"Utilisation ratio" and "Utilisation quotient" concepts

A) - "Utilisation ratio" concept for building bricks assessment

Our concept was developed starting from the examination of the bearing structure: each building based on LEGO bricks is always made up of 2x4 blocks (the first produced size of brick) and, it's not a coincidence that it has the shape and proportions of the classic brick used in construction industry. As surely all the fans know, the pair of digits (2x4) indicates the number of studs on the top side of the brick: 2x4 = 8 studs.

Studs slot in the underside tubes. Therefore, studs and tubes are the two constitutive elements marking out a LEGO brick.
It can be seen from the original drawings attached to the patent (already expired) deposited by Gotfred Kirk Christiansen in 1958 (see pic.).
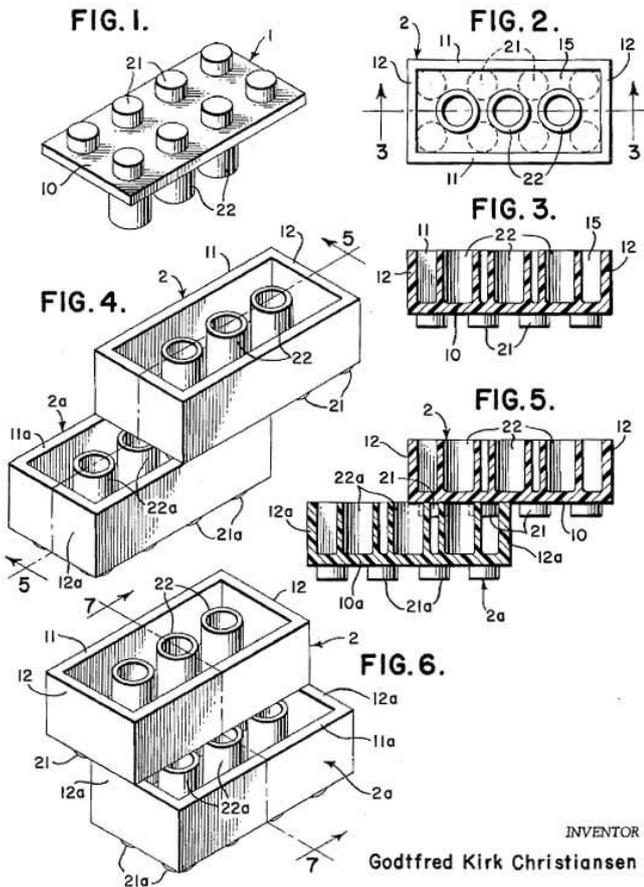

Oct. 24, 1961   G. K. CHRISTIANSEN   3,005,282
TOY BUILDING BRICK
Filed July 28, 1958   2 Sheets-Sheet 1

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Importance of the number of studs to attribute a correct value to the different building bricks

Usually a brick is identified by the **number of studs** on its upper side.

2x4   = 8 studs

1x4   e   2x2   = 4 studs

1x2   = 2 studs

1x1   = 1 stud

It is clear that the possibilities of utilisation of a brick is proportional to its number of studs. The larger the number of studs, the greater the possibility of combination. A 2x4 brick with 8 studs allows to build almost everything, but to the detriment of building details. Conversely, the smallest brick 1x1 with one stud, has only one slot-in possibility, and supposing to have only 1x1 bricks, just a pillar can at most be built. Therefore, it's obvious that the **possibilities of utilisation of a brick are proportional to its number of studs**. The **number of studs** on the brick is identifying what we're going to name: its "utilisation ratio"

Therefore our maximum "utilisation ratio" is obtained by using the 2x4 brick (8 studs) that allows a large number of combinations, while the minimum utilisation ratio is given by the small 1x1 brick (=1 stud), which can only be used for completing buildings made with other bricks. This is confirmed by the fact that the 2x4 brick is out and away the best-selling loose brick representing more than 50% of the turnover.

B) - "Utilisation quotient" how to calculate the value of a mixed packaging

Starting from the above-mentioned concept of "utilization ratio", it is easy to reach the concept of "quotient of utilisation" to be applied to a mixed package of building bricks. The "quotient of use" will therefore be proportional to the total number of studs, divided by the total number of bricks.

Let us examine some examples concretely:

- First example:

Our Q-BRICKS "MAXI-CASE" contains a total of 750 pieces, most of them are 2x4 bricks (240 pcs out of a total of 750 pcs), followed by other medium-sized bricks (1x4 and 2x2= 150 pcs/each), 120 pcs of 1x2 and 90 pcs of 1x1, i.e. in a decreasing quantity proportional to the number of stubs. Our packaging contains **750** bricks totally, corresponding to a total of **3,450** stubs.

The "quotient of utilisation" related to the Q-BRICKS "MAXI-CASE" is therefore given by the formula **3,450** (total number of stubs) **divided by 750** (Total number of bricks) = **4.6**.

The "quotient of utilisation" of the maxi-case is therefore **4.6.**

• Second example

The Q-BRICKS "SMALL BOX" contains 300 pieces, made up of a same number of bricks (60 pcs) each 5 sizes. Also the box contains **300** pcs corresponding to a total number of **1,140** stubs.

The "quotient of utilisation" related to the 300 Q-BRICKS "SMALL BOX" is given by the formula 1.140 (total stubs) divided by 300 (total pieces) = **3.8**.

Its "quotient of utilisation" equal to **3.8** is therefore lower than the quotient of the "MAXI-CASE".

The SMALL BOX is therefore suitable for those who, having a sufficient quantity of 2x4 bricks to build the bearing structures, are in need of some assorted complementary bricks.

• Third example

The 650-piece BASIC packaging marketed with success by the renowned and titled leading brand name contains only **2,060** studs, as it is mainly made up of small-sized bricks. More than half of its contents (356 pieces out of 650) consists of 1x1 and 2x1 bricks, utilizable only as completion pieces. It is therefore evident that the "quotient of utilisation" of said packaging is very low.

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In fact, its "quotient of utilisation" turns out to be **3.17** and it is not only lower than the value resulting for the "MAXI CASE" (**4.6**) but also below the quotient of the SMALL BOX (**3.8**)**,** considered as complementary package.

Conclusion

By merely comparing the number of pieces contained in a package, the consumer will never be aware of the real value of what he/she's going to purchase. This is the reason why, Q-BRICKS packages indicate also the total number of studs contained. We also give you the resulting "quotient of utilisation". Only in this way you can assess the real "quotient of utilisation" of your purchase.

On our website (www.q-bricks.org) there is a summary table useful for calculating the total number of studs contained in a package. The table also shows the details of the above-mentioned 650-Piece package, marketed by the leading house, so that you can make an objective comparison.