

## The Video Guru® Guide To Going Wide



### How Big of a Widescreen TV Should I Get?

How much money do you have? If money is no object, you can go really large. The largest HDTV will be installed in Dolphin's Stadium (Miami, FL) by April 2006. This Daktronics ProStar® LED display will measure approximately 50 feet high by 137 feet with a true resolution of 736 pixels high by 2,112 pixels wide. Full-screen images shown on this display will be comprised of more than 1.5 million pixels, made from more than 4.6 million red, green and blue LEDs.

Want something a bit smaller for your family room, living room, or den? If you have an entertainment center or a wall unit, then the width of the cabinet will be the deciding factor. Keep in mind that your new 16x9 widescreen TV might be as wide as your old 4x3, but it won't be as tall—you'll have empty space on top of your new TV. But that might be a good place to put a set-top box.

If room size is the limiting factor, there's a formula that you can use to figure out the biggest (or smallest) TV based on how people see—their field of view. You don't want a TV that's so big it's overwhelming to look at. And you certainly don't want a TV that's too small. You want one that's just right.

For 4x3 TVs, most experts agree that for the best viewing, you should be sitting six picture heights away from the TV. If you have a 35-inch diagonal 4x3 TV, our screen height chart shows a screen height of 21 inches. Six picture heights (6 x 21) would be 126 inches or about 11 feet.

#### Calculating Viewing Distance

**35-inch 4x3 TV**  
**Screen height = 21 inches**  
**Six picture heights (6 x 21) = 126**  
**126 inches / 12 = 10.5 feet**

The formula works backwards too. Let's say that the layout of your living room and furniture dictate that you'll be sitting 10 feet or 120 inches from the screen. Divide the distance in inches by six (120 / 6) and you find that a 20-inch screen height 4x3 would be the best size for your room. According to the screen height chart, that translates to a 33-inch diagonal 4x3 TV.

Of course you can go a little larger or a little smaller, but you get the idea.

For 16x9 TVs, the experts say that sitting three picture heights away from the TV is best—you'll actually be sitting closer to the screen than with conventional 4x3 TVs.

**You don't want a TV that's so big it's overwhelming to look at.**

**And you certainly don't want a TV that's too small.**

**You want one that's just right.**

Using the same example as before, let's say you went with a 35-inch diagonal 16x9 TV. Our chart shows a screen height of 17 inches. Three picture heights (3 x 17) would have you sitting at 51 inches or just over four feet from the screen.

Now let's use the formula the way it makes sense for someone who wants to trade in their old 4x3 TV for a new 16x9 model. We'll use the same living room as before so we know you'll be sitting 10 feet or 120 inches from the screen. There's no entertainment center or cabinet size restrictions, so we'll divide the distance in inches by three (120 / 3) and we'll find that a 40-inch screen height is called for. According to the chart, that gives us a very large 82-inch diagonal 16x9 TV. In fact, that 16x9 screen will be 71 inches wide. That's almost six feet wide!

Needless to say, now that you've done the math, you're probably scratching your head. You want a *better* TV viewing experience with widescreen and HDTV. But the numbers say that you'll need a TV that's almost as big as the one going into Dolphin's Stadium.

## What To Do

These formulas work well in theory, but in practice they sometimes fall apart. Of course you can sit closer or buy a smaller TV, but it's the *viewing experience* that matters.

There's no rule that says you *can't* bring a tape measure TV shopping with you, so it's a good idea to know the distance of your home viewing experience *before* going TV shopping. Keep in mind that it might be hard to re-create that home viewing distance in narrow store aisles.

Remember, it's all about watching TV, not mathematics. If you're happy with the size of the TV (and the picture—since you're the one who has to watch it), then the numbers don't matter, they're just a guideline.

### Calculating 16x9 TV Size

**Distance to TV = 10 feet**  
**10 feet x 12 = 120 inches**  
**120 inches / 3 = 40-inch height**  
**40-inch height = 82-inch diameter**

### Widescreen Math

HT Mart has a great 16x9 screen size calculator that will calculate two of three screen dimensions: [www.htmart.com/pages.php?pageid=1](http://www.htmart.com/pages.php?pageid=1)

HT Mart also has a 16x9 seating distance calculator at [www.htmart.com/pages.php?pageid=16](http://www.htmart.com/pages.php?pageid=16)

You can guesstimate optimal viewing distance for 16x9 TVs by multiplying the diagonal by 1.5.

