Let's find gcd(e,j) = gcd(197,352) using Extended Euclid's Algorithm:

gcd(197,352) =	
x = 197 (divisor) y = 352 (dividend)	
d = 352 **div** 197 = 1 r = 352 – 1 * 197 = 155 y = x = 197 x = r = 155	1 = 109 * 197 – 61 * 352 1 = 48 * 197 – 61 * 352 + 61 * 197 1 = 48 * 197 – 61 * (352 - 1*197)
= gcd(155,197) =	
d = 197 div 155 = 1 r = 197 – 1 * 155 = 42 y = x = 155 x = r = 42	1 = 48 * 197 – 61 * 155 1 = 48 * (197 – 1 * 155) – 13 * 155
= gcd(42,155) =	
d = 155 div 42 = 3 r = 155 – 3 * 42 = 29 y = x = 42 x = r = 29	1 = 48 * 42 – 13 * 155 1 = 9*42 – 13 * 155 + 39 * 42 1 = 9*42 – 13 * (155 - 3*42)
= gcd(29,42) =	
d = 42 div 29 = 1 r = 42 – 1 * 29 = 13 y = x = 29 x = r = 13	1 = 9 * 42 – 13 * 29 1 = 9 * (42 – 1 * 29) – 4 * 29
= gcd(13,29) =	
d = 29 div 13 = 2 r = 29 – 2 * 13 = 3 y = x = 13 x = r = 3	1 = 9 * 13 – 4 * 29 1 = 13 – 4 * 29 + 8 * 13 1 = 13 – 4*(29 – 2 * 13)
= gcd(3,13) =	1 = 13 - 4*3
d = 13 div 3 = 4 r = 13 – 4 * 3 = 1 y = x = 3 x = r = 1	Working from the bottom up:
= gcd(1,3) =	

d = 3 div 1 = 3 r = 3 – 3 * 1 = 0 y = x = 1 x = r = 0 = 1	

gcd(197,352) = 1 = 109 * 197 – 61 * 352   matching it with gcd*(x,y)* = *s*x* + *t*y*

s = 109, t = 61

multiplicative inverse of *x* **mod** *y* is *s* **mod** y.

Therefore, multiplicative inverse of 197 mod 352 is 109 mod 352 = **109**