(1) a) Want $\bar{x} = 18$

$$\frac{12+21+9+14+k}{5} = 18$$

$$12+21+9+14+k = 90$$

$$56 + k = 90$$

$$k = 34$$

b) Ordered: 9, 12, 14, 21, 34

median = 14

(2) a) Mean and median increase by 10.
Range and standard deviation do not change.

b) Mean, median, range and standard deviation are all multiplied by 10.

(3)

$$1 - \frac{1}{k^2} = 0.84$$

$$1 - 0.84 = \frac{1}{k^2}$$

$$0.16 = \frac{1}{k^2}$$

$$\frac{1}{0.16} = k^2$$

$$k = \sqrt{\frac{1}{0.16}}$$

$$k = 2.5$$

→

$$\mu - k\sigma \leq x \leq \mu + k\sigma$$

$$48 - 2.5(12) \leq x \leq 48 + 2.5(12)$$

$$18 \leq x \leq 78$$

At least 84% of measurements fall in the range 18 to 78.

(4) a) $z = \frac{x-\mu}{\sigma} = \frac{95000-89000}{3000} = 2$

b) $z = \frac{x-\mu}{\sigma} = \frac{75000-65000}{4000} = 2.5$

c) Bo

(5) a) $26 \times 26 \times 26 \times 26 \times 26 \times 26$

$= 308,915,776$

b) $26 \times 25 \times 24 \times 23 \times 22 \times 21$

$= 165,765,600$

c) $1 \times 25 \times 24 \times 23 \times 22 \times 21$

$= 6,375,600$

(6) a) # of symbols = 10+26 = 36

$36 \times 36 \times 36 \times 36 \times 36$

$= 60,466,176$

b) # of symbols = 26

$26 \times 26 \times 26 \times 26 \times 26$

$= 11,881,376$

c) (Total #) − (# with only letters)

$= 60,466,176 - 11,881,376$

$= 48,584,800$