Tarski World

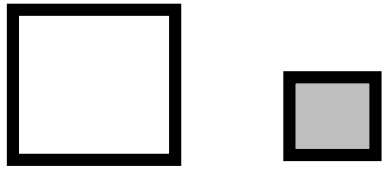
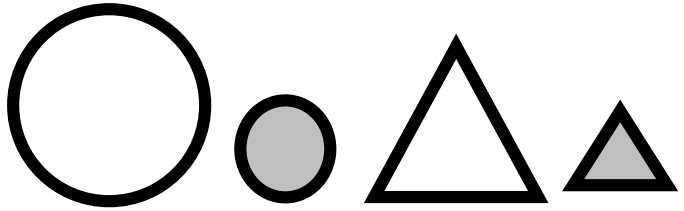
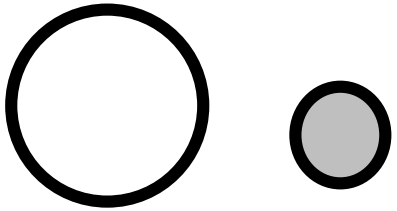
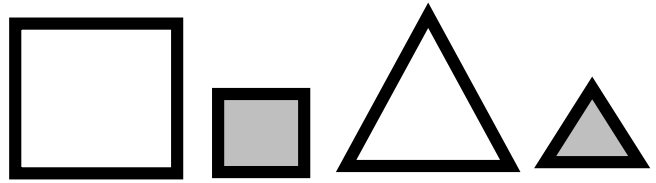
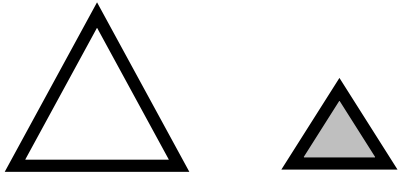
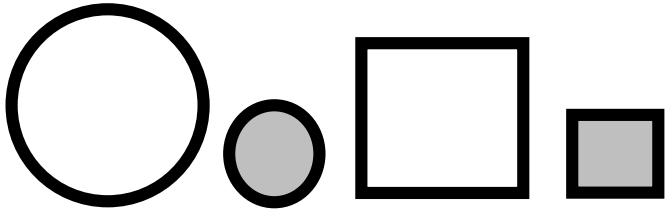
The world where you can be a Square!

Variables and Operators

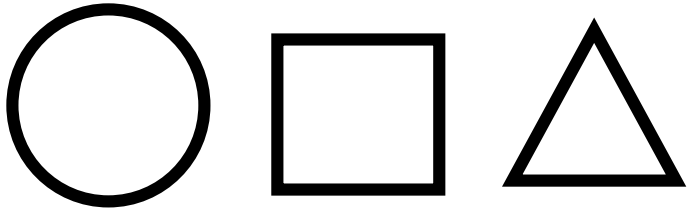
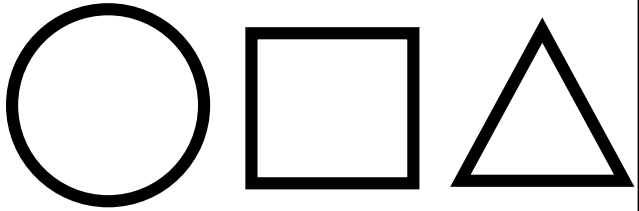
- Variables:
  - $x, y, z, u, w, \ldots$
  - $x_1, x_2, y_1, \ldots$
- Logical connectives
  - ¬ ∨ ∧ → ↔
- Quantifiers
  - ∀ ∃

- Domain: PIECES.
- Predicates over PIECES:
  - Unary:
    - Shapes: Square(), Circle(), Triangle()
    - Sizes: Big(), Little()
  - Binary:
    - NextTo(), Aligned(), EqualSize()

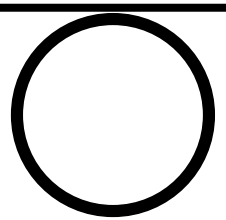
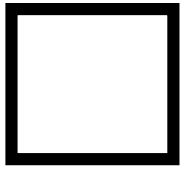
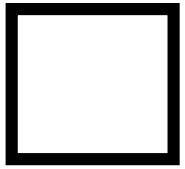
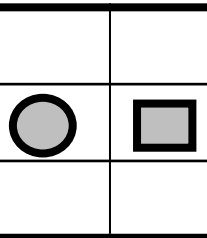
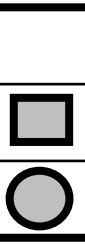
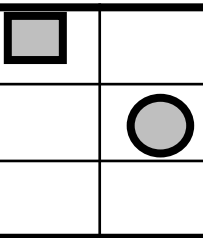
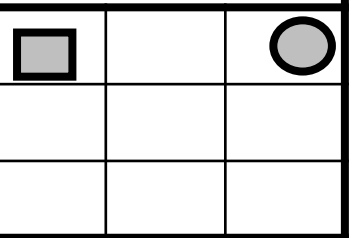
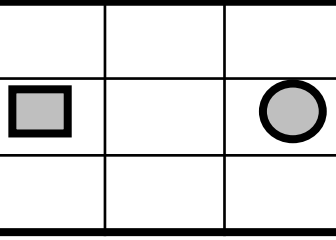
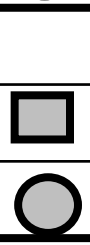
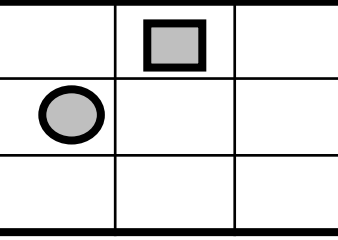
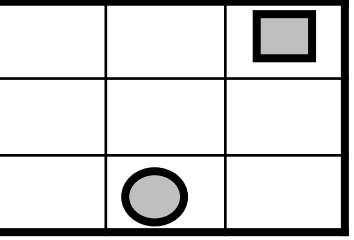
Shape predicates

