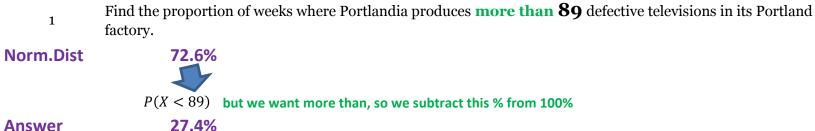
Portlandia Television is a regional manufacturer of big screen televisions. The number of defective televisions produced in its Portland factory in any given week is normally distributed with a mean of 80 televisions, and a standard deviation of 15 televisions.



Answer

2

| The Chief | Operating Officer (COO) will receive a bonus if the average weekly number of defective televisions is |
|-------------|--|
| less than 7 | 78 for a 13-week period. The COO gets fired if the average weekly number of defective televisions |
| exceeds 8 | ${f 3}$ for a 13-week period. Find the probability that Portlandia's COO keeps his job but fails to earn the |
| bonus. | |

Norm.Dist 31.5% 76.5% Interval probabilities require two norm.dist calculations 44.9% (76.5%-31.5%, note small one tenth difference due to rounding) Answer

n = 13

Glamour Tips is an on-line magazine available throughout the world. The number of "active users" per second can be approximated by a normal distribution with a mean of 14,000 and a standard deviation of 4,000.

| 1 | The site will freeze if the number of active users per second exceeds 19,000 . What proportion of the time is the site frozen? | | |
|-----------|---|--|--|
| Norm.Dist | 89.4% | | |
| | P(X < 17%) but we want greater than (more), so we subtract this % from 100% | | |
| Answer | 10.6% | | |
| | Glamour Tips can charge an advertising premium if the average number of active users exceeds | | |
| | | | |
| 2 | 14,250 over a ten-minute period . If a ten-minute period is chosen at random, what is the probability that Glamour Tips earned a premium for that period? | | |
| Norm.Dist | 93.7% | | |
| | Assume n = 600 - ten minutes X 60 seconds per minute = 600 | | |
| Answer | 6.3% | | |
| | | | |

Timberlake Dance is a national dance troop. The percentage of unsold seats for their performances varies considerably for each performance, but it can be estimated using a normal distribution with a mean of 17.8% and a standard deviation of 5.7%. The troop performs one show per night, plus a matinee on Thursday, Saturday and Saturday.

| 1 Norm.Dist | What is the probability that the percentage of empty seats is less that 15% for a performance? 31.2% | | |
|----------------|---|--|--|
| Answer | 31.2% | | |
| 2 | The troop loses money if the average percentage of empty seats exceeds 17% for any given week. What proportion of the weeks does Timberlake Dance lose money? | | |
| Norm.Dist | 32.9% n= 10 performances, one each night + three matinee shows = 10 total | | |
| | P(X < 17%) but we want greater than (more), so we subtract this % from 100% | | |
| Answer | 67.1% | | |

Each day, Big Winner Casino's black jack tables earn an amount that is distributed normally with a standard deviation of \$26,000, and a mean of \$143,000.

| 1 | The pit boss becomes suspicious when a table earns less than \$110,000 . What proportion of the time is the pit boss suspicious due to low table earnings? | | | | |
|---|--|---|--|--|--|
| Norm.Dist | 10.2% | | | | |
| Answer | 10.2% | | | | |
| 2 | Every month where Big Winner earns an average of \$138,000 or more , it makes a profit. Find the probability that Big Winner Casino makes a profit in any given month. | | | | |
| Norm.Dist | 14.6% Ass | sume n = 30 - a typical number of days in a month | | | |
| P(X < 138,000) but we want greater than (more), so we subtract this % from 100% | | | | | |
| Answer | 85.4% | | | | |