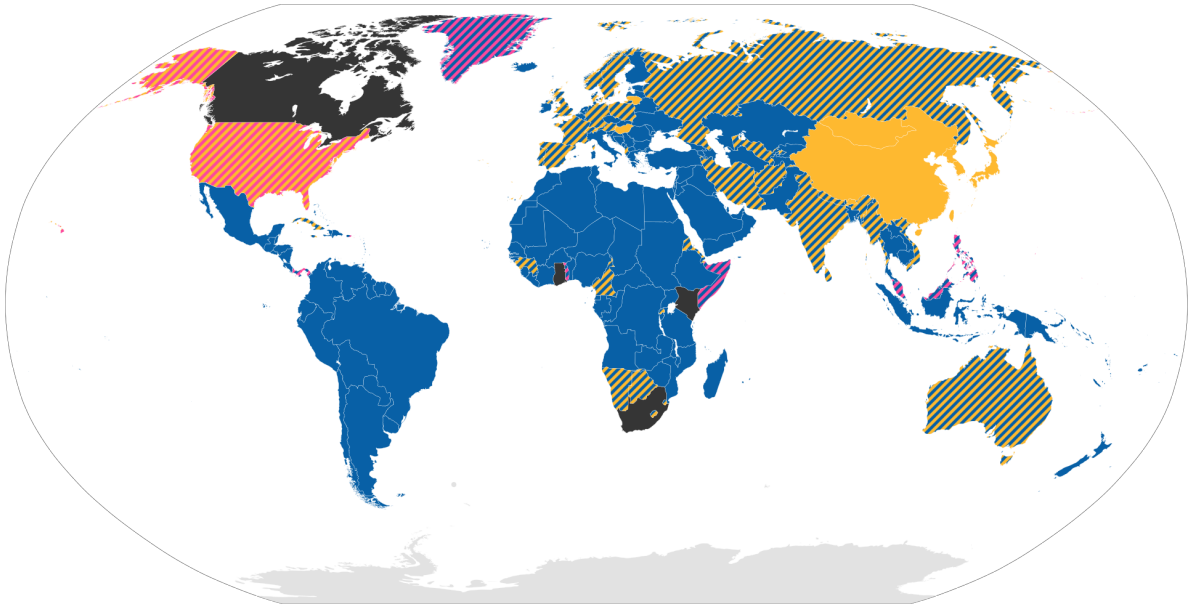
# Week 1 Friday

## Bait and Switch

Make sure you know your neighbors' names, and then discuss briefly:

America is one of few places regularly using month-day-year order for dates:



The date today is $1/12/24$, so consider the ring $R = \mathbb{Z}/\langle 11224 \rangle$. For which nonzero ideal $I \subseteq R$ is the quotient ring $R/I$ as large as possible?

# Single Variable Polynomials

1. Which of the following rings is a field?

(A) $\mathbb{R}[x]/\langle x^2+1\rangle$.

(B) $\mathbb{C}[x]/\langle x^2+1\rangle$.

(C) Both of (A) and (B).

(D) Neither (A) nor (B).

2. What is $\gcd(x^2 + x + 1, x^2 + 2)$ in $\mathbb{Q}[x]$? What about in $\mathbb{F}_3[x]$?

3. (A) True or (B) False? The ring $k[x]/\langle f \rangle$ is finite dimensional as a vector space over $k$ for any nonzero polynomial $f \in k[x]$.