#CRESTInnovator

CREST Science Olympiad (CSO)
Worksheet for
Class 8

Topic

Stars and Solar System

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Worksheet on Stars and Solar System

1. **Suppose a spacecraft is launched from Earth towards Jupiter. As it gets closer to Jupiter, which factor will increase the most significantly?**

   a. The spacecraft's size
   b. The spacecraft's speed
   c. The spacecraft's weight
   d. The spacecraft's temperature

2. **To demonstrate the concept of the Moon's phases, an experiment involves a light source, a globe representing the Earth, and a smaller sphere representing the Moon. How should the light source be positioned to simulate a full moon?**

   a. Directly above the smaller sphere
   b. Directly below the smaller sphere
   c. To the left of the smaller sphere
   d. To the right of the smaller sphere

3. **A stargazing event is planned, and participants observe the Moon through telescopes. Why might the Moon appear reddish during a total lunar eclipse?**

   a. Due to the Moon's inherent colour
   b. Because of the telescope's lens colour
   c. As a result of atmospheric scattering
   d. Because of the Moon's volcanic activity

4. **If you're sailing near the equator, how would the variation in day and night lengths throughout the year differ from that at higher latitudes?**

   a. There would be no variation in day and night lengths at the equator
   b. The variation would be more pronounced at the equator
   c. The variation would be less pronounced at the equator
   d. The equator experiences continuous daylight throughout the year

5. **Identify the constellation:**

   Clue 1: This constellation contains the bright star Sirius, also known as the "Dog Star."
   Clue 2: It represents a dog, and its name is associated with the canine species.
   Clue 3: Its presence in the night sky is a marker of the "Dog Days" of summer.

   a. Canis Major
   b. Canis Minor
   c. Ursa Major
   d. Leo Major

Answer Key

1. b - When a spacecraft is launched from Earth towards Jupiter, its speed will increase significantly as it gets closer to Jupiter. This is due to the gravitational pull of Jupiter, which accelerates the spacecraft as it falls towards the planet. This effect is described by Newton's law of universal gravitation, which states that the force of gravity between two objects increases with decreasing distance.

2. b - To simulate a full moon, the light source should be positioned directly below the smaller sphere representing the Moon. In the context of the Earth-Moon-Sun system, the full moon occurs when the Earth is positioned between the Sun and the Moon. This configuration causes the side of the Moon that is illuminated by the Sun to be facing away from the Earth, making the entire illuminated half of the Moon visible to observers on Earth. When the light source is placed directly below the smaller sphere, the light illuminates the entire side facing away from the Earth, replicating the appearance of a full moon as observed from Earth.

3. c - When the Earth gets between the Sun and the Moon during a total lunar eclipse, something cool happens. Our planet's air makes the Moon look red! The air likes to scatter or spread out the shorter blue and green light, leaving the longer red and orange light to paint the Moon. It's like the Earth's air is giving the Moon a reddish glow during the eclipse. This doesn't have anything to do with the Moon's normal colour or any volcanoes on it. It's all about how our air plays with sunlight during the eclipse.

4. a - Near the equator, the day and night lengths don't change much throughout the year. This is because the Earth's axis is tilted relative to its orbit around the Sun. However, the equator is almost perpendicular to the Sun's rays, so the amount of daylight and darkness doesn't vary as significantly as it does at higher latitudes. This is why the variation in day and night lengths is minimal at the equator.

5. a - The clues provided point to the constellation Canis Major. The presence of the bright star Sirius, the representation of a dog, and its association with the "Dog Days" of summer all align with the characteristics of the Canis Major constellation.

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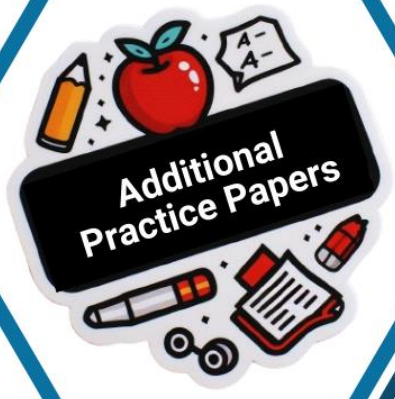

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