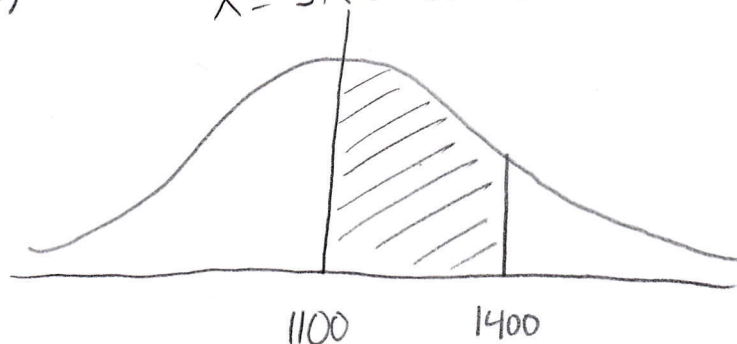SAT   Normal $(\mu = 1100, \quad \sigma = 200)$ X = SAT scores
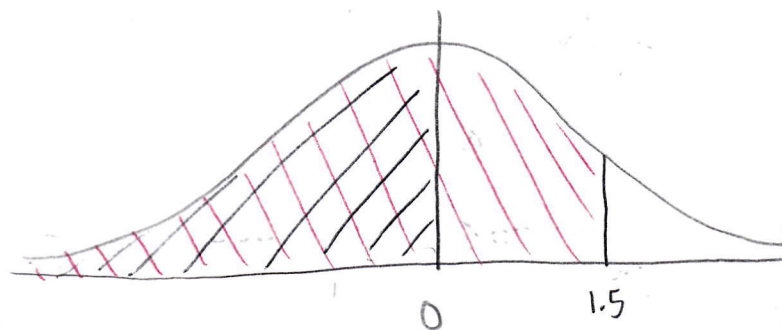
① draw picture

② z-scores

$$Z_{1100} = \frac{1100 - 1100}{200} = 0$$

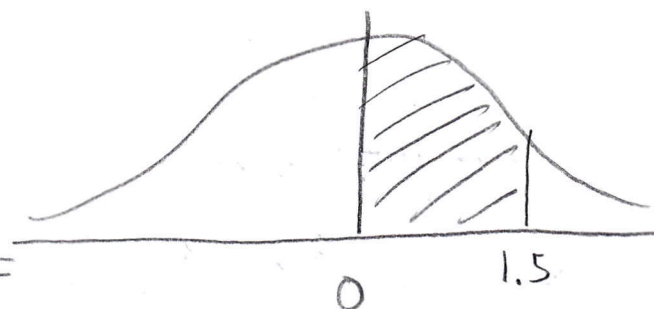$$Z_{1400} = \frac{1400 - 1100}{200} = \frac{3}{2} = 1.5$$

$$P(1100 < X < 1400)$$

Area for entire dist is **1**

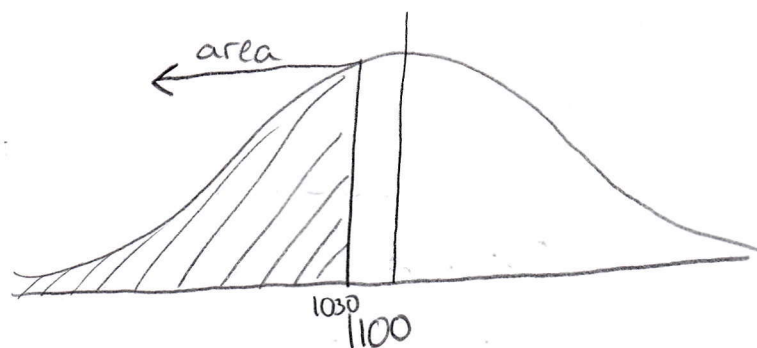$$P(Z < 1.5) - P(Z < 0)$$

$$0.9332 - 0.5 = 0.4332$$

Normal $(\mu = 1100, \sigma = 200)$.   Eduard scored 1030

Z-score:

$$Z = \frac{1030 - 1100}{200} = \frac{-70}{200} = -0.35$$

$$P(Z < 0.35) = 0.3632$$

Eduard's percentile is 36.32 percentile.

Men's heights   Normal (70, 3.3)

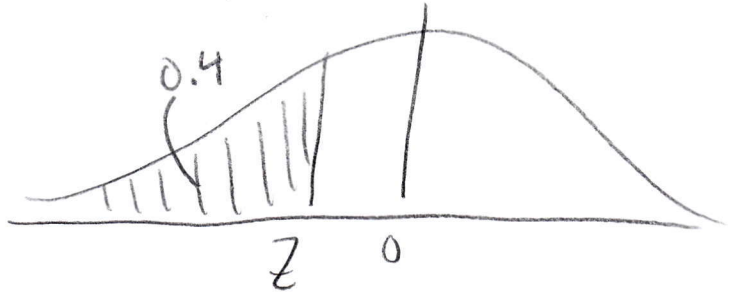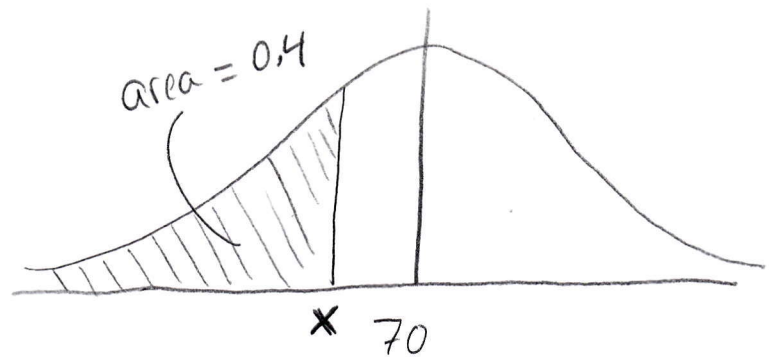Erik's height   40th percentile.

$$Z = \frac{X - \mu}{\sigma}$$

area = 0.4

× 70

$$Z\sigma = X - \mu$$

$$Z\sigma + \mu = X$$

$$(-0.253)(3.3) + 70 = X$$

$$69.1651 = X$$

Erik is   69.2" tall.

0.4

Z   0

Z = -0.253

Men's heights   Normal (70, 3.3)

70