Template for undecidability proofs using a mapping reduction

**Proof.** We will use a mapping reduction to prove the reduction _________________. Assume that ____________ is decidable. The function $f$ that maps instances of ____________ to instances of ____________ is performed by TM $F$ given by the following pseudocode.

$$ F = \text{“On input } \langle \text{___________} \rangle :$$

1. Construct the following $M'$ given by the following pseudocode.

$$M' = \text{“} \___________\text{”}$$

2. Output $\langle \text{__________} \rangle$”

Now, $\langle \text{__________} \rangle$ is an element of ____________ iff $\langle \text{__________} \rangle$ is an element of ____________. So using $f$ and the assumption that ____________ is decidable, we can decide ____________. A contradiction. Therefore, ____________ is undecidable. (This also proves that the complement of ____________ is undecidable, because the complement of any undecidable language is itself undecidable.)