

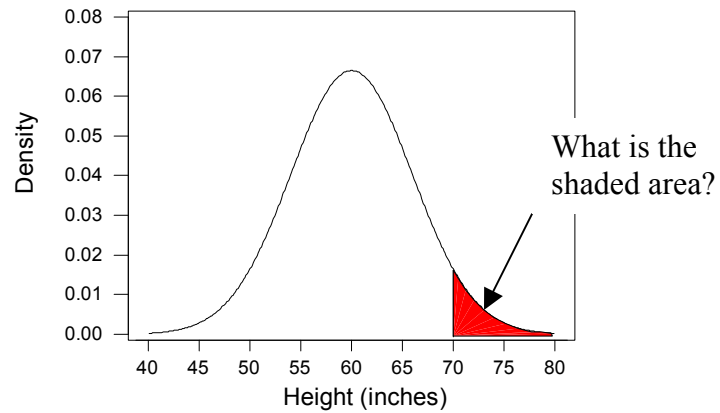
Normal Model for Height

Population mean: $\mu=60.0$

Population standard deviation: $\sigma=6$

1. What percentage of heights fall above 70?

a. Draw a picture.



b. Standardize

$$z = \frac{y - \mu}{\sigma} = \frac{70 - 60}{6} = 1.67$$

c. Use Table Z.

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
1.0										
1.1										
1.2										
1.3										
1.4										
1.5										
1.6								0.9525		
1.7										

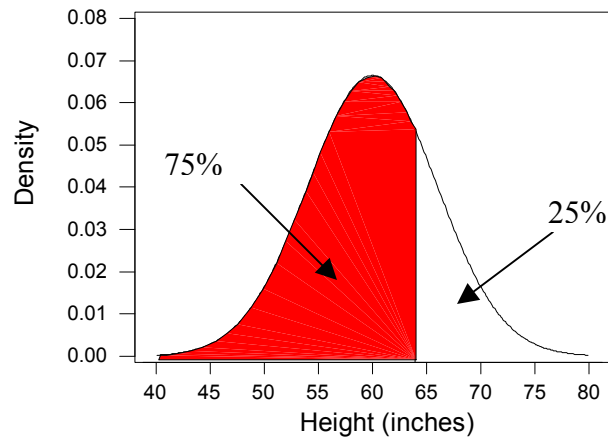
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95.25% of heights fall below 70.

$1 - 0.9525 = 0.0475$ or 4.75% of heights fall above 70.

2. What height corresponds to the 75th percentile?

a. Draw a picture.



b. Use Table Z

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0										
0.1										
0.2										
0.3										
0.4										
0.5										
0.6								0.7486		
0.7										

c. Reverse standardize

$$z = \frac{y - \mu}{\sigma} \Rightarrow \mathbf{0.67} = \frac{y - \mathbf{60.0}}{\mathbf{6}}$$

$$\mathbf{0.67(6)} + \mathbf{60.0} = y$$

$$\mathbf{4.02} + \mathbf{60.0} = \mathbf{64.02} \text{ inches is the } 75^{\text{th}} \text{ percentile height.}$$