

Chapter 4

- ① Standard deviation represents precision
smaller standard deviation = better precision
There is no relationship between standard deviation and accuracy

② a. $1\sigma = 0.3413$
 $\pm 1\sigma = 2(0.3413) = \boxed{0.6826}$

b. $2\sigma = 0.4773$
 $\pm 2\sigma = 2(0.4773) = \boxed{0.9546}$

c. $1\sigma = \boxed{0.3413}$

d. $0.5\sigma = \boxed{0.1915}$

e. $\mu \text{ to } -\sigma = 0.3413$

$\mu \text{ to } -0.5\sigma = 0.1915$

$-\sigma \text{ to } -0.5\sigma = 0.3413 - 0.1915 = \boxed{0.1498}$

④ a. $1005.3 - 845.2 = 160.1$

$\frac{160.1}{94.2} = 1.7\sigma = 0.4554$

0.5000
 -0.4554
 $= \boxed{0.0446} \text{ or } \boxed{4.5\%}$

b. 845.2
 -798.1
 $\hline$

$47.1/94.2 = 0.5\sigma$

901.7
 -845.2
 $\hline$

$56.5/94.2 = 0.6\sigma$

$\downarrow$
 0.1915

$\downarrow$
 0.2258

$0.1915 + 0.2258 = \boxed{0.4173} \text{ or } \boxed{42\%}$