

By the Central Limit Theorem

$$\frac{x - EX}{\sqrt{DX}} \sim x \sim N(0,1)$$

So

$$P(120 < x < 140) = P\left(\frac{120-136}{12} < \frac{x-136}{12} < \frac{140-136}{12}\right) =$$

$$P(-1.16 < \frac{x-136}{12} < 0.5) = F(0.5) - F(-1.16) = 57\%$$