

Denote by ξ random variable that corresponds to the scores of high school seniors taking the ACT college entrance. We know that ξ has roughly normal distribution with mean equal to 19.6 and standard deviation of 3.8. Thus,

$$\xi \sim N(19.6, 3.8)$$

We need to find probability that a single student chosen at random is taking the test with score 22 or higher.

$$P(\xi \geq 22)$$

Using properties of normal distribution we have:

$$P(\xi \geq 22) = 1 - P(\xi < 22) = 1 - \Phi\left(\frac{22 - 19.6}{3.8}\right) = 0.2638$$

Thus this probability equals 0.2638.

If we look for probability of scoring 23 or higher then

$$P(\xi \geq 23) < \{\text{using monotonicity of probability}\} < P(\xi \geq 22)$$

Thus, in this case probability decreases.