Flats are LIGHTER WEIGHT, CHEAPER TO BUILD, and can be used OVER AND OVER.
A flat is a 1x3 or 1x4 frame that can be covered with CANVAS, thin LUAN PLYWOOD, or other materials so the frame looks like a heavy, solid object, usually a wall.

There are 2 basic ways to build flats. One is a HOLLYWOOD or studio style flat. The other kind is a STAGE or theater type flat. We are going to look at how to build THEATER flats.

Identify the 5 parts of a flat frame on the diagram below:
The first thing we do is to measure and cut the rails to the _______ of the flat. For our 4’ wide flat, we measure and mark our 8’ long 1x4 to exactly ______ feet, using a tape measure and a tri-square. Next we _______ it with our jigsaw. Always ______ your measurements before cutting and remember to wear ______ with ANY power tool. You'll want to go ______ using a jigsaw.

Now that we have the rails cut, we measure and cut the _______. The stiles have to fit in-between the rails, so we have to subtract the _______ of the rails from the _______ of the stiles.

If you lay out a 10’ stile, then put a 3 1/2” top rail up against one end, and a 3 1/2” bottom rail up against the other end of the 10’ stile, your flat frame becomes approximately _______feet _______inches tall. To solve this problem, lay your top _______ next to your bottom _______, and the 10’ long 1x4’s up against the two of them. Hook your tape measure over the end of the 2 ______ together, and measure and mark 10’ on the boards you're using for the _______. You'll come out with the frame measuring EXACTLY _______feet tall. Remember to always subtract the _______ of the top and bottom rails from the length of the _______.

Next, square all 4 corners using a _______ or _______.

LIGHTLY tack the pieces down using the smallest possible nails, usually #_____ common or box nails. DON'T nail down the _______. The cornerblocks will need to go in the corners, and after they are applied, you won't be able to pull the nails out. And leave the heads of the nails _______ enough to pull them out later. This tacking down process is just to hold the stiles and rails in place while you apply the cornerblocks. Then these nails are _______ _______. Check your dimensions again, and make sure your frame is still _______.

You now have a square flat frame. It's time to apply the _______. First, make sure the grain of the plywood is going _______ the joint where the rail and stile meet.
Use a piece of scrap 1x4 to set the cornerblocks back 3/4" from the edge of the stiles and rails, and then use a STAGGERED fastening pattern to attach the cornerblock. Use a "W" pattern on the rail, and an "S" pattern on the stile. Staggering the nails like this keeps the wood from SPLITTING, and is stronger than if you nailed in a straight line. When the cornerblocks are applied, remove the NAILS tacking down the frame.

If you want to be able to take your flats apart and re-use the lumber for different size flats, use #8 x 3/4 inch phillips, flat head wood screws and forget the GLUE. Also, be careful not to touch the wood screws immediately after you put them in. They will be hot enough to BLISTER your skin!

From here, the rest is easy. Measure and cut the TOGGL... use an INSIDE measurement from stile to stile. Then attach the toggles using the KEystones. Set the keystones 3/4 inch from the edge of the stile using a scrap of 1x4, just like you did with the cornerblocks. Then attach the keystones using a TRIANGLE pattern on the stile, and a DIAMOND pattern on the toggle.