

Maine  
Department of  
Education

**GRADE**

**8**

Maine Science Assessment  
Released Items (2022)



**New Meridian**

Use the information from Running to answer **questions 1–6**.

## Running

Yasir is a member of her school’s running team. One day at practice, she runs a mile and then has to stop because not only do her muscles hurt, but she is tired and out of breath. As her teammates pass her by, they do not look tired or sore. Later, she asks what she could be doing differently. Her teammate suggests to Yasir that she eat healthy foods and drink plenty of water, and during runs to use proper breathing techniques.

1. Yasir asks her teammate why good breathing techniques will help her to run longer. Her teammate claims that steady breathing while running provides oxygen to the muscles.

Is this body system working directly in the process of breathing while running? Mark **Yes** or **No** for each body system.

	<b>Yes</b>	<b>No</b>
Circulatory system	<input type="radio"/>	<input type="radio"/>
Digestive system	<input type="radio"/>	<input type="radio"/>
Excretory system	<input type="radio"/>	<input type="radio"/>
Muscular system	<input type="radio"/>	<input type="radio"/>
Nervous system	<input type="radio"/>	<input type="radio"/>
Respiratory system	<input type="radio"/>	<input type="radio"/>

2. On the morning before her next practice, Yasir decides to use the advice of her teammate and eats a large breakfast of eggs, fruit, and toast for energy. As she eats, she wonders how the food moves through her body. Yasir thinks that her nervous system and digestive system are working together to process the food.

Which **two** statements support this claim? Select **two** statements.

- (A) The nervous system helps regulate the rate at which the food moves through the digestive system.
- (B) The digestive system controls muscle movements in the gut and signals the nervous system to start digestion.
- (C) The digestive system uses signals from the nervous system to release enzymes into the gut, which break down food.
- (D) The nervous system breaks down the food for energy, while the digestive system sends signals to the muscles of the stomach.

3. On the day of her competition, Yasir is able to finish her run without her muscles hurting. She wonders what else she can do to improve her running. She thinks about the different body systems that work together. Yasir makes the claim that the circulatory system is important in maintaining endurance.

Which **three** statements support her claim? Select **three** statements.

- (A) It sends signals to all parts of the body by working with the nervous system.
- (B) It pumps blood to the body by working with the heart and with the muscular system.
- (C) It supplies oxygen and nutrients to the body by working with the respiratory system.
- (D) It carries waste and carbon dioxide out of the body by working with the excretory system.
- (E) It helps to digest food and send nutrients to the body by interacting with the digestive system.

4. On one of Yasir's runs, she encounters a large hill. As she runs up the hill, she realizes that she is breathing heavily and beginning to sweat.

How does sweating enable Yasir to run better?

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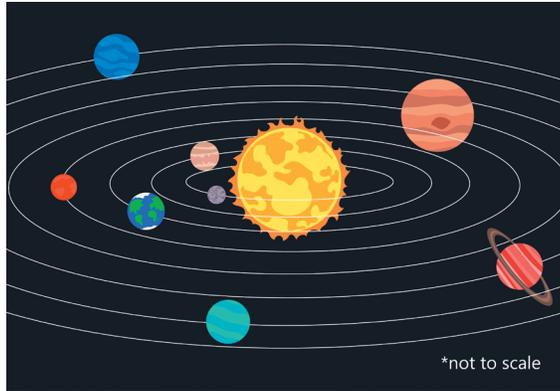
5. Why is it important for Yasir's body systems to function together while running?

- (A) They work together to maintain the same amount of oxygen throughout her entire run.
- (B) They work together to maintain stability and balance to provide enough oxygen to her muscles while running.
- (C) They work together to tell the nervous system to send signals to the body in order to speed the production of energy.
- (D) They work together to create energy and stability by providing enough carbon dioxide to her muscles while running.

Use the information from Gravity and the Solar System to answer **questions 6–7**.

### Gravity and the Solar System

Chris and Velma are learning about the solar system and using diagrams such as this one to make claims about whether gravity has a role in the orbit of planets around the Sun.



6. Chris claims that gravity has no effect on how the planets orbit the Sun. Velma argues against this claim and states that gravity is an essential part of how the planets orbit the Sun.

#### **Part A**

Which claim correctly describes the effect of gravity on the orbit of planets around the Sun?

- (A) Gravity has no effect on how the planets orbit the Sun.
- (B) Gravity is an essential part of how the planets orbit the Sun.

#### **Part B**

Which statements support the correct claim about the effect of gravity on the planets' orbit around the Sun? Select **all** that apply.

- (A) Due to the Sun's rotation, objects in our solar system are kept in orbit around the Sun.
- (B) Due to the Sun's enormous mass, objects in the solar system are kept in orbit around the Sun.
- (C) Due to relative distance to the Sun, objects in the solar system are kept in orbit around the Sun.
- (D) Due to relative distance to the Sun, objects in our solar system require additional forces to remain in orbit around the Sun.

7. As Chris considers the role of gravity in the orbit of planets around the Sun, he notices that the diagram is labeled as not drawn to scale. Which statements support the diagram as not drawn to scale? Select **all** that apply.
- (A) The relative sizes of the planets vary more than what is shown.
  - (B) The relative size of the Sun is too large compared to the planets.
  - (C) The relative number of planets in our solar system is more than what is shown.
  - (D) The relative distances between the orbits of the planets vary more than what is shown.

