1. **Solution**
   Let x represent a datum of interest. Let i represent that datum's index. Let ℓ represent that datum's percentile. Let n represent the sample size (number of measurements). In general,

$$\ell = \frac{i}{n}$$

   (a) We are given $x = 72.056$. This means $i = 9$. We know $n = 10$. Determine the percentile ℓ.

$$\ell = \frac{9}{10}$$

$$\ell = 0.9$$

   So, the answer is 0.9, or 90%.

   (b) We are given $\ell = 0.3$. We can use algebra to solve for i.

$$\ell = \frac{i}{n}$$

   Multiply both sides by n.

$$n \cdot (\ell) = n \cdot \left(\frac{i}{n}\right)$$

   Simplify both sides.

$$n\ell = i$$

   To make me happy, switch the sides.

$$i = n\ell$$

   Now, we can evaluate i.

$$i = (10)(0.3)$$

$$i = 3$$

   Determine the x associated with $i = 3$.

$$x = 70.659$$

   (c) The mean is $\frac{711.532}{10} = 71.1532$

   (d) If n is odd, then median is $x_{\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise median is mean of $x_{\lfloor \frac{n+1}{2} \rfloor}$ and $x_{\lceil \frac{n+1}{2} \rceil}$. So, median = 71.1355.

2. **Solution**
Let x represent a datum of interest. Let i represent that datum's index. Let ℓ represent that datum's percentile. Let n represent the sample size (number of measurements). In general,

$$\ell = \frac{i}{n}$$

(a) We are given $x = 76.879$. This means $i = 8$. We know $n = 30$. Determine the percentile ℓ.

$$\ell = \frac{8}{30}$$

$$\ell = 0.267$$

So, the answer is 0.267, or 26.7%.

(b) We are given $\ell = 0.867$. We can use algebra to solve for i.

$$\ell = \frac{i}{n}$$

Multiply both sides by n.

$$n \cdot (\ell) = n \cdot \left(\frac{i}{n}\right)$$

Simplify both sides.

$$n\ell = i$$

To make me happy, switch the sides.

$$i = n\ell$$

Now, we can evaluate i.

$$i = (30)(0.867)$$

$$i = 26$$

Determine the x associated with $i = 26$.

$$x = 109.683$$

(c) The mean is $\frac{2715.67}{30} = 90.522$

(d) If n is odd, then median is $x_{\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise median is mean of $x_{\lfloor \frac{n+1}{2} \rfloor}$ and $x_{\lceil \frac{n+1}{2} \rceil}$. So, median = 88.607.