You are now starting the second part: the instruction.

This instruction consists of:

- A short ***general*** instruction on critical thinking.
- explanation of how to draw a ***correct*** conclusion based on statements.
- explanation of how to arrive at a ***rational*** decision based on data.
- reading a short case study ***.***
- some ***exercises*** .

1. A short ***general*** instruction on critical thinking.

During the test, you completed several tasks to measure critical thinking. To develop critical thinking, you often have to pause your initial inspiration or solution and see if you've overlooked anything. **You try to reason and reflect before giving an answer, checking whether it's correct** . In this reasoning and reflection, you use rules or principles. Think, for example, of rules of logic to arrive at a valid statement or principles of probability. After each task, try to explain **HOW** you arrived at your answer—the steps you followed in your reasoning—and **WHY** you think the answer is correct.

Deductive and inductive reasoning are two well-known forms of reasoning. In deductive reasoning, the conclusion logically follows from two propositions. These propositions are assumed to be true. A classic example is :

Proposition 1: All men are mortal

Proposition 2: Socrates is a human being

Conclusion: Socrates is mortal

Inductive reasoning is about generalizing. This means drawing a general conclusion from specific situations. A well-known example is:

The first swan is white
the second swan is white
...the nth swan is white
So: all swans will probably be white.

However, this conclusion need not be true. Therefore, by induction, the conclusion does not logically follow from the previous statement, but it can still be a plausible conclusion.

2. Explanation of how to draw a ***correct*** conclusion based on statements.

The test included two assignments consisting of two statements, each requiring you to select the correct conclusion. One of these assignments was:

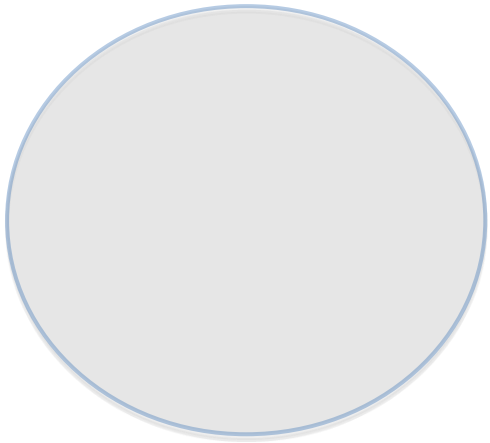
Proposition 1: All living things need water.
Proposition 2: Roses need water.

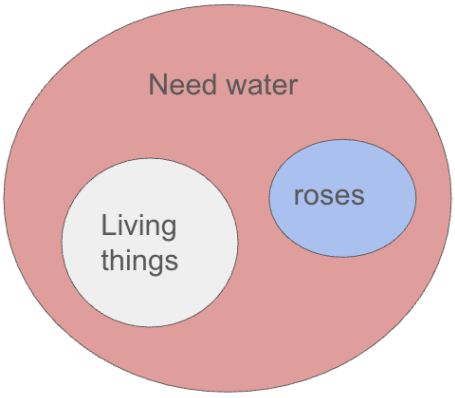
What can we conclude about roses?

1. All roses are living things.
2. Some roses are living things.
3. Roses are not living things.
4. No correct conclusion possible.

The first statement is generalizing, and the second statement is specific. The conclusion must logically follow from the first two statements. This may mean that the conclusion may deviate from reality as you know it.

Drawing a diagram can help with correct reasoning. For example
You draw three circles and place the elements from the statements in each circle: things that need water, living things, and roses. This is what you can conclude from the first two statements, nothing more, nothing less. Now you see that there is no overlap between living things and roses. This means that the conclusion "all roses are living things" or "some roses are living things" cannot be drawn from these statements. But you also cannot conclude that roses are not living things. That cannot be deduced from these two statements. In other words: no correct conclusion can be drawn from these two statements and therefore answer 4 is correct!





You can also use the following reasoning scheme:

Correct reasoning is:	**Example**
If A then B, then A then B.	All living things (A) need water (B), roses are living things (A) then they also need water (B).
If A then B; if not B then not A.	All living things (A) need water (B), roses do not need water (not B) so roses are not living things (not A).

Incorrect reasoning is:	**Example**
If A then B, then B.	All living things (A) need water (B), roses need water (B) so a rose is also a living thing (A).
If A then B, if no A then no B.	All living things (A) need water (B), roses are not living things (not A) then they do not need water (not B).

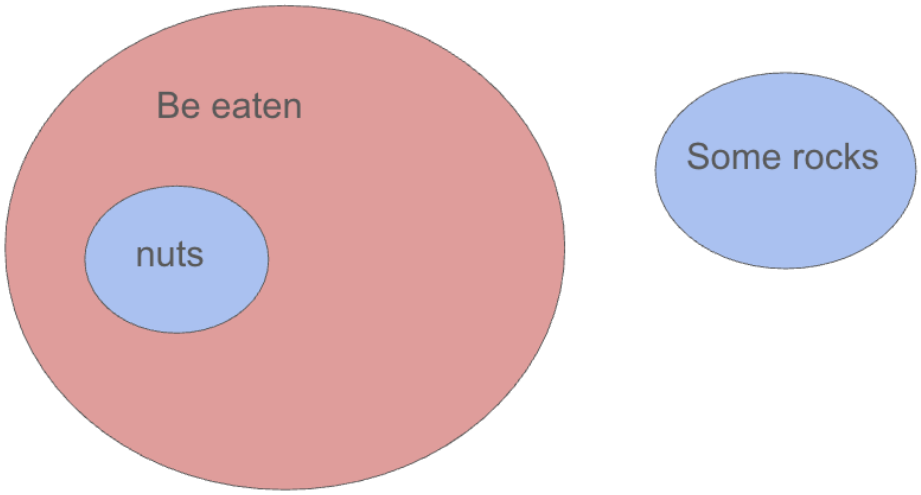
Another task in the test was:

Proposition 1. Nuts can be eaten .
Proposition 2. Some rocks cannot be eaten .

