# 淡江大學 104 學年度日間部轉學生招生考試試題

系別：保險、國企、產經三年級　　科目：統　計　學

考試日期：7 月 26 日(星期日) 第 3 節　　本試題共 4 大題， 6 頁

I. 是非題，正確答案請填"O"，錯誤答案請填"X"，其他符號不計分 (10%)

1. The interquartile range is the difference between any two consecutive quartiles.
2. If $M$ is the mean of $x_1$, $x_2$, and $x_3$, then the mean of $3x_1 + 9$, $3x_2 + 9$, and $3x_3 + 9$ is $3M + 9$.
3. If P(A) = 0.8 and P(B) = 0.3, then we can conclude that A and B are mutually exclusive.
4. The normal approximation is usually adequate when the sample size $n$ is greater than 30.
5. The variance and mean of the Poisson distribution are equal.

II. 選擇題 (16%)

1. Calculate the mean and median of the following data set, 31, 28, 34, 56, 32, 55. Round your answer to the nearest tenth:
   A) 39.3 and 32, respectively
   B) 39.3 and 34, respectively
   C) 39.3 and 33, respectively
   D) Mean: 39.3; there is no median
2. Calculate the third quartile of the following data set, 30, 10, 19, 18, 25, 20, 21, 23, 10, 17, 30, 19, 25, 10, 10, 25, 18, 17, 17, 23, 25
   A) 20　B) 25　C) 19　D) 21
3. Find the standard deviation of the following data set., 290, 305, 302, 355.
   A) 28.7　B) 29.7　C) 25.9　D) 24.9
4. If the median of the following set of data, 13.1, 9.2, $x$, 11.4, is 11.5, find the value of $x$.
   A) 11.4　B) 11.5　C) 11.6　D) Cannot be determined
5. Suppose $S = \{e_1, e_2, e_3\}$ be the sample space.If $P(e_1) = 0.2$ and $P(e_1) = 0.6$ what is the probability of $e_2$.
   A) 0.2　B) 0.8　C) –0.2　D) 1
6. Consider the experiment of tossing a coin nine times. Find the probability of getting exactly one head.
   A)1/512　B) 9/512　C)1/513　D) 1/2
7. Suppose P(A) = 0.61, P(B) = 0.3, and $P(\overline{A} \cap B) = 0.2$ Find the conditional probability of A given that B does not occur. Round your answers to three decimal places.
   A) 0.729　B) 0.364　C) 0.333　D) 0.164
8. Records suggest that the normal distribution with mean 54 and standard deviation 8 is a plausible model for a measurement of the amount of people in a subway coach. Find $P(30.48 \leq X \leq 67.28)$.
   A) 0.950　B) 0.949　C) 0.946　D) 0.942



背面尚有試題

9. The number of students per classroom in a mid-size college is a random variable whose distribution is normal with mean 36 students and standard deviation 3 students. You intend to visit twenty five classrooms, what is the probability that the average number of students per room will be greater than 37.1 students?

A) 0.9664 B) 0.0334 C) 0.9665 D) 0.0360

10. Data associated with gold daily price per gram during the last five years indicates a distribution with mean \$36.09 and standard deviation \$6.44. When 121 random samples of size six are taken, what is the standard deviation of $\overline{X}$

A) 0.05 B) 3.28 C) 0.02 D) 0.59

11. An industrial researcher wants to perform a test with the intent of establishing that this company's compact fluorescent lamp has a mean life greater than 6200 hours. The sample size is 119 and he knows that $\sigma = 62$ hours. Find the numerical value of $c$ so that the test $R = \{\bar{X} \geq c\}$ has a 5% level of significance.

A) 6205.68 B) 6205.83 C) 6209.35 D) 6190.65

12. Out of a sample of 604 gasoline purchases at a self-service gas station, 437 were made with a credit or debit card. Estimate the proportion of sales made with a credit or debit card.

