Lesson 2.7.1: Logical Equivalence of Statements

Logically equivalent statements: statements that have the same logical content or truth value.
Counterexample: any example that shows a statement is false

Practice Exercises 2.7.1

Determine the truth value of each statement.

1. Conditional: If a bird is an ostrich, then it cannot fly.
   Inverse: If a bird is not an ostrich, then it can fly.
   Converse: If a bird cannot fly, then it is an ostrich.
   Contrapositive: If a bird can fly, then it is not an ostrich.
2. Conditional: If two angles are right, then they are congruent.
   Inverse: If two angles are not right, then they are not congruent.
   Converse: IIf two angles are congruent, then they are right.
   Contrapositive: If two angles are not congruent, then they are not right.
3. Conditional: If a number is divisible by 3, then it is divisible by 6.
   Inverse: If a number is not divisible by 3, then it is not divisible by 6.
   Converse: If a number is divisible by 6, then it is divisible by 3.
   Contrapositive: If a number is not divisible by 3, then it is not divisible by 3.

Activity 2.7.1

Determine the truth value of each statement.

1. Conditional: If two lines intersect, then they are perpendicular.
   Inverse: If two lines do not intersect, then they are not perpendicular.
   Converse: If two lines are perpendicular, then they intersect.
   Contrapositive: If two lines are not perpendicular, then they do not intersect.
2. Conditional: If a shape is a triangle, then it is a polygon.
   Inverse: If a shape is not a triangle, then it is not a polygon.
   Converse: If a shape is a polygon, then it is a triangle.
   Contrapositive: If a shape is not a polygon, then it is not a triangle.
3. Conditional: If a number is divisible by 2, then it is divisible by 4.
   Inverse: If a number is not divisible by 2, then it is not divisible by 4.
   Converse: If a number is divisible by 4, then it is divisible by 2.
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