compounded semiannually. What is the interest due at maturity? (Round to the nearest yen.)

From the Compound Amount table

4%, 4 periods 1.16985856

2%, 8 periods 1.17165938

Answer

- (29) A fixed asset costing ¥907,000, with a useful life of 28 years, is depreciated by the declining-balance method. What is the book value at the start of period 3? (The accounts are closed once a year and a residual book value of ¥/ is kept. Round each period's depreciation limit down to the nearest yen.)

From the 200% declining-balance depreciation rate table (acquired on or after / April 20/2)

Useful life 28 years 0.071

Answer

- (30) ¥480,000 is paid at the end of each year for 12 years. What is the amount of the annuity? Interest is 8% per year, compounded annually. (Round to the nearest yen.)

From the Amount of an Annuity table

8%, 11 periods 16.64548746

8%, 12 periods 18.97712646

8%, 13 periods 21.49529658

Answer

## Answers Dan

### Multiplication

|    |               |    |                |    |                 |
|----|---------------|----|----------------|----|-----------------|
| 1  | 284,885,856   | 11 | 495.918        | 21 | 34,477          |
| 2  | 31,675,298.6  | 12 | 19,630,755,540 | 22 | 540,811,935,478 |
| 3  | 32.345        | 13 | 62,388,046,918 | 23 | 20,481,775,935  |
| 4  | 3.154         | 14 | 61.237         | 24 | 1,299,669       |
| 5  | 266,582,060   | 15 | 554,814.013    | 25 | 3               |
| 6  | 2,354,510,856 | 16 | 10,872,403,416 | 26 | 36,407,032,710  |
| 7  | 32,895,894.4  | 17 | 17,859,567,200 | 27 | 505,417,762     |
| 8  | 2,885,616.018 | 18 | 277,363        | 28 | 321,692,498     |
| 9  | 802,453,602   | 19 | 14             | 29 | 167,374,254,532 |
| 10 | 612.311       | 20 | 7,500,868      | 30 | 405,298,214,577 |

### Division

|   |        |    |         |    |         |    |           |    |           |
|---|--------|----|---------|----|---------|----|-----------|----|-----------|
| 1 | 6.218  | 7  | 5.854   | 13 | 40,270  | 19 | 4,880     | 25 | 509,173   |
| 2 | 7,667  | 8  | 659,223 | 14 | 99,128  | 20 | 33,948    | 26 | 61,904    |
| 3 | 52,698 | 9  | 85,232  | 15 | 992.055 | 21 | 3,380,297 | 27 | 79,120    |
| 4 | 1.069  | 10 | 40.6    | 16 | 31,974  | 22 | 3,316     | 28 | 1,598,598 |
| 5 | 0.407  | 11 | 45.124  | 17 | 868,398 | 23 | 635,576   | 29 | 129,824   |
| 6 | 93.191 | 12 | 7,231   | 18 | 72,286  | 24 | 7,887     | 30 | 78,759    |

### Sums

|   |           |    |             |    |               |    |               |
|---|-----------|----|-------------|----|---------------|----|---------------|
| 1 | 2,423,003 | 9  | -50,427     | 17 | 25,041,375    | 25 | 90,649,796    |
| 2 | 975,969   | 10 | 2,072,307   | 18 | 176,011,347   | 26 | 1,218,389,212 |
| 3 | 1,827,370 | 11 | 15,785,409  | 19 | -52,643,637   | 27 | 355,882,929   |
| 4 | 239,775   | 12 | 11,942,739  | 20 | 133,133,361   | 28 | 1,771,946,753 |
| 5 | 1,617,393 | 13 | 23,927,293  | 21 | 1,667,530,974 | 29 | 37,274,292    |
| 6 | 1,825,005 | 14 | 20,298,068  | 22 | -27,917,851   | 30 | 889,428,667   |
| 7 | 669,882   | 15 | 11,474,465  | 23 | 969,956,746   |    |               |
| 8 | 2,500,268 | 16 | 183,793,848 | 24 | 1,631,321,241 |    |               |

