

## LONG DIVISION ALGORITHM

def

ALGORITHM - A STEP-BY-STEP METHOD USED TO SOLVE A PROBLEM.

DIVISION IS USED TO SEE HOW MANY TIMES THE DIVISOR FITS INTO THE DIVIDEND.

$$\begin{array}{r} 6 \text{ ← QUOTIENT} \\ 4 \overline{) 24} \\ \underline{24} \\ 0 \end{array}$$

DIVISOR      DIVIDEND

$$35 \div 7 = 5$$

DIVIDEND      QUOTIENT  
DIVISOR

def

A QUOTIENT IS THE ANSWER TO A DIVISION PROBLEM

### ALGORITHM

- DAD 1) DIVIDE
- MOM 2) MULTIPLY
- SISTER 3) SUBTRACT
- BROTHER 4) BRING DOWN
- REPEAT 5) REPEAT

$$\begin{array}{r} 25 \\ 3 \overline{) 75} \\ \underline{-6} \downarrow \\ 15 \\ \underline{-15} \\ 0 \end{array}$$

YOU TRY:

$$1) \begin{array}{r} 17 \\ 6 \overline{) 102} \\ \underline{-6} \downarrow \\ 42 \\ \underline{-42} \\ 0 \end{array}$$

$$2) 216 \div 8 = 27$$
$$\begin{array}{r} 27 \\ 8 \overline{) 216} \\ \underline{-16} \downarrow \\ 56 \\ \underline{-56} \\ 0 \end{array}$$

def

REMAINDER - THE PART "LEFT OVER"  
IN DIVISION

$$23 \div 4$$

$$\begin{array}{r} 5 \text{ R}3 \leftarrow \text{NO MORE R!} \\ 4 \overline{)23} \\ \underline{-20} \\ 3 \leftarrow \text{REMAINDER} \end{array}$$

REMAINDERS AS FRACTIONS

$$139 \div 6$$

$$\begin{array}{r} 23 \frac{1}{6} \\ 6 \overline{)139} \\ \underline{-12} \downarrow \\ 19 \\ \underline{-18} \\ 1 \end{array} = 23 \frac{1}{6}$$

YOU TRY:

$$1) 154 \div 4 =$$

$$\begin{array}{r} 38 \frac{2}{4 \div 2} \\ 4 \overline{)154} \\ \underline{-12} \downarrow \\ 34 \\ \underline{-32} \\ 2 \end{array} = 38 \frac{1}{2}$$

$$2) 121 \div 8 =$$

$$\begin{array}{r} 15 \frac{1}{8} \\ 8 \overline{)121} \\ \underline{-8} \downarrow \\ 41 \\ \underline{-40} \\ 1 \end{array} = 15 \frac{1}{8}$$

\* DON'T FORGET TO  
SIMPLIFY BY DIVIDING  
BY THE GCF!

\* NO SIMPLIFYING  
REQUIRED BECAUSE  
GCF OF 1 AND 8  
IS 1!

## REMAINDERS AS DECIMALS

$$\begin{array}{r} 25.2 \\ 5 \overline{) 126.0} \\ \underline{-10} \phantom{0} \downarrow \\ 26 \phantom{0} \downarrow \\ \underline{-25} \phantom{0} \downarrow \\ 10 \phantom{0} \downarrow \\ \underline{-10} \\ 0 \end{array} \quad \begin{array}{l} \leftarrow \text{ADD A DECIMAL AND ZERO TO KEEP} \\ \text{DIVIDING. THEN PUT DECIMAL} \\ \text{UP ON TOP TOO!} \\ \\ \\ \\ \\ \leftarrow \text{YOU ARE DONE WHEN REMAINDER} \\ \text{IS ZERO.} \end{array} = 25.2$$

YOU CAN KEEP ADDING ZEROES UNTIL YOU GET A ZERO REMAINDER OR YOU ROUND TO GET YOUR FINAL ANSWER.

YOU TRY:

1)  $154 \div 4$

$$\begin{array}{r} 38.5 \\ 4 \overline{) 154.0} \\ \underline{-12} \phantom{0} \downarrow \\ 34 \phantom{0} \downarrow \\ \underline{-32} \phantom{0} \downarrow \\ 20 \phantom{0} \downarrow \\ \underline{-20} \\ 0 \end{array} = 38.5$$

2)  $121 \div 8$

$$\begin{array}{r} 15.125 \\ 8 \overline{) 121.000} \\ \underline{-8} \phantom{00} \downarrow \\ 41 \phantom{00} \downarrow \\ \underline{-40} \phantom{00} \downarrow \\ 10 \phantom{00} \downarrow \\ \underline{-8} \phantom{00} \downarrow \\ 20 \phantom{00} \downarrow \\ \underline{-16} \phantom{00} \downarrow \\ 40 \phantom{00} \downarrow \\ \underline{-40} \\ 0 \end{array} = 15.125$$