Instructions: Write name legibly. Explain so that smart people who have not taken our class will understand.

Write down the modus tollens form of argument by which we reject hypotheses (2a in Hempel reading).

If ____________________________, then ____________________________.

But ____________________________, then ____________________________.

So, ____________________________.

Write down the modus ponens form of argument by which we support hypotheses (2b in Hempel reading).

If ____________________________, then ____________________________.

And ____________________________, then ____________________________.

So, ____________________________.

Indicate whether the following statements are true or false by underlining one or the other option.

True     False  The form of argument by which we reject hypotheses is (deductively) valid.
True     False  The form of argument by which we affirm hypotheses is (deductively) valid.
True     False  Hempel thinks that we can conclusively disprove hypotheses.
True     False  Hempel thinks that we can conclusively prove hypotheses.
True     False  Hempel thinks that favorable test results provide some support for their hypotheses.

Complete the following argument forms based on the corresponding scientific theories.

(a) Torricelli found that mercury can be pumped only a 14th as high as water can be pumped above its pump. That is what we would expect if earth’s atmosphere exerts downward pressure. So earth’s atmosphere probably does exert downward pressure.

If ____________________________, then we would observe ____________________________.

We did observe ____________________________.

So, it is probably the case that ____________________________.

(b) Pascal found that his barometer’s mercury at the top of a mountain was lower than it was at the bottom of the mountain. That is what we would expect based on the hypothesis that there is less more atmosphere pressure at higher altitudes. So that theory of atmospheric pressure is probably true.

If ____________________________, then we would observe ____________________________.

We did observe ____________________________.

So, it is probably the case that ____________________________.
Hempel defines some terms for us. Finish the definitions below.

(a) “Inductive inferences... are sometimes described as leading from __________________ to __________________” (p. 7).

(b) “the premisses of an inductive inference are often said to _____________________________ _____________________________ whereas the premisses of a deductive inference _____________________________” (p. 7-8).

Complete the following claims from Hempel (using Hempel’s words).

(c) “Facts/data are relevant to a hypothesis if either _____________________________ or _____________________________ can be _____________________________ the hypothesis” (p. 9).

(d) “___________________________ determine, among other things, what data should be collected at a given point in scientific investigation” (p. 9).

(e) “Scientific objectivity is safeguarded by...the checking of _____________________________ _____________________________” (p. 12).

(f) “the maxim that data should be gathered without guidance by antecedent hypotheses about the connections among the facts under study is _____________________________, and it is certainly not _____________________________” (p. 9).

Indicate whether the following statements are true or false, according to Hempel.

True  False  Hempel thinks that scientists do not consider hypotheses until they have gathered, analyzed, and classified all of the facts. (p. 9)

True  False  Hempel thinks that scientists should not consider hypotheses until they have gathered, analyzed, and classified all of the facts. (p. 9)

True  False  Hempel thinks that science is objective. (p. 12)

True  False  Hempel thinks that science is unbiased. (p. 8-10)

True  False  Hempel thinks that “the method of hypotheses” can prove hypotheses to be true. (p. 13-14)

True  False  Hempel thinks that “the method of hypotheses” is inductive in some sense. (p. 14).

True  False  Hempel thinks that narrow inductivism is inductive in the same sense as wide inductivism.

True  False  Hempel thinks that the narrow inductivism is as plausible as wide inductivism.

Recount the steps in Hempel’s view of science as “the method of hypotheses” (wide inductivism) (p. 13):

I. ____________________________________________________________

II. ____________________________________________________________
Recount the four-step, “narrow inductivist” (Baconian) scientific method that Hempel quotes (or lists) (p. 8):

1. ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

2. ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

3. ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

4. ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

In your own words, recount Hempel’s reasons to think that narrow inductivism is a non-starter.

A. ________________________________________________________________
   ________________________________________________________________

B. ________________________________________________________________
   ________________________________________________________________

C. ________________________________________________________________
   ________________________________________________________________

D. ________________________________________________________________
   ________________________________________________________________

Do the first two premises support the conclusion?

Yes No   All flowers have petals. Roses have petals. So, roses are flowers.

Yes No   If something is a flower, then it has petals. Roses have petals. So roses are flowers

Yes No   All vehicles have wheels. Boats are vehicles. So, boats have wheels.

Yes No   Is something is a vehicle, is has wheels. Boats are vehicles. So, boats have wheels.

Yes No   If the earth is flat, then horizons will seem flat. Horizons seem flat. So, the earth is flat.

Yes No   If the earth is flat, then horizons are perfectly flat. But horizons aren’t. So, the earth isn’t flat.

Yes No   All things that have engines need oil. Cars need oil. So cars have engines.

Yes No   If something has an engine, then it needs oil. Cars need oil. So cars have engines.

Yes No   All things that have engines need oil. Cars have engines. So cars need oil.