Definition (Opposite category)**.** Given a category $\mathbf{C}$, the *opposite category* $\mathbf{C}^{\mathrm{op}}$ has the same objects as $\mathbf{C}$, but a morphism $f : X \to Y$ in $\mathbf{C}^{\mathrm{op}}$ is the same as a morphism $f : Y \to X$ in $\mathbf{C}$. Furthermore, a composite of morphisms $f \fatsemi g$ in $\mathbf{C}^{\mathrm{op}}$ is the composite $g \fatsemi f$ in $\mathbf{C}$.