

Homework 1: Popper and paradoxes

1. Read the Wikipedia page on *Zeno's paradoxes*. The paradox about Achilles and the Tortoise is 2500 years old and still excellent food for thought.

A *paradox* consists of three parts.

PREMISE consisting of facts and established truths.
ARGUMENT which is a logical derivation from the premise.
CONCLUSION which seems to be false.

In every paradox, either the premise is wrong, the argument is flawed or the conclusion is in fact true. In Zeno's paradox, state these three parts as clearly as possible and point out the error in one of them.

2. If Achilles starts with a baton in his right hand and switches hand for every completed part, in which hand will the baton be when he catches the tortoise?
3. In a variant of the paradox, Achilles runs the first part of the race at 1 m/s while the tortoise runs at $1/2$ m/s, then they slow down to $1/2$ m/s and $1/3$ m/s, then to $1/3$ m/s and $1/4$ m/s etc. Now, in which part of the paradox will the error be? (Remember the *harmonic series*?)
4. Read Popper's essay on *Science as Falsification*
What does Popper attempt to do in this paper? Write a paragraph on this (no more than 100 words).
5. Falsification seems paradoxical
PREMISE Scientific statements should be falsifiable.
ARGUMENT If a statement is falsified it is not true.
CONCLUSION Scientific statements are not true.
Where is the error in the paradox? Explain!

Handing in your solution

Please save your solution as a pdf file and hand it in on the peergrade page. Do not write your name in the pdf file.

Peer grading

You will be asked to review the homework of three other students. Your own solution will also be checked in this way.

Your teacher will read your submission and report the result in rapp.