The inverse square law in one sentence is “for every doubling of distance from a sound source in free field the amplitude will decrease by 6dB SPL”.

While we almost never work in a completely free field (our microphones pick up reflections, bleed from the mains, the SPL produced from the mains reflects off of hard surfaces, etc.), this rule is considered accepted real world practice.

The inverse square law applies how any sound travels as sound pressure level.

Practical applications include microphone placement and it's distance relative to the sound source it's micing (whether that's a drum mic, guitar amp mic, or vocal mic) and the distance a listener is from the mains/sound source.

Here's a few tips on how the inverse square law might effect the operation of equipment or the reaction of the congregation.

If you feel like you need to gain up a channel more then normal, you're not getting adequate level, or if when you gain up a microphone, you get feedback, bleed from other instruments, or a distant sound, you might consider moving the microphone closer to the sound source so you can pick up the direct waves from the sound source better.

If a congregation member mentions to you that in their opinion the overall mix sounds too loud to them but it doesn't seem to be very loud to you, consider where they were sitting and how close they were to the mains. As they move further back in the room, the sound pressure level will decrease by 6dB (which to most people is significant) if they double the distance from the mains to their original spot. An example would be if their original spot was 15 feet back from the mains. They could move to a position that is 30 feet back from the mains and they would experience a drop of 6dB in SPL.