What can you conclude about rocks based on these two statements?

1. Some rocks can be eaten.
2. Some rocks are nuts.
3. Some rocks are not nuts.
4. No correct conclusion possible.

Here you see again that the first statement is generalizing, while the second statement is specific. The conclusion must follow logically from these two statements. Drawing a diagram can also help you with proper reasoning. For example, you could draw three circles and place the elements from the statements inside them: "being eaten," "nuts," and "some rocks." Some rocks cannot be eaten, so you should place them outside the "being eaten" circle. This is the only conclusion you can draw from the first two statements.



The only correct conclusion you can draw from the statements is that some rocks are not nuts!

You can also use the reasoning scheme for this:

Correct reasoning is:	**Example**
If A then B, then A then B.	Nuts (A) can be eaten (B), some rocks are nuts (A) then some rocks can be eaten (B).
If A then B; if not B then not A.	Nuts (A) can be eaten (B), Some rocks cannot be eaten (not B) so some rocks are not nuts (not A).

Incorrect reasoning is:	**Example**
If A then B, then B.	Nuts (A) can be eaten (B), some rocks can be eaten (B) so some rocks are nuts (A).
If A then B, if not A then also not B.	Nuts (A) can be eaten (B), Some rocks are not nuts (not A) so some nuts cannot be eaten (not B).

Remember that reasoning maps can be applied to multiple reasoning tasks.

3. Explanation of how to make a ***rational*** decision based on data.

Think back to the assignment about the Jacobs family's choice between an Audi and a BMW. The question was, what should the Jacobs family do?

1. Maybe they would be better off buying the BMW.
2. They would definitely be better off buying the BMW.
3. Maybe they would be better off buying the Audi.
4. They would definitely be better off buying the Audi.

In this case study, we look at how to interpret data, i.e., how to arrive at a general statement based on detailed information.

In these types of decisions, we tend to be guided more by our personal preferences, for example, for a particular type of car, or by personal findings (think of the friend who was very dissatisfied with the Audi). In doing so, we often ignore other relevant information, such as, in this case, the findings of experts and consumer reports. Relevant information consists of more than just one or a few findings: primarily data from large groups of, for example, experts and consumers. This information is more reliable than individual findings and forms the basis for a more rational approach. Generally, we can say that such an approach provides a better basis for decisions in complex situations. In this case, answer 3 or answer 4 is therefore the best option.

You see the same principle in the following assignment:

A study of 1,000 people involves 975 women and 25 men. Robin is a randomly selected participant. Robin is 23 years old, has a mechanical engineering degree, enjoys going out with friends, enjoys a beer, and is a fan of hard rock music. What are the odds that Robin is male?

1. More than 75%
2. 50%
3. 30%
4. Less than 3%

You might be tempted to think there's a good chance Robin is male because of his description. But Robin was chosen at random, and if you look at the numbers, the probability that Robin is female (975/1000, or 97.5%) is much greater than the probability that Robin is male (25/1000, or 2.5%). So the correct answer is 4 (less than 3%).

Here, too, as in the previous example, it's all about the big numbers! Don't be misled by your initial associations.

Remember that correctly assessing probabilities is an important skill that you can apply in many reasoning tasks.

4. Now read the case study you received on paper. You may use this case study for the next four assignments.

Eindhoven is in the grip of Dance for three days with Eindhoven Dance Motion (EDM)

Eindhoven is *the place to be* for everyone who loves dance. Let loose at a dance party, enjoy a dance menu, or participate in a dance seminar—it's all possible during the second edition of EDM. EDM is organized by Dynamo and Yu'r Events in collaboration with various Eindhoven partners, including Biki 90, the Effenaar, the Van Abbe Museum, and various bars on Stratums Eind.

With this city-wide event, EDM aims to put Eindhoven on the map and keep it there as a dance city. EDM also prioritizes talent development. Various events offer young talent a platform, and Dynamo hosts a variety of seminars.

After a successful first edition with 5,000 visitors, the organization aims to achieve healthy growth in the coming years. This includes growth in visitors, events, educational programs, and partnerships. In 2015, this was more than achieved with over 20 partners at 19 different locations and 26 events! From pop venues to restaurants, from dance organizations to museums, from cafés to clothing stores.

Eindhoven Dance Motion played too much of a pub scene, with small parties. As a result, it lacked impact and visibility in previous years. Another contributing factor was the lack of reputable organizations participating. This year, however, is different. "We may be losing some of the number of locations and activities, but we're definitely gaining in quality," says Eva van Gorcum of the organizing youth center Dynamo.
Under her leadership, a well-thought-out program has been created. We believe it now deserves the designation "Eindhoven's ADE."

This year, Dik & Lang have become partners with EDM. After one of the many parties, visitors can enjoy a tasty snack or an effective hangover breakfast at Dik & Lang. What exactly they'll have on the menu remains a surprise...