Calculating long exposures (1 minute or greater)

Pre-requisites
1   Cover all openings to avoid light leak. Openings include, depending on the camera/ lens, the top LCD, back LCD, eye piece, and if there is a depth of field window on the lens. A lens hood can help when shooting with the sun off to the side or in front of the lens, but many cause slight to severe vignetting. ***Personally, I only use lens hoods at 70mm or greater, and avoid high contrast shooting situations.
2   You'll need a solid tripod and cable release.
3   Compose the image and take a properly exposed straight shot, unconcerned with movement, and take note of the SHUTTER SPEED ONLY.

Process
1   Use manual focus because the ND filters are too dark for the sensor to see through and auto focus will result in a blurry image.
2   Cover the camera openings. *** I use a small golf towel, my bandana, large cleaning cloth, detached hood from my coat.
3   Let's assume that your properly exposed shutter speed is 1/4 second.
4   Here's the formula:
     1   1/4 second is with zero ND (Neutral density)
     2   1 stop of ND is 1/2 sec
     3   2 stop of ND is 1 sec
     4   3 stops of ND is 2 seconds
     5   4 stops of ND is 4 seconds
     6   5 stops of ND is 8 seconds
     7   6 stops of ND is 15 seconds
     8   7 stops of ND is 30 seconds
     9   8 stops of ND is 1 minute
     10   9 stops of ND is 2 minutes
     11   10 stops of ND is 4 minutes

etc. for a 15 stop ND filter (This filter will yield practical long exposure times when the initial exposure is faster, e.g. 1/125sec

Important note: Notice that the exposure times double as the stops of ND increase

5. Compose and focus the scene
6. apply your chosen filter, make sure the camera is covered as per pre-req. #1
7. Set the camera to the BULB setting, then press and lock the cable release for the time calculated.
8. Check the histogram and, if needed, add or subtract exposure time and shoot again. This is where the trial and error part comes in, however if the initial shot was properly exposed and the long exposure was properly calculated, and if there was no dramatic change in the natural light, fine tuning adjustments should not be necessary.

NOTE: Every phone app store has apps to calculate long exposures. Many are overwritten, including too much information. The ISO and aperture are irrelevant. All that matters is shutter speed. On my iPhone I use the app, NDExposure. I input the shutter speed in one column and scroll down the list of neutral density stops (e.g. 10 stop). After that is selected, the exposure time appears at the bottom of the window.