# Screen Size Measures 

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## 1. Introduction

The size of computer screens is measured in the length of their diagonal. However, the aspect ratio of these screens (width:height) vary among $4: 3,5: 4$, and $16: 10$. Therefore, a screen with a longer diagonal does not necessarily have a larger area. Moreover, one may be more interested in the screen height than the screen width. Manufacturers seldom indicate, whether, for example, a $14.1^{\prime \prime}$ screen ( $4: 3$ aspect ratio) is taller a 15.4 " wide screen ( $16: 10$ aspect ratio). Perhaps surprisingly, the former is 0.3 inches taller. Also, it is worth noting that CRT screens actually have shorter diagonals than what is described.

The screen resolution determines the number of pixels available for use. The more the pixels, the larger the working area. A higher resolution makes text and images look smaller on the screen than they do on a lower resolution. The actual size of text and images on the screen is measured by Pixels Per Inch (PPI). It simply indicates how many pixels there are per inch. The smaller PPI, the larger texts and images are. PPIs of $96( \pm 10)$ are used in many screens, but some graphics designers and programmers work with screens that have PPI values of 117 and more, which allows them to have more workspace.

## 2. Screen Size

### 2.1. LCD Screens

The diagonal length of LCD screens is the same as in the screen description. E.g. a 17" LCD screen has a 17 " long diagonal.

## Regular LCDs (4:3 and 5:4)

|  | 4:3 Screens |  |  |  |  |  |  | 5:4 Screens |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Diagonal <br> Length | $\mathbf{1 0 . 4}$ | $\mathbf{1 2 . 1}$ | $\mathbf{1 3 . 3 \prime}$ | $\mathbf{1 4 . 1 \prime}$ | $\mathbf{1 5 \prime}$ | $\mathbf{1 6 . 1 \prime}$ | $\mathbf{2 0 . 1}$ | $\mathbf{2 1 . 3 \prime}$ | $\mathbf{1 6 \prime \prime}$ | $\mathbf{1 7 \prime}$ | $\mathbf{1 8 . 1}$ | $\mathbf{1 9 \prime \prime}$ |
| Width | $8.3^{\prime \prime}$ | $9.7^{\prime \prime}$ | $10.6^{\prime \prime}$ | $11.3^{\prime \prime}$ | $12.0^{\prime \prime}$ | $12.9^{\prime \prime}$ | $16.1^{\prime \prime}$ | $17.0^{\prime \prime}$ | $12.5^{\prime \prime}$ | $13.3^{\prime \prime}$ | $14.1^{\prime \prime}$ | $14.8^{\prime \prime}$ |
| Height | $6.2^{\prime \prime}$ | $7.3^{\prime \prime}$ | $8.0^{\prime \prime}$ | $8.5^{\prime \prime}$ | $9.0^{\prime \prime}$ | $9.7^{\prime \prime}$ | $12.1^{\prime \prime}$ | $12.8^{\prime \prime}$ | $10.0^{\prime \prime}$ | $10.6^{\prime \prime}$ | $11.3^{\prime \prime}$ | $11.9^{\prime \prime}$ |
| Area | 52 | 70 | 85 | 95 | 108 | 124 | 194 | 218 | 125 | 141 | 160 | 176 |

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Wide Screen LCDs (16:10, 5:3, and 16:9)

|  | 16:10 Screens |  |  |  |  |  | 5:3 Screens |  |  |  | 16:9 Screens |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Diagonal Length | 12.1" | 13.3" | 15.4" | 17" | 22.2 | 23" | 10.6" | 12.1" | 15" | 17" | 13.3" |
| Width | 10.3" | 11.3" | 13.1" | 14.4" | 18.8" | 19.5" | 9.11 | 10.4" | 12.9" | 14.6" | 11.6" |
| Height | 6.4" | 7.0 " | 8.2" | 9.0 " | 11.8" | 12.2" | 5.5" | 6.2 " | 7.7" | 8.7" | $6.5{ }^{\prime \prime}$ |
| Area (inch ${ }^{2}$ ) | 66 | 80 | 107 | 130 | 222 | 238 | 50 | 65 | 99 | 128 | 76 |

