Energy is released from methane during a combustion reaction. The equation below shows the substances involved in this reaction.

$$CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$$

A Identify **one** element that is involved in this reaction.

B Identify **one** compound other than methane that is involved in this reaction.

C Describe **one** piece of evidence that could be used to determine whether a substance is an element or a compound.

Score	Description
3	Three key elements. AND Response addresses all parts of the question clearly and correctly. Response does not contain any incorrect information.
2	Two key elements. AND Response addresses all parts of the question. Response includes only minor errors.
1	One key element. Response does not address all parts of the question. OR Response addresses all parts of the question, but response includes major errors.
0	Response is incorrect.
Blank	No response.

Part A
One key element

One key element for identifying one of the following elements that is involved in the reaction:

- Carbon
- Hydrogen
- Oxygen

Part B
One key element

One key element for identifying one of the following compounds other than methane that is involved in the reaction:

- Carbon dioxide
- Water

Part C
One key element

One key element for describing one of the following examples of evidence that can be used to determine whether a substance is an element:

- The substance is made of only one type of atom.
- The substance cannot be made by combining other elements in chemical reactions.
- The substance cannot be broken down into other elements in chemical reactions.

OR
One key element for describing one of the following examples of evidence that can be used to determine whether a substance is a compound:

- The substance is made of more than one type of atom.
- The substance can be made by combining elements in chemical reactions.
- The substance can be broken down into different elements in chemical reactions.

In September, Alex observed a dry creek in a wildlife area in northwestern Nevada. In February of the next year, water started to flow in the creek, and a small pond formed in the area. By the end of May, the creek was dry again, and the pond was gone.

A Identify **one** possible natural source of the water that flowed in the creek.

B Describe the property of water that **most** likely changed when the pond disappeared.

C Explain how some of the water that had been in the pond could return to the source you identified in **Part A**.

Score	Description
3	Three key elements. AND Response addresses all parts of the question clearly and correctly. Response does not contain any incorrect information.
2	Two key elements. AND Response addresses all parts of the question. Response includes only minor errors.
1	One key element. Response does not address all parts of the question. OR Response addresses all parts of the question, but response includes major errors.
0	Response is incorrect.
Blank	No response.

Part A
One key element

One key element for identifying one of the following possible natural sources of the water in the creek:

- Rain
- Snow
- Melting ice or snow
- Runoff from the surrounding area
- Ground water (seasonal spring)

Part B
One key element

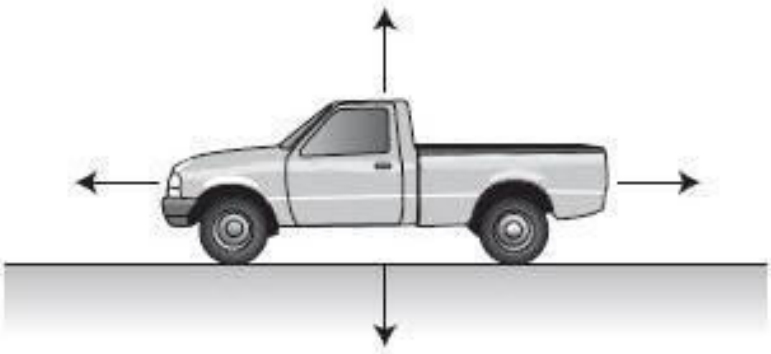
One key element for describing one of the following properties of water that most likely changed when the pond disappeared:

- temperature
- volume
- density
- (average) speed of the particles
- forces between particles
- space between particles

Part C
One key element

One key element for explaining that the water could evaporate back to the air, form new clouds, and fall again as rain or snow (which could melt, refreeze to form ice, runoff back into the stream, or move through the layers of soil and bedrock to return to the ground water source).

The diagram below shows a truck traveling on a straight and level road. Each arrow represents a force on the truck. The forces on the truck are balanced.



A Identify **two** forces on the truck that balance each other.

B Explain how you could show that the forces you identified in **Part A** are balanced.

Score	Description
3	Three key elements. AND Response addresses all parts of the question clearly and correctly. Response does not contain any incorrect information.
2	Two key elements. AND Response addresses all parts of the question. Response includes only minor errors.
1	One key element. Response does not address all parts of the question. OR Response addresses all parts of the question, but response includes major errors.
0	Response is incorrect.
Blank	No response.

Part A
Two key elements

One key element for identifying either of the following pairs of balanced forces:

- the force from the engine (or thrust) pushing forward and friction (or drag) resisting forward motion
- gravity (or weight) pulling down and the ground (or the normal force) pushing up

Part B
One key element

One key element for describing either of the following as evidence that the forces identified in **Part A** are balanced:

If the truck is traveling at a constant speed (is not slowing down or speeding up), then the forward and backward forces are balanced.
OR
If the truck is traveling on a level road and does not move upward or downward, then the upward and downward forces are balanced.