### Receipts

|   |           |    |            |    |             |    |             |
|---|-----------|----|------------|----|-------------|----|-------------|
| 1 | 1,843,332 | 9  | 1,451,275  | 17 | 20,549,634  | 25 | 133,220,198 |
| 2 | 1,532,938 | 10 | 1,093,517  | 18 | 14,107,503  | 26 | 111,723,822 |
| 3 | 2,506,517 | 11 | 18,433,636 | 19 | 21,903,701  | 27 | 123,708,008 |
| 4 | 1,209,933 | 12 | 9,263,492  | 20 | 15,711,659  | 28 | 115,066,749 |
| 5 | 2,390,835 | 13 | 11,967,142 | 21 | 102,647,578 | 29 | 110,657,415 |
| 6 | 789,476   | 14 | 15,904,832 | 22 | 119,023,545 | 30 | 109,273,241 |
| 7 | 1,115,621 | 15 | 11,813,908 | 23 | 165,132,963 |    |             |
| 8 | 1,698,410 | 16 | 13,811,399 | 24 | 120,784,985 |    |             |

### Mental Calculation

|   |        |    |        |    |         |    |            |    |       |
|---|--------|----|--------|----|---------|----|------------|----|-------|
| 1 | 8,066  | 7  | 25,579 | 13 | 114,128 | 19 | 3,459      | 25 | 182   |
| 2 | 11,773 | 8  | 11,376 | 14 | 59,248  | 20 | 279,752    | 26 | 27    |
| 3 | 14,871 | 9  | 31,439 | 15 | 1,748   | 21 | 3,233      | 27 | 896   |
| 4 | 559    | 10 | 32,816 | 16 | 434     | 22 | 36,234,380 | 28 | 752   |
| 5 | 21,456 | 11 | 96,111 | 17 | 86      | 23 | 71         | 29 | 3,405 |
| 6 | 2,250  | 12 | 94,004 | 18 | 69,204  | 24 | 95         | 30 | 4,217 |

## Answers Dan

### Roots

|   |        |    |        |    |         |    |         |    |        |
|---|--------|----|--------|----|---------|----|---------|----|--------|
| 1 | 60,913 | 7  | 24     | 13 | 32,995  | 19 | 6,681.2 | 25 | 267    |
| 2 | 0.0667 | 8  | 356    | 14 | 48,780  | 20 | 38,467  | 26 | 489    |
| 3 | 4.69   | 9  | 5,793  | 15 | 0.4445  | 21 | 814     | 27 | 0.336  |
| 4 | 9,645  | 10 | 3.51   | 16 | 503.32  | 22 | 68.38   | 28 | 0.0104 |
| 5 | 289    | 11 | 2,099  | 17 | 3.9041  | 23 | 952.7   | 29 | 37.8   |
| 6 | 4,427  | 12 | 57.201 | 18 | 0.75738 | 24 | 9.856   | 30 | 63.72  |

### Applied Calculation

|    |            |    |                       |    |            |
|----|------------|----|-----------------------|----|------------|
| 1  | 31,800     | 11 | 79.6%                 | 21 | ¥9,611     |
| 2  | 312        | 12 | ¥609,973              | 22 | ¥2,090,081 |
| 3  | 432,295    | 13 | 2,806 cm <sup>2</sup> | 23 | ¥559,300   |
| 4  | 465,015    | 14 | ¥32,818               | 24 | ¥214,032   |
| 5  | 32         | 15 | ¥659,960              | 25 | ¥724,183   |
| 6  | 510,000    | 16 | ¥986,000              | 26 | ¥338,494   |
| 7  | ¥3,963,472 | 17 | 117.1 m/s             | 27 | ¥8,314,461 |
| 8  | 460mL      | 18 | ¥646,000              | 28 | ¥411,983   |
| 9  | ¥519,480   | 19 | ¥34,450               | 29 | ¥782,779   |
| 10 | 10:06 a.m. | 20 | ¥59,405               | 30 | ¥9,109,021 |