

Dear Young Scientist,

Welcome to the Detroit Science Center! Today's trip has been carefully planned to help you learn as much as possible about Science. Your jobs today are to pay attention, be respectful, ask questions, and complete the 4 sections of this Field Trip Learning Guide.

Have fun and learn as much as possible!

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Teachers: Please note that you should review these questions with your students at the end of each event. Each student should have their own copy of this sheet.

NOTE: The reflection area should be completed at school.  
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8th Grade MEAP Scavenger Hunt

1. A tuning fork placed in water will create a _____ wave in which the particles of the medium are displaced in a direction parallel to the direction of energy transport. (Physical Science Demonstration Level 2)
 - a. Compression
 - b. Longitudinal
 - c. Transverse
 - d. Rarefaction

2. Sound travels faster through _____ and slower through _____. (Physical Science Demonstration Level 2)
 - a. Gas, liquid
 - b. Liquid, gas
 - c. Solid, gas
 - d. Solid, liquid

3. In the electromagnetic spectrum, wavelength is inversely related to the amount of energy carried. A smaller wavelength would have a _____ energy. (Level 2 Exhibit)
 - a. Lower
 - b. Higher
 - c. Equal
 - d. None of the above

4. In the How Steel Is Made exhibit, blasts of hot air feed this heat-generating reaction. (Level 3 Exhibit)
 - a. Endothermic
 - b. Exothermic
 - c. Both A and B
 - d. None of the above

5. The cylinders found in the Fun Factory convert sound waves into what type of energy? (Level 3 Exhibit)
- Light
 - Heat
 - Sound
 - Potential
6. Lasers use specific colors of light into narrow beams that can cut through materials. The most powerful continuous lasers use what type of light? (Fun Factory Exhibit)
- White light
 - Refracted light
 - Infrared
 - Reflected light
7. At the Amazing Bell Curve, a ball has what probability of going to the left of a triangle? (Fun Factory Exhibit)
- 33%
 - 10%
 - 25%
 - 50%
8. What is the formula for wattage, or the power of electricity? (Fun Factory Exhibit)
- $\text{Watts} = \text{MC}^2$
 - $\text{Watts} = \text{Volts} * \text{Amps}$
 - $\text{Watts} = \text{Amps} / \text{Volts}$
 - $\text{Watts} = \text{Volts} + \text{Amps}$
9. What is evidence of a chemical change? (Physical Science Demonstration Level 2)
- Sound, temperature, color, and physical changes
 - Gas formation, weight change, sound, and mixture forming
 - Gas formation, solid formation, liquid formation, and disappearing substances
 - Gas formation, solid formation, temperature change, and color
10. The _____ produces fats and hormones to control some cell functions. (Level 3 Exhibit)
- Smooth Endoplasmic Reticulum
 - Rough Endoplasmic Reticulum
 - Golgi Apparatus
 - Nucleus
11. _____ is when the organelles of a cell duplicate causing the cell to grow and divide in two identical cells. (Life Science Demonstration Level 3)
- Meiosis
 - Cell Splitting
 - Mitosis
 - Cell Division

12. Inside a plant cell, chloroplast does what? (Level 3 Exhibit)
- Holds the cell contents together
 - Helps release cellular waste
 - Provides energy for the cell to function, combining carbon dioxide and water.
 - Provides food for the plant by photosynthesis.
13. Ethanol and biodiesel are other ways to power cars. What is ethanol made from? (Level 3 Exhibit)
- Alcohol and vegetable oil
 - Starch or sugar in plants
 - Grease and animal fat
 - None of the above
14. The sun's rays are most powerful when there is little angle to the ray. For a solar cell, the more extreme the angle to the sun, the less electricity the cell can generate. (Level 3 Exhibit)
- True
 - False
15. Hydrogen fueled cars are better for the Earth's atmosphere because _____. (Level 3 Exhibit)
- There is no carbon dioxide emitted
 - Less nitrogen oxide pollution
 - None of the above
 - Both A and B
16. Wind currents are similar to ocean currents in that: (Earth Science Demonstration Level 2)
- Warmer air is less dense causing it to rise allowing cooler air, which is more dense, to move in
 - Cooler air is less dense causing it to rise allowing warmer air, which is more dense, to move in
 - Temperature does not affect the currents
 - None of the above
17. Clouds are formed when what two substances are combined? (Earth Science Demonstration Level 2)
- Water vapor and dust
 - Smaller clouds and condensation
 - Condensation and water droplets
 - Water droplets and ice
18. Which of the following are negative reasons for asexual reproduction through mitosis – circle all that apply: (Life Science Demonstration Level 3)
- Does not take a long time
 - Identical duplication means lack of variation
 - Same weaknesses are continuously passed along
 - Ideal for stationary plants and animals
 - Needs a very stable environment

19. What is the smallest component that makes up an element?

- a. Matter
- b. Atom
- c. Compound
- d. Solution

20. H_2O is the chemical equation for water. The subscript 2 represents what?

- a. There are two water molecules
- b. There are two oxygen molecules
- c. There are two hydrogen atoms
- d. There are two electrons

Field Trip Reflections:

My favorite part about today's trip was:

The most important thing I learned was:

What would have made this trip better, would have been if:

When I grow up, I would like to have a job related to something I learned about today Yes/ No