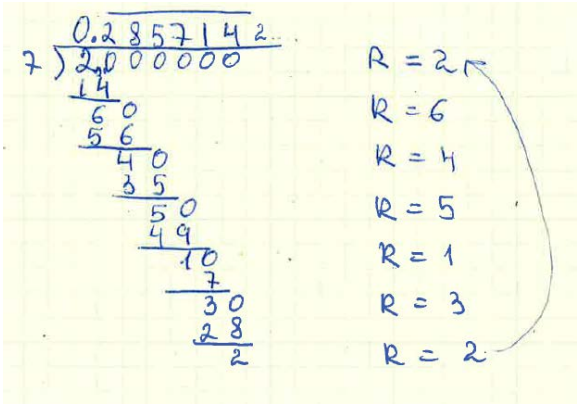
CLASSWORK 14, January 31, 2021

1. **Rational number is** a real number that can be written as a simple/irregular fraction, i.e as a proportion $\frac{a}{b}$.
2. A rational number is a reoccurring decimal. Can be proved using remainder and Pigeonhole principle.

Decimal fractions:

$\frac{2}{7}$



Find simple fractions for$0.\overline{3}$, $0.\overline{71}$,

$\mathbf{0.\overline{3} = x}$**, multiply by 10.**

$\mathbf{3.\overline{3} = 10x \rightarrow 3 + 0.\overline{3} = 10x \rightarrow 3 + x = 10x}$

Equations:

$7x = 2$ $\qquad$ $\frac{3}{8}x = \frac{1}{3}$ $\qquad$ $\frac{3x+2a}{2a-5x} = -1$

Operations with powers: $\quad a^n = a \cdot a \cdot \cdots \cdot a\ (ntimes)$

$(a \cdot b)^n = a^n \cdot b^n$

$a^m \cdot a^n = a^{m+n};$

$a^m \div a^n = a^{m-n}$

$a^0 = 1$

$a^{-n} = \frac{1}{a^n}$

HOMEWORK 14,
January 31, 2021

1. Simplify the following and show the answer in the exponent form

a) $\frac{3^7 \cdot 2^7}{2^3 \cdot 2^4} =$ b) $\frac{6^5 \cdot 2^4}{3^5 \cdot 2^2} =$ c) $\frac{7^9 \cdot 2^5}{7^2 \cdot 2^4} =$

d) $\frac{11^4}{11^2 \cdot 5^2 \cdot 5^3} =$ e) $7^4 \cdot 11^2 \cdot 11^{-5} \cdot 7^2 =$ f) $\frac{3^{-5} \cdot 2^7}{3^{-3} \cdot 2^4} =$

g) $\frac{42^2}{6^2} =$ h) $\frac{3^5 \cdot 3^{-5}}{3^9} =$ i) $\frac{x^2 \cdot y^2 \cdot x^{-3}}{x^2} =$

2. Find a simple fraction form for the following repeating decimals:

a) $0.\overline{6}$ b) $0.\overline{7}$ c) $0.\overline{8}$

3. Using pencil, ruler, and **quadrille** paper construct a rectangle ABCD with sides 3cm and 4 cm. Measure the diagonal AC.

4. Using pencil, ruler, and quadrille paper construct isosceles triangle ABC with the base 5 cm and the height 4 cm. Using protractor measure all angles in your triangle: $\angle A, \angle B, \angle C$.

5. Using compass construct a circle with radius 45 mm. Construct another circle with radius 30 mm and the center on any point on the first circle. Draw a line QF between two fathers points on the circles. Measure this distance in mm. |QF| =

6. Using compass construct a circle with radius 5 cm. Using ruler draw diameter AB. Put any point K on the circle and construct the triangle ABK. Using protractor measure $\angle K$.