2203A52183

# Activity - 8

* Suppose a normal distribution has a mean $\mu = 50$ and a standard deviation $\sigma = 10$

a) what percentage of value lie below 60 (i.e., $P(x \leq 60)$)?

b) what value corresponds to the 90th percentile (i.e., qnorm (0.90))?

| z | 0 | 0.01 | 0.02 | 0.03 | 0.04 |
|---|---|---|---|---|---|
| I | 0.8413 | 0.8438 | 0.8461 | 0.8485 | 0.8508 |

a) $z = \frac{60-50}{10} = 1$

$= 0.8413 = 84\%$.

b) $z = \frac{x-\mu}{\sigma} = 1.29 = \frac{x-50}{10}$

$10(1.29) = x - 50$

$12.9 = x - 50$

$x = 62.9$

a) The test scores of a group of students are normally distributed with a mean ($\mu$) of 75 & a standard deviation of ($\sigma$) 10. what is the probability that a randomly selected student scored below 80?

b) In a factory, the weight of a product follows a normal distribution with a mean weight ($\mu$) of 50kg and a standard deviation ($\sigma$) of 5kg. what weight corresponds to the 85th percentile of the distribution?

a) $\frac{80-75}{10} = \frac{5}{10} = 0.5$

$z = 0.695$

69%.

b) $85\% = \frac{x-50}{5}$

$5(5.04) = x - 50$

$5.2 = x - 50$

$x = 65.2$.