### 2.2. CRT Screens

All normal CRT screens are have $4: 3$ proportions. The length of the diagonal of CRT screens is actually shorter than described. For example, a 19" CRT screen may have $17.5^{\prime \prime}$ long diagonal on the visible screen. You must measure the length of the diagonal manually.

| Diagonal Length | 14" | 14.5" | 15" | 15.5" | 16" | 16.5" | 17.0" | 17.5" | 18" | 18.5" | 19" | 19.5" | 20" | 20.5" | 21" |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Width | 11.2" | 11.6" | 12.0" | 12.4" | 12.8" | 13.2" | 13.6" | 14.0" | 14.4" | 14.8" | 15.2" | 15.6" | 16.0" | 16.4" | 16.8" |
| Height | 8.4" | 8.7" | 9.0 " | 9.3 " | 9.6 ' | 9.9 " | 10.2" | 10.5 " | 10.8" | 11.1" | 11.4" | 11.7" | 12.0" | 12.3" | 12.6" |
| Area (inch ${ }^{2}$ ) | 94 | 101 | 108 | 115 | 123 | 131 | 139 | 147 | 156 | 164 | 173 | 183 | 192 | 202 | 212 |

## 3. Pixels per Inch

Note: The diagonal length of LCD screens is the same as in the screen description. E.g. a 17" LCD screen has a 17" long diagonal. The length of the diagonal of CRT screens is actually shorter than described. For example, a 19" CRT screen may have 17.5" long diagonal. You must measure the length of the diagonal manually.

### 3.1. 4:3 Screens

The table below can be used for 4:3 LCD screens.

|  |  |  | Pixels per Inch / Diagonal Length |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Resolution | Abbr. | No. of pixels | 10.4" | 12.1" | 13.3" | 14.1" | 15" | 16.1" | 20.1" | 21.3" |
| $640 \times 480$ | VGA | 307.2 k | 77 | 66 | 60 | 57 | 53 | 50 | 40 | 38 |
| $800 \times 600$ | SVGA | 480.0 k | 96 | 83 | 75 | 71 | 67 | 62 | 50 | 47 |


| $\mathbf{1 0 2 4} \mathbf{x} 768$ | XGA | 786.4 k | 123 | 106 | 96 | 91 | 85 | 80 | 64 | 60 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1 1 5 2} \mathbf{x ~ 8 6 4}$ | $*$ | 995.3 k | 138 | 119 | 108 | 102 | 96 | 89 | 72 | 68 |
| $\mathbf{1 2 8 0} \times \mathbf{9 6 0}$ | QVGA | 1.228 M | 154 | 132 | 120 | 113 | 107 | 99 | 80 | 75 |
| $\mathbf{1 4 0 0} \times \mathbf{1 0 5 0}$ | SXGA+ | 1.470 M | 168 | 145 | 132 | 124 | 117 | 109 | 87 | 82 |
| $\mathbf{1 6 0 0 \times 1 2 0 0}$ | UXGA | 1.920 M | 192 | 165 | 150 | 142 | 133 | 124 | 100 | 94 |
| $\mathbf{2 0 4 8} \times \mathbf{1 5 3 6}$ | QXGA | 3.146 M | 246 | 212 | 192 | 182 | 171 | 159 | 127 | 120 |

*) No official abbreviation for this resolution.
The table below is to be used for CRT screens. It lists diagonal lengths in $0.5^{\prime \prime}$ increments and presents appropriate PPIs.

