# 2.3-Vector Arithmetic

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In [ ]: > heights <- c(69,62,66,70,70,73,67,73,67,70)
        > heights * 2.54
         [1] 175.26 157.48 167.64 177.80 177.80 185.42 170.18 185.42 170.18 177.80
        > heights - 69
         [1]  0 -7 -3  1  1  4 -2  4 -2  1
        > #this is the difference

        > murder_rate <- murders$total/murders$population*100000
        > murder_rate
         [1]  2.8244238  2.6751860  3.6295273  3.1893901  3.3741383  1.2924531
         [7]  2.7139722  4.2319369 16.4527532  3.3980688  3.7903226  0.5145920
        [13]  0.7655102  2.8369608  2.1900730  0.6893484  2.2081106  2.6732010
        [19]  7.7425810  0.8280881  5.0748655  1.8021791  4.1786225  0.9992600
        [25]  4.0440846  5.3598917  1.2128379  1.7521372  3.1104763  0.3798036
        [31]  2.7980319  3.2537239  2.6679599  2.9993237  0.5947151  2.6871225
        [37]  2.9589340  0.9396843  3.5977513  1.5200933  4.4753235  0.9825837
        [43]  3.4509357  3.2013603  0.7959810  0.3196211  3.1246001  1.3829942
        [49]  1.4571013  1.7056487  0.8871131
        > # multiply by 100,000 to get it in the right units.
        > murders$state[order(murder_rate, decreasing = TRUE)]
         [1] "District of Columbia" "Louisiana"            "Missouri"
         [4] "Maryland"             "South Carolina"       "Delaware"
         [7] "Michigan"             "Mississippi"          "Georgia"
        [10] "Arizona"              "Pennsylvania"         "Tennessee"
        [13] "Florida"              "California"           "New Mexico"
        [16] "Texas"                "Arkansas"             "Virginia"
        [19] "Nevada"               "North Carolina"       "Oklahoma"
        [22] "Illinois"             "Alabama"              "New Jersey"
        [25] "Connecticut"          "Ohio"                 "Alaska"
        [28] "Kentucky"             "New York"             "Kansas"
        [31] "Indiana"              "Massachusetts"        "Nebraska"
        [34] "Wisconsin"            "Rhode Island"         "West Virginia"
        [37] "Washington"           "Colorado"             "Montana"
        [40] "Minnesota"            "South Dakota"         "Oregon"
        [43] "Wyoming"              "Maine"                "Utah"
        [46] "Idaho"                "Iowa"                 "North Dakota"
        [49] "Hawaii"               "New Hampshire"        "Vermont"
        >
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