You can guesstimate optimal 16x9 screen size by multiplying the distance to screen (in inches) by 0.67.

## Measuring Screen Size

TVs are measured using their diagonal screen size. Because of this, it's hard to compare image sizes between 4x3 and 16x9 TVs. For example, you might want to know how big of a 16x9 screen you need to match the height of a 4x3 screen (for the same height of screen, 16x9 screens are 33% wider).

The screen height chart below gives the relationships between 4x3 screens and 16x9 screens based on the same picture height. It also gives the three times viewing distance from the screen (for 4x3 TVs) and six times viewing distance from the screen (for 16x9 TVs).

### Screen Height Comparison Charts for 4x3 & 16x9 Screens

Common Screen Height (inches)	5	6	7	8	9	10	11	12	13	14	15
4x3 diagonal (inches)	8	10	12	13	15	17	18	20	22	23	25
16x 9 diagonal (inches)	10	12	14	16	18	20	22	24	27	29	31
4x3 viewing distance (feet) [6 picture heights]	3	3	4	4	5	5	6	6	7	7	8
16x9 viewing distance (feet) [3 picture heights]	1	2	2	2	2	3	3	3	3	4	4

Common Screen Height (inches)	16	17	18	19	20	21	22	23	24	25
4x3 diagonal (inches)	27	28	30	32	33	35	37	38	40	42
16x 9 diagonal (inches)	33	35	37	39	41	43	45	47	49	51
4x3 viewing distance (feet) [6 picture heights]	8	9	9	10	10	11	11	12	12	13
16x9 viewing distance (feet) [3 picture heights]	4	4	5	5	5	5	6	6	6	6

<b>Common Screen Height (inches)</b>	<b>26</b>	<b>27</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>31</b>	<b>32</b>	<b>33</b>	<b>34</b>	<b>35</b>
<b>4x3 diagonal (inches)</b>	<b>43</b>	<b>45</b>	<b>47</b>	<b>48</b>	<b>50</b>	<b>52</b>	<b>53</b>	<b>55</b>	<b>57</b>	<b>58</b>
<b>16x9 diagonal (inches)</b>	<b>53</b>	<b>55</b>	<b>57</b>	<b>59</b>	<b>61</b>	<b>63</b>	<b>65</b>	<b>67</b>	<b>69</b>	<b>71</b>
<b>4x3 viewing distance (feet)</b> [6 picture heights]	<b>13</b>	<b>14</b>	<b>14</b>	<b>15</b>	<b>15</b>	<b>16</b>	<b>16</b>	<b>17</b>	<b>17</b>	<b>18</b>
<b>16x9 viewing distance (feet)</b> [3 picture heights]	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>8</b>	<b>9</b>	<b>9</b>

<b>Common Screen Height (inches)</b>	<b>36</b>	<b>37</b>	<b>38</b>	<b>39</b>	<b>40</b>	<b>41</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>45</b>	<b>46</b>
<b>4x3 diagonal (inches)</b>	<b>60</b>	<b>62</b>	<b>63</b>	<b>65</b>	<b>67</b>	<b>68</b>	<b>70</b>	<b>72</b>	<b>73</b>	<b>75</b>	<b>77</b>
<b>16x9 diagonal (inches)</b>	<b>73</b>	<b>75</b>	<b>78</b>	<b>80</b>	<b>82</b>	<b>84</b>	<b>86</b>	<b>88</b>	<b>90</b>	<b>92</b>	<b>94</b>
<b>4x3 viewing distance (feet)</b> [6 picture heights]	<b>18</b>	<b>19</b>	<b>19</b>	<b>20</b>	<b>20</b>	<b>21</b>	<b>21</b>	<b>22</b>	<b>22</b>	<b>23</b>	<b>23</b>
<b>16x9 viewing distance (feet)</b> [3 picture heights]	<b>9</b>	<b>9</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>12</b>

Note: All numbers rounded to the nearest whole number.

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