|  |  |  | Pixels Per Inch / Diagonal Length |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Resolution | Abbr. | No. of pixels | 14" | 14.5" | 15" | 15.5" | 16" | 16.5" | 17.0" | 17.5" | 18" | 18.5" | 19" | 19.5" | 20" | 20.5" | 21" |
| $640 \times 480$ | VGA | 307.2 k | 57 | 55 | 53 | 52 | 50 | 48 | 47 | 46 | 44 | 43 | 42 | 41 | 40 | 39 | 38 |
| $800 \times 600$ | SVGA | 480.0 k | 71 | 69 | 67 | 65 | 63 | 61 | 59 | 57 | 56 | 54 | 53 | 51 | 50 | 49 | 48 |
| $1024 \times 768$ | XGA | 786.4 k | 91 | 88 | 85 | 83 | 80 | 78 | 75 | 73 | 71 | 69 | 67 | 66 | 64 | 62 | 61 |
| $1152 \times 864$ | * | 995.3 k | 103 | 99 | 96 | 93 | 90 | 87 | 85 | 82 | 80 | 78 | 76 | 74 | 72 | 70 | 69 |
| $1280 \times 960$ | QVGA | 1.228 M | 114 | 110 | 107 | 103 | 100 | 97 | 94 | 91 | 89 | 86 | 84 | 82 | 80 | 78 | 76 |
| $1400 \times 1050$ | SXGA+ | 1.470 M | 125 | 121 | 117 | 113 | 109 | 106 | 103 | 100 | 97 | 95 | 92 | 90 | 88 | 85 | 83 |
| $1600 \times 1200$ | UXGA | 1.920 M | 143 | 138 | 133 | 129 | 125 | 121 | 118 | 114 | 111 | 108 | 105 | 103 | 100 | 98 | 95 |

*) No official abbreviation for this screen size.

### 3.2. 5:4 Screens

|  |  |  | Pixels per Inch / Diagonal Length |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Resolution | Abbr. | No. of pixels | $\mathbf{1 6 "}$ | $\mathbf{1 7 \prime \prime}$ | $\mathbf{1 8 . 1 "}$ | $\mathbf{1 9 \prime \prime}$ |
| $\mathbf{1 2 8 0} \mathbf{~ x ~ 1 0 2 4}$ | SXGA | 1.311 M | 102 | 96 | 91 | 86 |

### 3.3. 16:10 Screens (Wide Screen)

|  |  |  | Pixels Per Inch / Diagonal Length |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Resolution | Abbr. | No. of pixels | $\mathbf{1 2 . 1 "}$ | $\mathbf{1 3 . 3 "}$ | $\mathbf{1 5 . 4}$ | 17" | $\mathbf{2 2 . 2}$ | $\mathbf{2 3 "}$ |
| $\mathbf{1 2 8 0} \times \mathbf{8 0 0}$ | WXGA | 1.024 M | 125 | 113 | 98 | 89 | 68 | 66 |
| $\mathbf{1 4 4 0} \times \mathbf{9 0 0}$ | WXGA+ | 1.296 M | 140 | 128 | 110 | 100 | 76 | 74 |


| $\mathbf{1 6 8 0} \times 1050$ | WSXGA+ | 1.764 M | 164 | 149 | 129 | 117 | 89 | 86 |
| :---: | :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{1 9 2 0} \times \mathbf{1 2 0 0}$ | WUXGA | 2.304 M | 187 | 170 | 147 | 133 | 102 | 98 |

3.4. 5:3 Screens (Wide Screen 15:9)

|  |  |  | Pixels Per Inch / Diagonal Length |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Resolution | Abbr. | No. of pixels | $\mathbf{1 0 . 6 "}$ | $\mathbf{1 2 . 1 "}$ | $\mathbf{1 5 \prime \prime}$ | $\mathbf{1 7 \prime \prime}$ |
| $\mathbf{1 2 8 0} \mathbf{~ x ~ 7 6 8 ~}$ | WXGA | 983.0 k | 141 | 123 | 100 | 88 |

### 3.5. 16:9 Screens (Wide Screen)

|  |  |  | Pixels Per Inch / Diagonal Length |
| :--- | :---: | :---: | :---: |
| Resolution | Abbr. | No. of pixels | $\mathbf{1 3 . 3 "}$ |
| $\mathbf{1 3 6 6} \times \mathbf{7 6 8}$ | WXGA | 1.049 M | 118 |

## Acknowledgements

Enderet for pointing out that 13.3 " wide screens (16:10) and 12.1 " wide screens (5:3) exist.
KCK for pointing out that TFT screens that use SXGA resolution have 5:4 dimensions and that 15 " and 17" 5:3 screens exist.