Predicates	True when x is	False when x is
Square(x)		
Circle(x)		
Triangle(x)		

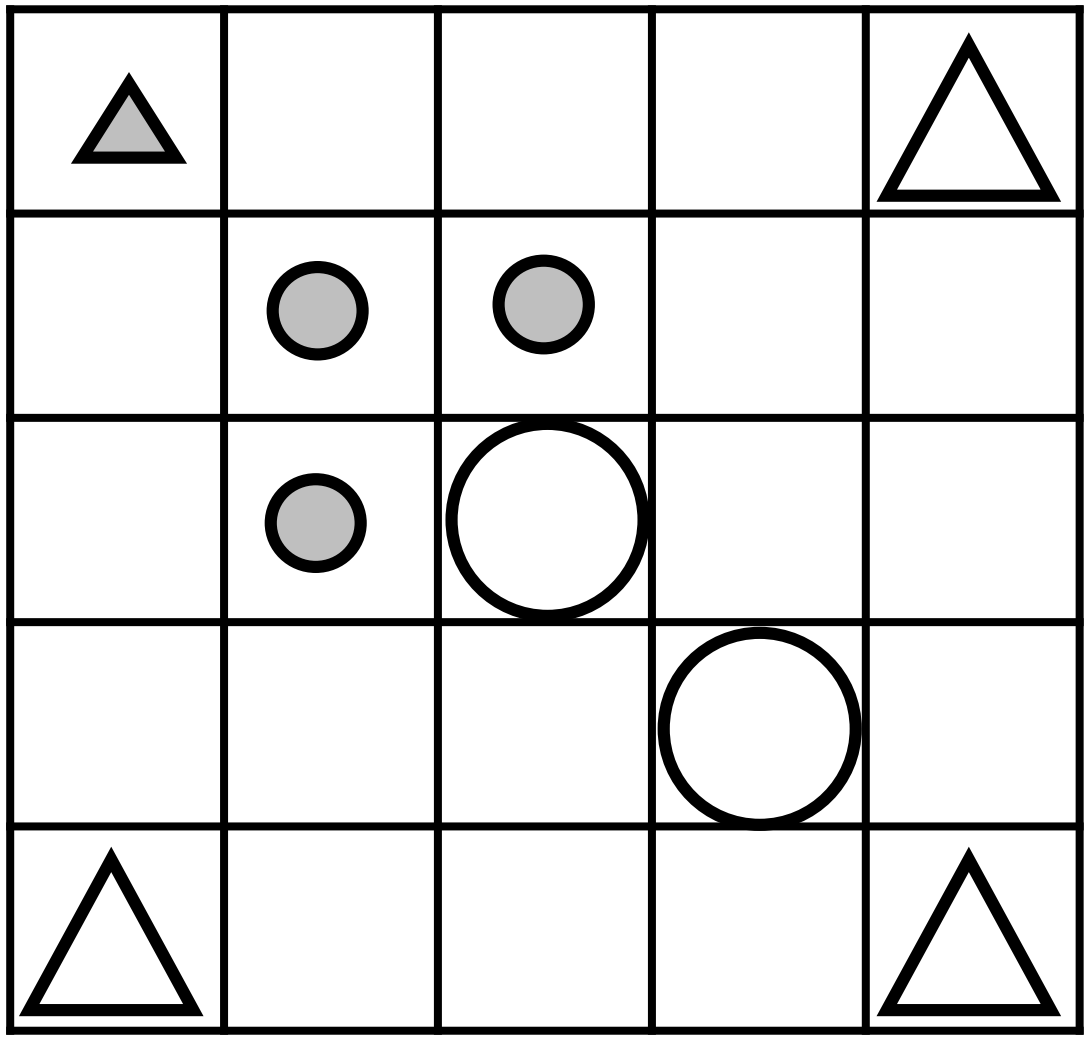
Size predicates

Predicate	True when x is	False when x is
Little(x)		
Big(x)		

