

More Fun with Prime Numbers

# Final Exam

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# Problem 1

Choose the **incorrect statement** on the birth year of Fermat, Euler, Gauss, Eisenstein.



Pierre de  
Fermat  
(1607?-1665)



Leonhard  
Euler  
(1707-1783)



Carl Friedrich  
Gauss  
(1777-1855)



Gotthold  
Eisenstein  
(1823-1852)

[https://en.wikipedia.org/wiki/Pierre\\_de\\_Fermat](https://en.wikipedia.org/wiki/Pierre_de_Fermat)

[https://en.wikipedia.org/wiki/Leonhard\\_Euler](https://en.wikipedia.org/wiki/Leonhard_Euler)

[https://en.wikipedia.org/wiki/Carl\\_Friedrich\\_Gauss](https://en.wikipedia.org/wiki/Carl_Friedrich_Gauss)

[https://en.wikipedia.org/wiki/Gotthold\\_Eisenstein](https://en.wikipedia.org/wiki/Gotthold_Eisenstein)

# Problem 1

(a) The precise birth year of Pierre de Fermat is **not known**. According to a theory, he was born in 1607, and **1607 is a prime number**.

- **Correct**
- Fermat was a lawyer at Toulouse, France.



Pierre de  
Fermat  
(1607?-1665)

# Problem 1

(c) Johann Carl Friedrich Gauss was born in 1777, and **1777 is a prime number**.

- **Correct**
- Gauss first proved the **Quadratic Reciprocity Law** when he was 19 years old. (19 is a prime number.)



Carl Friedrich  
Gauss  
(1777-1855)

# Problem 1

(d) Gotthold Eisenstein was born in 1823, and **1823 is a prime number**.

- **Correct**
- He proved the **cubic reciprocity law** and the **quartic reciprocity law**. He died of tuberculosis at the age of 29. (29 is a prime number.)



Ferdinand  
Gotthold Max  
Eisenstein  
(1823-1852)

# Problem 1

(b) Leonhard Euler was born in 1707, and 1707 is a prime number.

➤ **Incorrect!**

➤  $1+7+0+7=15$

➤  $1707 = 3 \times 569$

➤ 1783 is a prime number!



Leonhard  
Euler  
(1707-1783)