

Carl's Place

How to Select Your Ideal Projector Screen Size



Many things in life are subjective. The best projector screen size (for homes to large venues) is one of them. We like to follow recommendations made by a few organizations like THX and the Society of Motion Picture and Television Engineers, but don't be afraid to make your own decision. Make an informed one with considerations like how far away you'll be sitting or how many people you can fit into a space.

BEFORE YOU START: MAKING CALCULATIONS EASIER

Let's point out the elephant in the room here, which is how hard it is to measure screen length diagonally. Displays are generally measured in diagonal but in screens over 100" or so, that can get very confusing. In fact, one of the most common questions we get is, "How big is a 120-inch projector screen?". Since we're all about simplicity, we recommend using height x width for ease of measuring.

DETERMINE THE OPTIMAL SCREEN HEIGHT

Getting the biggest screen possible without overwhelming the audience requires some considerations, like recommended projector screen size for viewing distance. **To calculate how close you can sit**, take the height of your screen and multiply it by two, and that's how close you can get before it becomes uncomfortable and/or overwhelming. **For the ideal distance from the best seat:** As a rule of thumb, any seats greater than about four screen heights away will start to have their experience diminish, and after five or six screen heights away the screen probably appears too small. A great middle ground is to find the distance from the screen to your optimum seat, divide by three, and that's a good starting point for the height.

DETERMINE THE SCREEN WIDTH

Once your height is determined, the width can be found multiplying it by your chosen aspect ratio. A 50" tall screen in a 16:9 aspect ratio is $50 \times 16/9 = 88.9$ " wide. A 100" tall 4:3 screen is $100 \times 4/3 = 133.3$ " wide.

FOR OPTIMAL VIEWING AT HOME/ SMALL SPACES:

How close you can sit is a factor that matters most in compact spaces. Imagine you're building a projector screen for your new home theater where you will almost always sit about 165 inches from the screen. 165 divided by 3 is 55, and so your screen should be about 55" tall in that situation. Assuming a 16:9 aspect ratio for a 1080p/4K image, the width would then be $55 \times 16/9 = 97.78$ ". You can then use Pythagorean's Theorem ($a^2 + b^2 = c^2$) to calculate the diagonal size of about 112".

HOW LARGE OF A CROWD YOUR SCREEN WILL ACCOMMODATE

Here's an example of how to calculate projector screen size for crowds: imagine you have one of our 9x16 Standing Kits. The viewable height on that screen measures 105", so ideally the audience should sit between $105 \times 2 = 210$ " away and $105 \times 4 = 420$ " away. It would not be unreasonable to extend seating back to $105 \times 6 = 630$ ". Converting to feet, you would want your audience between 17.5' and 52.5' away with optimum seating being about 26' away. How densely you pack the seats into that area would, of course, be up to you.

HOW MUCH SCREEN YOU NEED (AND DON'T) IN LARGE VENUES

Don't push it for the sake of pushing it. Smaller screens concentrate your projector's light more (though it's not really noticeable outside of comparing 100" to 300") and if your screen is big enough for the whole crowd to see the full detail as described above then you don't need to overwhelm with a screen that's larger than it needs to be.

DON'T FORGET YOUR PROJECTOR

The size of your screen might be limited by your projector. If your projector must be mounted in one specific spot, your projector screen size will be determined by the zoom range of your projector, creating an instant projector throw distance formula of sorts. Short throw projectors can make larger screens in less space, but we often find that the limiting factor is the max throw available for a projector in a given room. Tip: We highly recommend the screen size calculator on www.projectorcentral.com