A) 0.724 B) 0.730 C) 0.736 D) 0.742

13. Find the probability of $\chi^2 < 4.6$ when degrees of freedom 15.

A) 0.005 B) 0.995 C) 0.01 D) 0.05

III.填充題 (40%)

1. For the data set, 19, 13, 9, calculate the variance. Round your answers to two decimal places.

_____

2. A sample space consists of eight elementary outcomes with the following probabilities. $P(e_1) = P(e_8) = 0.125$, $P(e_2) = P(e_3) = P(e_4) = 0.0625$, $P(e_5) = P(e_6) = P(e_7) = 0.1875$. Three events are given as $A = \{e_1, e_3, e_4, e_6\}$, $B = \{e_3, e_5, e_6\}$ and $C = \{e_1, e_2, e_6, e_8\}$. Determine the probability of $(A \cup \overline{B}) \cap C$.

_____

3. Suppose P(A) = 0.48 and P(B) = 0.31. Determine $P(A \cup B)$ if A and B are mutually independent.

_____

4. Among the students in a Statistics course, 23% are physics majors, 32% are math majors, and 45% are biology majors. The percents of bilingual students within these three groups are 8%, 15%, and 20%, respectively. What is the probability that a person selected at random from this course is a math major, knowing that is bilingual?

_____

5. Given the following probability distribution, f(x)=0.3 for x=3, f(x)=0.5 for x=4 and f(x)=0.2 for x=7. Find E(X).

_____

# 淡江大學 104 學年度日間部轉學生招生考試試題

系別：保險、國企、產經三年級　　科目：統　計　學

考試日期：7 月 26 日(星期日) 第 3 節　　本試題共 4 大題， 6 頁

6. About 64% of children in a neighborhood have a bicycle. Suppose $n = 4$ children are randomly selected. Find the probability that at most two have a bicycle. Round your answer to two decimal places.

_____

7. The median age of residents of Louisiana is 34 years. If a survey of 300 residents is taken, approximate the probability that at least 110 will be under 34 years of age.

_____

8. From a random sample of size 18, one has calculated the 90% confidence interval for μ and obtained the result (17.6, 28.0). What was the $\bar{x}$ for the sample?

_____

III.計算題 (34%)

1. Consider the following data set

| x | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| y | 8 | 8 | 4 | 3 | 2 |

A) Determine the regression line. (10%)

B) Use the regression line to predict the value of y when x=4.5. (4%)

C) Calculate the residual sum of squares SSE. (10%)

D) Calculate the determination coefficient. (10%)

背面尚有試題

#3

# 淡江大學 104 學年度日間部轉學生招生考試試題

系別：保險、國企、產經三年級　　科目：統　計　學

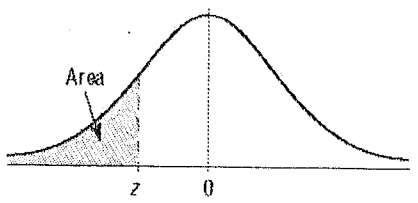
考試日期：7 月 26 日(星期日) 第 3 節　　本試題共 4 大題， 6 頁

