If $\varphi: \mathcal{F} \to \mathcal{G}$ is a morphism of sheaves, we define the image of φ, denoted by $\operatorname{Im}\varphi$, to be the sheaf associated to the presheaf image of φ.
By the universal property of the sheaf associated to a presheaf, there is a natural map $\operatorname{Im}\varphi \longrightarrow \mathcal{G}$.

In fact, the map is injective and thus $\operatorname{Im}\varphi$ can be identified with a subsheaf of $\mathcal{G}$.

We say that a morphism $\varphi: \mathcal{F} \to \mathcal{G}$ of sheaves is surjective if $\operatorname{Im}\varphi = \mathcal{G}$.

We say that a sequence $\cdots \to \mathcal{F}^{i-1} \xrightarrow{\varphi^{i-1}} \mathcal{F}^{i} \xrightarrow{\varphi^{i}} \mathcal{F}^{i+1} \to \cdots$ of sheaves and morphism is exact if at each stage
$\ker \varphi^{i} = \operatorname{Im} \varphi^{i-1}$.
Thus $0 \to \mathcal{F} \xrightarrow{\varphi} \mathcal{G}$ is exact $\Leftrightarrow$ φ is injective
and $\mathcal{F} \xrightarrow{\varphi} \mathcal{G} \to 0$ is exact $\Leftrightarrow$ φ is surjective.

Now let $\mathcal{F}'$ be a subsheaf of a sheaf $\mathcal{F}$.
We define the quotient sheaf $\mathcal{F}/\mathcal{F}'$ to be the sheaf associated to the presheaf $U \longrightarrow \mathcal{F}(U)/\mathcal{F}'(U)$.

It follows that for any point p, the stalk $(\mathcal{F}/\mathcal{F}')_p = \mathcal{F}_p/\mathcal{F}_p'$.

$$\left(\mathcal{F}/\mathcal{F}'\right)_p = \varinjlim_{U} \frac{\mathcal{F}(U)}{\mathcal{F}'(U)} \qquad U \ni p.$$

$$[(U,\sigma)] \in \left(\mathcal{F}/\mathcal{F}'\right)_p \longrightarrow \mathcal{F}_p/\mathcal{F}_p'$$

$\overset{\shortparallel}{[(V,\tau)]} \longrightarrow [(U,\sigma)] + \mathcal{F}_p'$

$\sigma \in \mathcal{F}(U)$ $\qquad [(V,\tau)] + \mathcal{F}_p'$

$\Downarrow \quad \sigma|_W - \tau|_W \in \mathcal{F}'(W) \Leftrightarrow [(U,\sigma)] - [(V,\tau)] \in \mathcal{F}_p'$