Binary predicates

Function Name	True for x and y		False for x and y	
	x	y	x	y
EqualSize(x,y)				
NextTo(x,y)				
Aligned(x,y)				

Example Tarski board 1



True for this board:

$\forall\ x, \neg\ Square(x)$

$\exists x\ Big(x) \wedge Circle(x)$

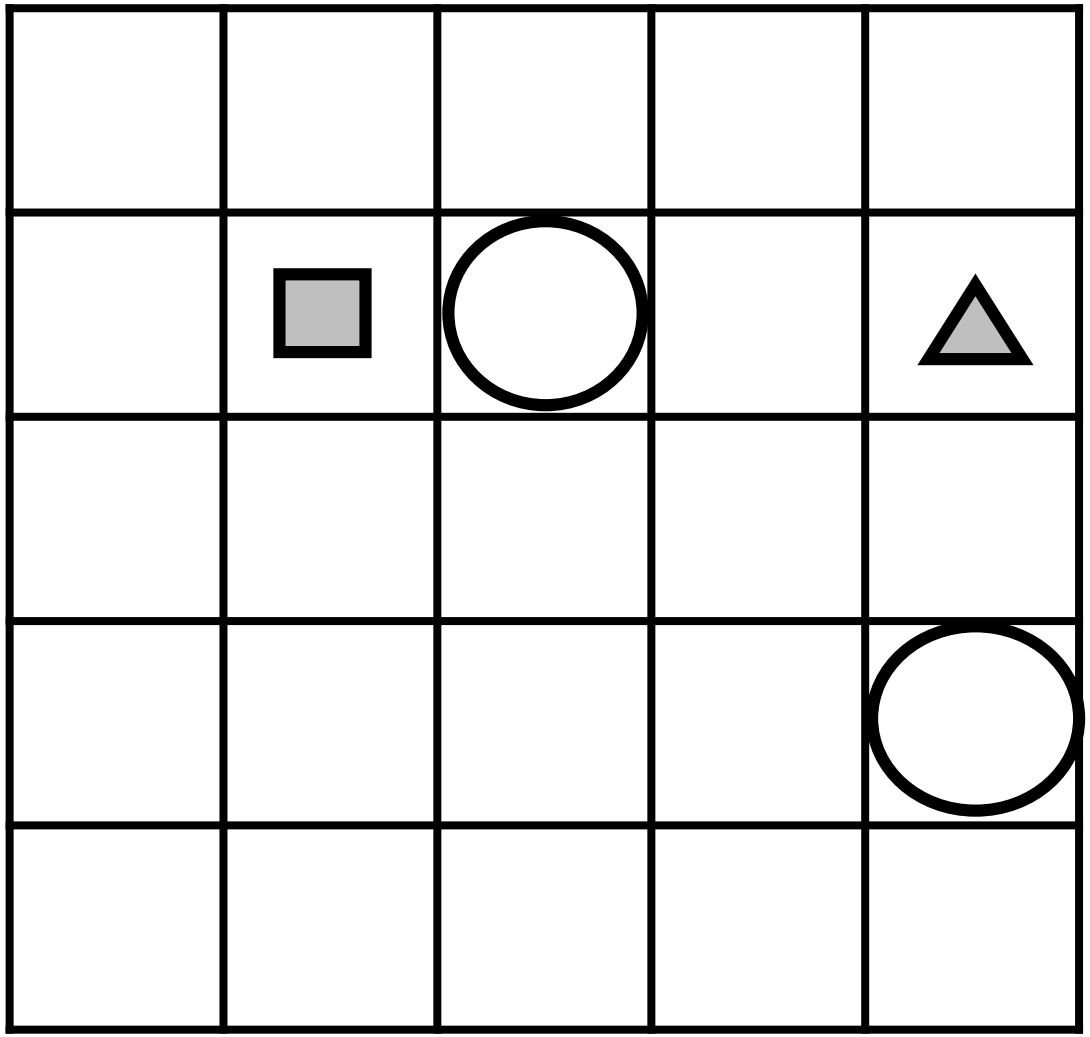
False for this board:

$\forall x\ \exists y\ NextTo(x, y)$

$\forall x\ Circle(x) \rightarrow \exists y\ Aligned(x, y)$

$\forall x\ \neg Little(x) \rightarrow Circle(x)$

Example Tarski board 2



True for this board:

$\exists\, x\, Triangle(x) \wedge \forall y\, Aligned(x, y)$

$\forall x \neg Little(x) \rightarrow Circle(x)$

False for this board:

$\forall x\, \exists y\, NextTo(x, y)$

$\forall x \left(Square(x) \rightarrow \forall y\, Aligned(x, y)\right)$

$\forall\, x, \neg\, Square(x)$