

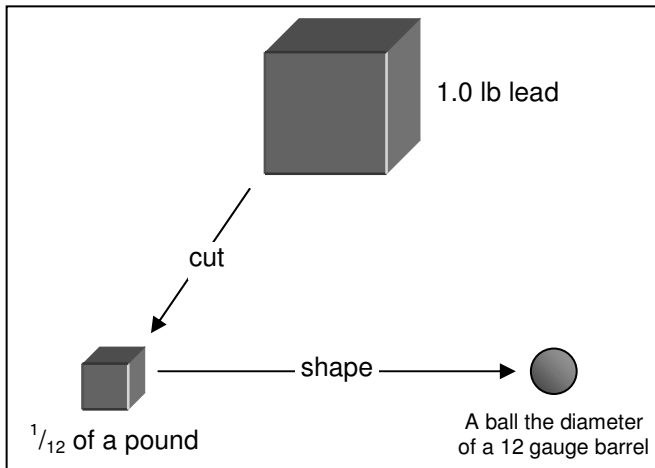
# SHOT SIZE AND BARREL GAUGE

Before we get onto the horribly complicated discussion of the physics of both shot size and shell speed, it'd be good to explain exactly how barrel gauge is calculated and what shot sizes actually exist.

Barrel gauge is an interesting one to work out and is fascinatingly easy to explain.

To calculate the internal diameter of a 12 gauge shotgun barrel, simply take one pound of lead (0.454kg) and cut it into 12 equal pieces. After battering, pummeling and mashing one of these pieces into a perfect sphere (ball) the diameter of this sphere will equal the internal diameter of a 12 gauge shotgun.

It's for this reason that folk in the UK apparently refer to a 12 gauge shotgun as a 12 ball – don't quote me on this however as it's a word-of-mouth reference.



This method of calculation holds true for all shotgun gauges, in that for a 20 gauge shotgun you can simply cut you pound of lead into 20 equal pieces, make a sphere out of one of those and measure its diameter. It's that easy.

Using this principle, here's a table with a list of some common (and rare) gauges and their associated diameters:

Gauge	Barrel Diameter (mm)	Barrel Diameter (inches)
0	42.4	1.67
10	19.7	0.775
12	18.5	0.730
16	16.8	0.663
20	15.6	0.615
28	14.0	0.550
67.5	10.4	0.410

Obviously, as gauge increases, barrel diameter decreases. It is interesting to note that a 0.410 shotgun would traditionally be measured as 67.5 gauge!

Unfortunately, I've been unable to source an equivalently interesting explanation or formula for the genesis of the various shot sizes.

The closest I've come to a formula can be found on [www.wikipedia.org/wiki/Shotgun\\_shell](http://www.wikipedia.org/wiki/Shotgun_shell) which states:

“A useful mnemonic for remembering the diameter of numbered birdshot is simply to subtract the shot size from 17.”

For example, to calculate the diameter of number 6 shot you subtract 6 from 17 which yields the answer 11 (ie. 17 – 6 = 11). This gives the answer in hundredths of an inch. So number 6 shot is 11 x 1/100 of an inch, or 0.11 inches in diameter.

The following table shows the progression of shot size through the numbering system. Now I've found several conflicting sources regarding shot size, so there's a very real chance these figures may not be correct (however the largest discrepancy was a mere 2/1000 of an inch so any errors won't be significant).

Shot Size	Diameter (mm)	Diameter (inches)	No. of pellets in 28g
BBB	4.83	0.190"	42
BB	4.57	0.180"	49
B	4.32	0.170"	59
1	4.06	0.160"	70
2	3.81	0.150"	85
3	3.56	0.140"	105
4	3.30	0.130"	131
5	3.05	0.120"	167
6	2.79	0.110"	216
7.5	2.41	0.095"	336
8	2.29	0.090"	395
9	2.03	0.080"	562

Now these are all mathematical calculations. In reality a shot maker may use an alloy of lead with a slightly different density, or may make the shot slightly too large or too small. These variations will all have noticeable effects.

To check the variability of the number of pellets in a 28g load, I may or may not have spent one Tuesday night counting the pellets in a Briley Blaster, and there may or may not have been 374 pellets in that shell...

For those of you who weren't around for the Beatles' first concert tour, you may be wondering why we shoot 28g loads as the nominal load and not any other size. The answer lies rooted in the imperial (ie. old-fashioned) measuring system. 28 grams roughly corresponds to 1/16 of a pound, otherwise known as the ounce (oz). More precisely, 1oz is equal to 28.35g.

Heaven only knows which archaic fellow thought of that. Whoever it was, he probably knows his height in cubits...