## Table E The Standard Normal Distribution

**Cumulative Standard Normal Distribution**

| z | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 |
|---|---|---|---|---|---|---|---|---|---|---|
| −3.4 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0002 |
| −3.3 | .0005 | .0005 | .0005 | .0004 | .0004 | .0004 | .0004 | .0004 | .0004 | .0003 |
| −3.2 | .0007 | .0007 | .0006 | .0006 | .0006 | .0006 | .0006 | .0005 | .0005 | .0005 |
| −3.1 | .0010 | .0009 | .0009 | .0009 | .0008 | .0008 | .0008 | .0008 | .0007 | .0007 |
| −3.0 | .0013 | .0013 | .0013 | .0012 | .0012 | .0011 | .0011 | .0011 | .0010 | .0010 |
| −2.9 | .0019 | .0018 | .0018 | .0017 | .0016 | .0016 | .0015 | .0015 | .0014 | .0014 |
| −2.8 | .0026 | .0025 | .0024 | .0023 | .0023 | .0022 | .0021 | .0021 | .0020 | .0019 |
| −2.7 | .0035 | .0034 | .0033 | .0032 | .0031 | .0030 | .0029 | .0028 | .0027 | .0026 |
| −2.6 | .0047 | .0045 | .0044 | .0043 | .0041 | .0040 | .0039 | .0038 | .0037 | .0036 |
| −2.5 | .0062 | .0060 | .0059 | .0057 | .0055 | .0054 | .0052 | .0051 | .0049 | .0048 |
| −2.4 | .0082 | .0080 | .0078 | .0075 | .0073 | .0071 | .0069 | .0068 | .0066 | .0064 |
| −2.3 | .0107 | .0104 | .0102 | .0099 | .0096 | .0094 | .0091 | .0089 | .0087 | .0084 |
| −2.2 | .0139 | .0136 | .0132 | .0129 | .0125 | .0122 | .0119 | .0116 | .0113 | .0110 |
| −2.1 | .0179 | .0174 | .0170 | .0166 | .0162 | .0158 | .0154 | .0150 | .0146 | .0143 |
| −2.0 | .0228 | .0222 | .0217 | .0212 | .0207 | .0202 | .0197 | .0192 | .0188 | .0183 |
| −1.9 | .0287 | .0281 | .0274 | .0268 | .0262 | .0256 | .0250 | .0244 | .0239 | .0233 |
| −1.8 | .0359 | .0351 | .0344 | .0336 | .0329 | .0322 | .0314 | .0307 | .0301 | .0294 |
| −1.7 | .0446 | .0436 | .0427 | .0418 | .0409 | .0401 | .0392 | .0384 | .0375 | .0367 |
| −1.6 | .0548 | .0537 | .0526 | .0516 | .0505 | .0495 | .0485 | .0475 | .0465 | .0455 |
| −1.5 | .0668 | .0655 | .0643 | .0630 | .0618 | .0606 | .0594 | .0582 | .0571 | .0559 |
| −1.4 | .0808 | .0793 | .0778 | .0764 | .0749 | .0735 | .0721 | .0708 | .0694 | .0681 |
| −1.3 | .0968 | .0951 | .0934 | .0918 | .0901 | .0885 | .0869 | .0853 | .0838 | .0823 |
| −1.2 | .1151 | .1131 | .1112 | .1093 | .1075 | .1056 | .1038 | .1020 | .1003 | .0985 |
| −1.1 | .1357 | .1335 | .1314 | .1292 | .1271 | .1251 | .1230 | .1210 | .1190 | .1170 |
| −1.0 | .1587 | .1562 | .1539 | .1515 | .1492 | .1469 | .1446 | .1423 | .1401 | .1379 |
| −0.9 | .1841 | .1814 | .1788 | .1762 | .1736 | .1711 | .1685 | .1660 | .1635 | .1611 |
| −0.8 | .2119 | .2090 | .2061 | .2033 | .2005 | .1977 | .1949 | .1922 | .1894 | .1867 |
| −0.7 | .2420 | .2389 | .2358 | .2327 | .2296 | .2266 | .2236 | .2206 | .2177 | .2148 |
| −0.6 | .2743 | .2709 | .2676 | .2643 | .2611 | .2578 | .2546 | .2514 | .2483 | .2451 |
| −0.5 | .3085 | .3050 | .3015 | .2981 | .2946 | .2912 | .2877 | .2843 | .2810 | .2776 |
| −0.4 | .3446 | .3409 | .3372 | .3336 | .3300 | .3264 | .3228 | .3192 | .3156 | .3121 |
| −0.3 | .3821 | .3783 | .3745 | .3707 | .3669 | .3632 | .3594 | .3557 | .3520 | .3483 |
| −0.2 | .4207 | .4168 | .4129 | .4090 | .4052 | .4013 | .3974 | .3936 | .3897 | .3859 |
| −0.1 | .4602 | .4562 | .4522 | .4483 | .4443 | .4404 | .4364 | .4325 | .4286 | .4247 |
| −0.0 | .5000 | .4960 | .4920 | .4880 | .4840 | .4801 | .4761 | .4721 | .4681 | .4641 |

For z values less than −3.49, use 0.0001.



