edX **KyotoUx:** 004x Fun with Prime Numbers: The Mysterious World of Mathematics

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HOMEWORK 1-1-1 (1/1 point)

Factorize the following integers into products of prime numbers:

Write prime factors in the blanks in ascending order.

100 = (A) × (B) × (C) × (D)

A	B	C	D
2	2	5	5
✔	✔	✔	✔
2	2	5	5

HOMEWORK 1-1-2 (1/1 point)

Factorize the following integers into products of prime numbers:

Write prime factors in the blanks in ascending order.

555 = (E) × (F) × (G)

e	F	G
3	5	37
✔	✔	✔
3	5	37

HOMEWORK 1-1-3 (1/1 point)

Factorize the following integers into products of prime numbers:

Write prime factors in the blanks in ascending order.

112,233 = (H) × (I) × (J) × (K)

H	I	J	K
3	11	19	179
✔	✔	✔	✔
3	11	19	179

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HOMEWORK 1-2 (2/2 points)

How many twin prime pairs are there between 1,000 and 1,500?

15 ✓

15

HOMEWORK 1-3 (4/4 points)

Confirm the Goldbach conjecture for 100. It is known that 100 can be written as a sum of two prime numbers in six different ways. Namely, we have

$$100 = A_1 + B_1 = A_2 + B_2 = A_3 + B_3 = A_4 + B_4 = A_5 + B_5 = A_6 + B_6,$$

where A_i and B_i are prime numbers satisfying $A_1<A_2<A_3<A_4<A_5<A_6$ and $A_i<B_i$. Calculate A_i and B_i.

A_1	B_1	A_2	B_2
3	97	11	89
✓	✓	✓	✓
3	97	11	89

A_3	B_3	A_4	B_4
17	83	29	71
✓	✓	✓	✓
17	83	29	71

A_5	B_5	A_6	B_6
41	59	47	53
✓	✓	✓	✓
41	59	47	53

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