Calculating Percentiles
Statistics

P_p is the pth percentile of the data

L_p is the locator variable for P_p

n is the size of the data set

$L_p = (n + 1) \times \dfrac{p}{100}$ (the location of P_p within the data set)

For the ordered data set   1 7 12 12 15 15 19 $n = 7$.

Example 1: The 75th percentile, P_{75}, is found as follows:

$L_{75} = (7 + 1) \times \dfrac{75}{100} = (8) \times 0.75 = 6$ A WHOLE NUMBER

1 7 12 12 15 **15** 19   Since **15** is the **6**th element, then $P_{75} = $ **15**.

Example 2: The 30th percentile, P_{30}, is found as follows:

$L_{30} = (7 + 1) \times \dfrac{30}{100} = (8) \times 0.3 = 2.4 = $ **2**   +   **0.4**   A DECIMAL NUMBER

                                                 2nd **40%** of the way from
                                            element   the 2nd to 3rd element

2.4 is between the 2nd element and the 3rd element

1 **7** **12** 12 15 15 19

                $P_{30} = 2^{nd}$ element + [**0.4** $\times$ (3rd element - 2nd element)]

                   $= $ **7** $+ $ [(**0.4**) $\times$ (**12** - **7**)]

                   $= 7 + $ [0.4 $\times$ (5)]

                   $= 7 + 2$

                   $= 9$

Therefore, $P_{30} = 9$.

HUMBER