# 淡江大學 104 學年度日間部轉學生招生考試試題

系別：　保險、國企、產經三年級　　科目：統　計　學

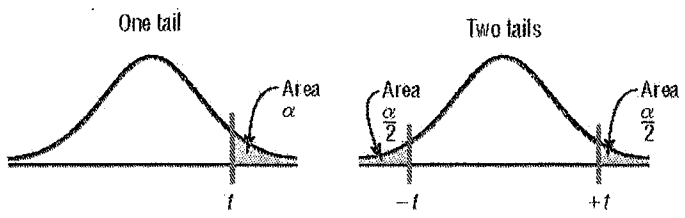
考試日期：7 月 26 日(星期日) 第 3 節　　本試題共 4 大題， 6 頁

**Table E-4 The *t* Distribution**

| | Confidence intervals | 80% | 90% | 95% | 98% | 99% |
|---|---|---|---|---|---|---|
| | One tail, $\alpha$ | 0.10 | 0.05 | 0.025 | 0.01 | 0.005 |
| d.f. | Two tails, $\alpha$ | 0.20 | 0.10 | 0.05 | 0.02 | 0.01 |
| 1 | | 3.078 | 6.314 | 12.706 | 31.821 | 63.657 |
| 2 | | 1.886 | 2.920 | 4.303 | 6.965 | 9.925 |
| 3 | | 1.638 | 2.353 | 3.182 | 4.541 | 5.841 |
| 4 | | 1.533 | 2.132 | 2.776 | 3.747 | 4.604 |
| 5 | | 1.476 | 2.015 | 2.571 | 3.365 | 4.032 |
| 6 | | 1.440 | 1.943 | 2.447 | 3.143 | 3.707 |
| 7 | | 1.415 | 1.895 | 2.365 | 2.998 | 3.499 |
| 8 | | 1.397 | 1.860 | 2.306 | 2.896 | 3.355 |
| 9 | | 1.383 | 1.833 | 2.262 | 2.821 | 3.250 |
| 10 | | 1.372 | 1.812 | 2.228 | 2.764 | 3.169 |
| 11 | | 1.363 | 1.796 | 2.201 | 2.718 | 3.106 |
| 12 | | 1.356 | 1.782 | 2.179 | 2.681 | 3.055 |
| 13 | | 1.350 | 1.771 | 2.160 | 2.650 | 3.012 |
| 14 | | 1.345 | 1.761 | 2.145 | 2.624 | 2.977 |
| 15 | | 1.341 | 1.753 | 2.131 | 2.602 | 2.947 |
| 16 | | 1.337 | 1.746 | 2.120 | 2.583 | 2.921 |
| 17 | | 1.333 | 1.740 | 2.110 | 2.567 | 2.898 |
| 18 | | 1.330 | 1.734 | 2.101 | 2.552 | 2.878 |
| 19 | | 1.328 | 1.729 | 2.093 | 2.539 | 2.861 |
| 20 | | 1.325 | 1.725 | 2.086 | 2.528 | 2.845 |
| 21 | | 1.323 | 1.721 | 2.080 | 2.518 | 2.831 |
| 22 | | 1.321 | 1.717 | 2.074 | 2.508 | 2.819 |
| 23 | | 1.319 | 1.714 | 2.069 | 2.500 | 2.807 |
| 24 | | 1.318 | 1.711 | 2.064 | 2.492 | 2.797 |
| 25 | | 1.316 | 1.708 | 2.060 | 2.485 | 2.787 |
| 26 | | 1.315 | 1.706 | 2.056 | 2.479 | 2.779 |
| 27 | | 1.314 | 1.703 | 2.052 | 2.473 | 2.771 |
| 28 | | 1.313 | 1.701 | 2.048 | 2.467 | 2.763 |
| 29 | | 1.311 | 1.699 | 2.045 | 2.462 | 2.756 |
| 30 | | 1.310 | 1.697 | 2.042 | 2.457 | 2.750 |
| 32 | | 1.309 | 1.694 | 2.037 | 2.449 | 2.738 |
| 34 | | 1.307 | 1.691 | 2.032 | 2.441 | 2.728 |
| 36 | | 1.306 | 1.688 | 2.028 | 2.434 | 2.719 |
| 38 | | 1.304 | 1.686 | 2.024 | 2.429 | 2.712 |
| 40 | | 1.303 | 1.684 | 2.021 | 2.423 | 2.704 |
| 45 | | 1.301 | 1.679 | 2.014 | 2.412 | 2.690 |
| 50 | | 1.299 | 1.676 | 2.009 | 2.403 | 2.678 |
| 55 | | 1.297 | 1.673 | 2.004 | 2.396 | 2.668 |
| 60 | | 1.296 | 1.671 | 2.000 | 2.390 | 2.660 |
| 65 | | 1.295 | 1.669 | 1.997 | 2.385 | 2.654 |
| 70 | | 1.294 | 1.667 | 1.994 | 2.381 | 2.648 |
| 75 | | 1.293 | 1.665 | 1.992 | 2.377 | 2.643 |
| 80 | | 1.292 | 1.664 | 1.990 | 2.374 | 2.639 |
| 90 | | 1.291 | 1.662 | 1.987 | 2.368 | 2.632 |
| 100 | | 1.290 | 1.660 | 1.984 | 2.364 | 2.626 |
| 500 | | 1.283 | 1.648 | 1.965 | 2.334 | 2.586 |
| 1000 | | 1.282 | 1.646 | 1.962 | 2.330 | 2.581 |
| (z) ∞ | | 1.282[a] | 1.645[b] | 1.960 | 2.326[c] | 2.576[d] |

