If you think of these mathematicians as large numbers and let Euclid get involved, half of the result will be the size of the key.
Answer Key

BDK TKPOQSP PCAKV RKXPEQLLS MCB EP CP EXCPOK GDCSX DSM ZXSKPV LCOXCPOK UCM TLCYSPO
MEGGKX PKCXR

- Affine encryption code: \( f(x) = 15x + 2 \)
- Plaintext: "The penguin named Bernoulli sat on an orange chair. His friend Lagrange was playing soccer nearby."

If you think of these mathematicians as large numbers and let Euclid get involved, half of the result will be the size of the key.

- Bernoulli: (1417131420111118), Lagrange: (11061701364)
  - Each letter converted to number mod 26 and put together as one for each word
- \( \gcd(\text{Bernoulli}, \text{Lagrange}) = \gcd(1417131420111118, 11061701364) = 6 \)
- Key moving forward: \( \frac{1}{2}(6) = 3 \)

UEZ IFGM PZFJN JKNVOHPRIUXWMB WVQ RIBI ZLP LKJX QCBO DU FN PKGZ QRP RIQGN IFBI XIE QCF
PPNJDU FN VPNJQQ JQ DT KJU PJ CXY. BINP, BZMP VSB ZMBBBKO JK ZWBMZ TVZ. BQFOTPKZ OBEZEP
OP YZ FPKFZDBIGZ OZTMZDQAVI JG BZMP. ZFI!

- Vigenere cipher with key length 3, \( f(x) = BXV = 1, 23, 21 \)
- Plaintext: "The hill seems insurmountable but when you know that it is only two units high and the summit is \textit{ussity} it is not so bad. Also, eels are elegant in every way. Everyone needs to be especially respectful of eels. Eek!"
- Key moving forward: "\textit{summit}" converts to "\textit{ussity}" by a Hill cipher with keylength 2

\[ \begin{pmatrix} 5 & 3 \\ 2 & 3 \end{pmatrix} \]

- Hill cipher with keylength 2: \( f(x) = \begin{pmatrix} 5 & 3 \\ 2 & 3 \end{pmatrix} \)
- Plaintext: "Congratulations you have reached the end!"