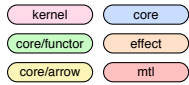# Cats Type Classes

kernel | core
core/functor | effect
core/arrow | mtl

The highlighted type classes are the first ones you should learn. They're well documented and well-known so it's easy to get help.

a === b
a =!= b

Eq

Some type classes introduce symbolic operators.

a > b
a >= b
a < b
a <= b

PartialOrder

Order

a |+| b

Semigroup

Band | CommutativeSemigroup | **Monoid**

Semilattice | CommutativeMonoid | Group

BoundedSemilattice | CommutativeGroup

a >>> b
a <<< b

Compose | Profunctor

Category | Strong

Choice | Arrow

CommutativeArrow

a |@| b
a *> b
a <* b

Invariant

Foldable | **Functor** | Cartesian | Contravariant

Reducible | **Traverse** | InvariantMonoidal | ContravariantCartesian

NonEmptyTraverse | Apply

a <+> b

Show | InjectK

SemigroupK

Inject | NotNull

CoflatMap | FlatMap | **Applicative** | MonoidK

CommutativeFlatMap | **Monad** | ApplicativeError | **Alternative**

Bifoldable | Bifunctor

Comonad | CommutativeMonad | MonadError

Bitraverse

Bimonad

Sync | LiftIO

Async

Effect

Applicative

Functor

ApplicativeAsk | FunctorRaise | FunctorEmpty | FunctorTell

ApplicativeLocal | FunctorLayer | FunctorListen

MTL type classes do not extend core type classes directly, but the effect is similar; the dashed line can be read "implies".

Monad

ApplicativeLayer | FunctorLayerFunctor

MonadState | MonadLayer | ApplicativeLayerFunctor

Traverse

MonadLayerFunctor | TraverseEmpty

MonadLayerControl