[a]This value has been rounded to 1.28 in the textbook.
[b]This value has been rounded to 1.65 in the textbook.
[c]This value has been rounded to 2.33 in the textbook.
[d]This value has been rounded to 2.58 in the textbook.

*Source:* Adapted from W. H. Beyer, *Handbook of Tables for Probability and Statistics*, 2nd ed., CRC Press, Boca Raton, Fla., 1986. Reprinted with permission.




背面尚有試題

# 淡江大學 104 學年度日間部轉學生招生考試試題

51-6

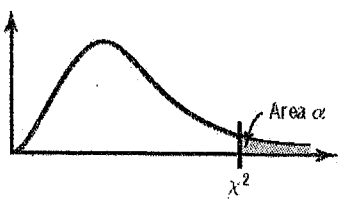
系別：保險、國企、產經三年級　　科目：統　計　學

考試日期：7 月 26 日(星期日) 第 3 節　　本試題共 4 大題， 6 頁

**Table G** The Chi-Square Distribution

| Degrees of freedom | $\alpha$ | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.995 | 0.99 | 0.975 | 0.95 | 0.90 | 0.10 | 0.05 | 0.025 | 0.01 | 0.005 |
| 1 | — | — | 0.001 | 0.004 | 0.016 | 2.706 | 3.841 | 5.024 | 6.635 | 7.879 |
| 2 | 0.010 | 0.020 | 0.051 | 0.103 | 0.211 | 4.605 | 5.991 | 7.378 | 9.210 | 10.597 |
| 3 | 0.072 | 0.115 | 0.216 | 0.352 | 0.584 | 6.251 | 7.815 | 9.348 | 11.345 | 12.838 |
| 4 | 0.207 | 0.297 | 0.484 | 0.711 | 1.064 | 7.779 | 9.488 | 11.143 | 13.277 | 14.860 |
| 5 | 0.412 | 0.554 | 0.831 | 1.145 | 1.610 | 9.236 | 11.071 | 12.833 | 15.086 | 16.750 |
| 6 | 0.676 | 0.872 | 1.237 | 1.635 | 2.204 | 10.645 | 12.592 | 14.449 | 16.812 | 18.548 |
| 7 | 0.989 | 1.239 | 1.690 | 2.167 | 2.833 | 12.017 | 14.067 | 16.013 | 18.475 | 20.278 |
| 8 | 1.344 | 1.646 | 2.180 | 2.733 | 3.490 | 13.362 | 15.507 | 17.535 | 20.090 | 21.955 |
| 9 | 1.735 | 2.088 | 2.700 | 3.325 | 4.168 | 14.684 | 16.919 | 19.023 | 21.666 | 23.589 |
| 10 | 2.156 | 2.558 | 3.247 | 3.940 | 4.865 | 15.987 | 18.307 | 20.483 | 23.209 | 25.188 |
| 11 | 2.603 | 3.053 | 3.816 | 4.575 | 5.578 | 17.275 | 19.675 | 21.920 | 24.725 | 26.757 |
| 12 | 3.074 | 3.571 | 4.404 | 5.226 | 6.304 | 18.549 | 21.026 | 23.337 | 26.217 | 28.299 |
| 13 | 3.565 | 4.107 | 5.009 | 5.892 | 7.042 | 19.812 | 22.362 | 24.736 | 27.688 | 29.819 |
| 14 | 4.075 | 4.660 | 5.629 | 6.571 | 7.790 | 21.064 | 23.685 | 26.119 | 29.141 | 31.319 |
| 15 | 4.601 | 5.229 | 6.262 | 7.261 | 8.547 | 22.307 | 24.996 | 27.488 | 30.578 | 32.801 |
| 16 | 5.142 | 5.812 | 6.908 | 7.962 | 9.312 | 23.542 | 26.296 | 28.845 | 32.000 | 34.267 |
