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 $x = 138.697$. This means $i = 7$. We know $n = 7$. Determine the percentile ℓ.

$$\ell = \frac{7}{7}$$

$$\ell = 1$$

So, the answer is 1, or 100%.

(b) We are given $\ell = 0.571$. 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.

$$i = (7)(0.571)$$

$$i = 4$$

Determine the x associated with $i = 4$.

$$x = 123.896$$

(c) The mean is $\frac{838.887}{7} = 119.841$

(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 = 123.896.

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 $x = 70.676$. This means $i = 17$. We know $n = 36$. Determine the percentile ℓ.

$$\ell = \frac{17}{36}$$

$$\ell = 0.472$$

So, the answer is 0.472, or 47.2%.

(b) We are given $\ell = 0.528$. 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.

$$i = (36)(0.528)$$

$$i = 19$$

Determine the x associated with $i = 19$.

$$x = 71.117$$

(c) The mean is $\frac{2567.494}{36} = 71.319$

(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 = 70.95.