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 $x = 85.727$. This means $i = 5$. We know $n = 6$. Determine the percentile ℓ.

   $$\ell = \frac{5}{6}$$

   $$\ell = 0.833$$

   So, the percentile rank is $\boxed{0.833}$, or 83.3th percentile.

   (b) We are given $\ell = 0.667$. 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.

   $$i = (6)(0.667)$$

   $$i = 4$$

   Determine the x associated with $i = 4$.

   $$x = \boxed{85.302}$$

   (c) The mean: $\bar{x} = \frac{510.91}{6} = \boxed{85.152}$

   (d) If n is odd, then median is $x_{i=\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise, if n is even, the median is mean of $x_{i=\frac{n}{2}}$ and $x_{i=\frac{n}{2}+1}$. In this case, $n = 6$ and so n is even.

   $$\text{median} = \frac{x_3 + x_4}{2} = \frac{84.999 + 85.302}{2}$$

   So, median $= \boxed{85.1505}$.

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 $x = 150.606$. This means $i = 52$. We know $n = 63$. Determine the percentile ℓ.

   $$\ell = \frac{52}{63}$$

   $$\ell = 0.825$$

   So, the percentile rank is $\boxed{0.825}$, or 82.5th percentile.

   (b) We are given $\ell = 0.905$. 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.

   $$i = (63)(0.905)$$

   $$i = 57$$

   Determine the x associated with $i = 57$.

   $$x = \boxed{152.768}$$

   (c) The mean: $\bar{x} = \frac{8879.005}{63} = \boxed{140.94}$

   (d) If n is odd, then median is $x_{i=\frac{n+1}{2}}$, the value of x when $i = \frac{n+1}{2}$. Otherwise, if n is even, the median is mean of $x_{i=\frac{n}{2}}$ and $x_{i=\frac{n}{2}+1}$. In this case, $n = 63$ and so n is odd.

   $$\text{median} = x_{(63+1)/2,} = x_{32}$$

   So, median = $\boxed{141.371}$.