| 17 | 5.697 | 6.408 | 7.564 | 8.672 | 10.085 | 24.769 | 27.587 | 30.191 | 33.409 | 35.718 |
| 18 | 6.265 | 7.015 | 8.231 | 9.390 | 10.865 | 25.989 | 28.869 | 31.526 | 34.805 | 37.156 |
| 19 | 6.844 | 7.633 | 8.907 | 10.117 | 11.651 | 27.204 | 30.144 | 32.852 | 36.191 | 38.582 |
| 20 | 7.434 | 8.260 | 9.591 | 10.851 | 12.443 | 28.412 | 31.410 | 34.170 | 37.566 | 39.997 |
| 21 | 8.034 | 8.897 | 10.283 | 11.591 | 13.240 | 29.615 | 32.671 | 35.479 | 38.932 | 41.401 |
| 22 | 8.643 | 9.542 | 10.982 | 12.338 | 14.042 | 30.813 | 33.924 | 36.781 | 40.289 | 42.796 |
| 23 | 9.262 | 10.196 | 11.689 | 13.091 | 14.848 | 32.007 | 35.172 | 38.076 | 41.638 | 44.181 |
| 24 | 9.886 | 10.856 | 12.401 | 13.848 | 15.659 | 33.196 | 36.415 | 39.364 | 42.980 | 45.559 |
| 25 | 10.520 | 11.524 | 13.120 | 14.611 | 16.473 | 34.382 | 37.652 | 40.646 | 44.314 | 46.928 |
| 26 | 11.160 | 12.198 | 13.844 | 15.379 | 17.292 | 35.563 | 38.885 | 41.923 | 45.642 | 48.290 |
| 27 | 11.808 | 12.879 | 14.573 | 16.151 | 18.114 | 36.741 | 40.113 | 43.194 | 46.963 | 49.645 |
| 28 | 12.461 | 13.565 | 15.308 | 16.928 | 18.939 | 37.916 | 41.337 | 44.461 | 48.278 | 50.993 |
| 29 | 13.121 | 14.257 | 16.047 | 17.708 | 19.768 | 39.087 | 42.557 | 45.722 | 49.588 | 52.336 |
| 30 | 13.787 | 14.954 | 16.791 | 18.493 | 20.599 | 40.256 | 43.773 | 46.979 | 50.892 | 53.672 |
| 40 | 20.707 | 22.164 | 24.433 | 26.509 | 29.051 | 51.805 | 55.758 | 59.342 | 63.691 | 66.766 |
| 50 | 27.991 | 29.707 | 32.357 | 34.764 | 37.689 | 63.167 | 67.505 | 71.420 | 76.154 | 79.490 |
| 60 | 35.534 | 37.485 | 40.482 | 43.188 | 46.459 | 74.397 | 79.082 | 83.298 | 88.379 | 91.952 |
| 70 | 43.275 | 45.442 | 48.758 | 51.739 | 55.329 | 85.527 | 90.531 | 95.023 | 100.425 | 104.215 |
| 80 | 51.172 | 53.540 | 57.153 | 60.391 | 64.278 | 96.578 | 101.879 | 106.629 | 112.329 | 116.321 |
| 90 | 59.196 | 61.754 | 65.647 | 69.126 | 73.291 | 107.565 | 113.145 | 118.136 | 124.116 | 128.299 |
| 100 | 67.328 | 70.065 | 74.222 | 77.929 | 82.358 | 118.498 | 124.342 | 129.561 | 135.807 | 140.169 |

*Source:* Owen, *Handbook of Statistical Tables*, Table A–4 "Chi-Square Distribution Table," © 1962 by Addison-Wesley Publishing Company, Inc. Copyright renewal © 1990. Reproduced by permission of Pearson Education, Inc.




#6