

Prime Numbers & Prime Factorization

**This sheet is used in the video
Prime Numbers & Prime Factorization*

List the prime numbers through the thirties:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, ...

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Give the prime factorization:

$$1) \begin{array}{r} 2 \overline{)66} \\ 3 \overline{)33} \\ 11 \end{array} = \underline{2 \cdot 3 \cdot 11}$$

$$5) \begin{array}{r} 3 \overline{)63} \\ 3 \overline{)21} \\ 7 \end{array} = \underline{3 \cdot 3 \cdot 7}$$

or

$$3^2 \cdot 7$$

$$2) \begin{array}{r} 2 \overline{)90} \\ 3 \overline{)45} \\ 3 \overline{)15} \\ 5 \end{array} = \underline{2 \cdot 3 \cdot 3 \cdot 5}$$

or

$$2 \cdot 3^2 \cdot 5$$

$$6) \begin{array}{r} 2 \overline{)114} \\ 3 \overline{)57} \\ 19 \end{array} = \underline{2 \cdot 3 \cdot 19}$$

$$3) \begin{array}{r} 5 \overline{)85} \\ 17 \end{array} = \underline{5 \cdot 17}$$

$$7) \begin{array}{r} 3 \overline{)135} \\ 3 \overline{)45} \\ 3 \overline{)15} \\ 5 \end{array} = \underline{3 \cdot 3 \cdot 3 \cdot 5}$$

or

$$3^3 \cdot 5$$

$$4) \begin{array}{r} 2 \overline{)486} \\ 3 \overline{)243} \\ 3 \overline{)81} \\ 3 \overline{)27} \\ 3 \overline{)9} \\ 3 \end{array} = \underline{2 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3}$$

or

$$2 \cdot 3^5$$

$$8) \begin{array}{r} 3 \overline{)957} \\ 11 \overline{)319} \\ 29 \end{array} = \underline{3 \cdot 11 \cdot 29}$$

~~$$\begin{array}{r} 4 \\ 7 \overline{)319} \\ -28 \\ \hline 39 \end{array}$$~~
$$\begin{array}{r} 29 \\ 11 \overline{)319} \\ -22 \\ \hline 99 \end{array}$$