**10.31**

Any three properties that are mutually exclusive satisfy the four basic shape axioms

1.

“A car cannot be red and yellow”  
“A car cannot be red and blue”

“A car cannot be blue and yellow”

“A car can be red, yellow, or blue”

The axioms are not precise enough. Premises 1-3 are debatable: e.g., a car could have red doors and the rest of it yellow. Axiom 4 would be true.

2. By adding the word “entirely” we have

“A car cannot be entirely red and entirely yellow”  
“A car cannot be entirely red and entirely blue”

“A car cannot be entirely blue and entirely yellow”

“A car can be entirely red, entirely yellow, or entirely blue”

In general, if an object is a particular shape, it cannot be partially that shape and partially another shape, otherwise it wouldn’t be either of the shapes. This property of the property shape isn’t the same for color of a car: a car can be red and yellow at the same time. But if the property is of being “entirely of one color”, then the property is analogous to shape: a car cannot be entirely of two colors.

3. Axioms are true for size of blocks in Tarski’s world.

4. For physical objects in the real world, there is an infinite spectrum of sizes. However, if we are modeling the real world, we could use specific metrics to split objects into three sizes. These metrics would be specified as additional axioms. If we do this, then the axioms for size are true.