8TH GRADE PHYSICAL SCIENCE

ECHOLS MIDDLE SCHOOL

MAY 2020 ISSUE 7

WEEK 6 ANSWERS

STEMscopedia:

No questions.

Reading Science:

1. A, 2. C, 3. B, 4. B, 5. A, 6. D

Math Connections:

1. Computer monitor, Hair dryer, Earth's magnetic field, fluorescent lamp, lodestone, bar magnet, Jupiter, Sunspot, Electron Microscope, Neodynium Magnet, Large Magnet, MRI Magnet, Large Hadron Collider Accelerator, Strong Laboratory Magnet, National High Magnetic Field Laboratory Magnet, White Dwarf, Pulsar
2. a. 1.5T x 5 = 6.5 T, b. The magnetic field strength of the LHC is five times stronger.
3. a. 3T x 15 = 45T, b. It takes 15 MRI electromagnets with a strength of 3T to equal the strength of one 45T NHMFL.
4. a. 0.01T x 1,000 = 10T, b. It takes 1,000 bar magnets with a MFS of 0.01T to equal one bar magnet.
5. a. 0.0005T x 2,000 = 0.1T, b. Earth's magnetic field of 0.0005T multiplied by 2,000 equals Jupiter's magnetic field.

Guided Practice:

Paragraph

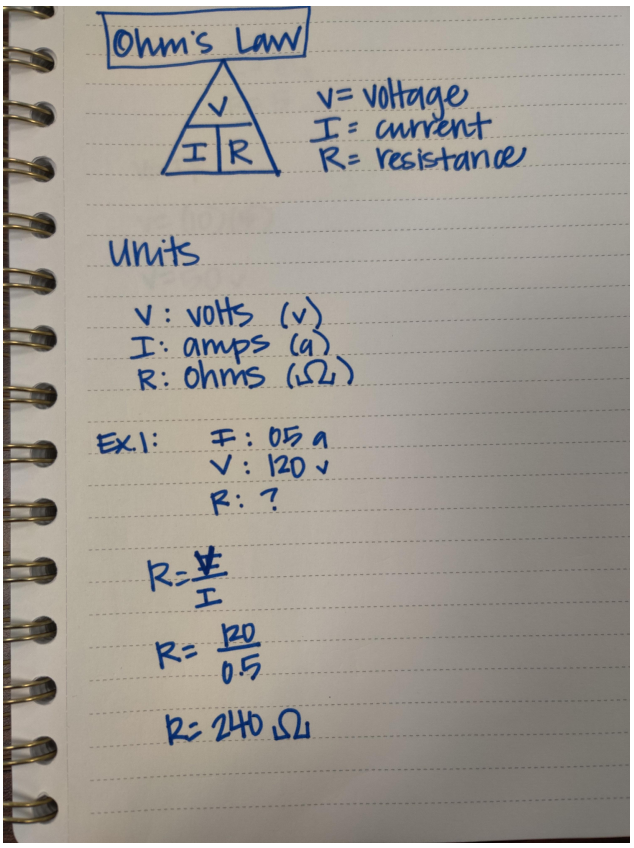
Field, attraction, magnetic, poles, same, every gravitational

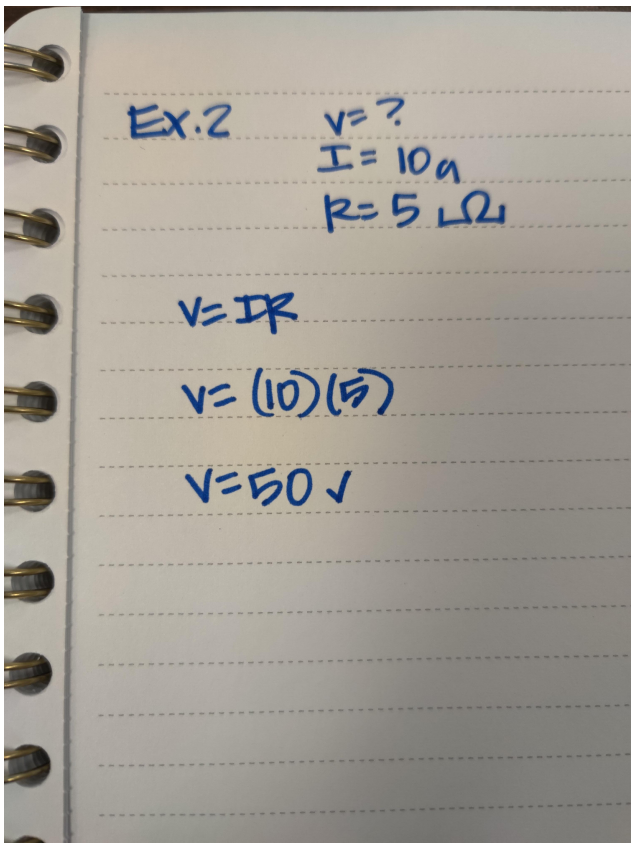
Questions

1. The iron filings will be attracted to the magnet.
2. Gravitational force fields exist between all masses such as a ball and the Earth, and Mars and the Sun.

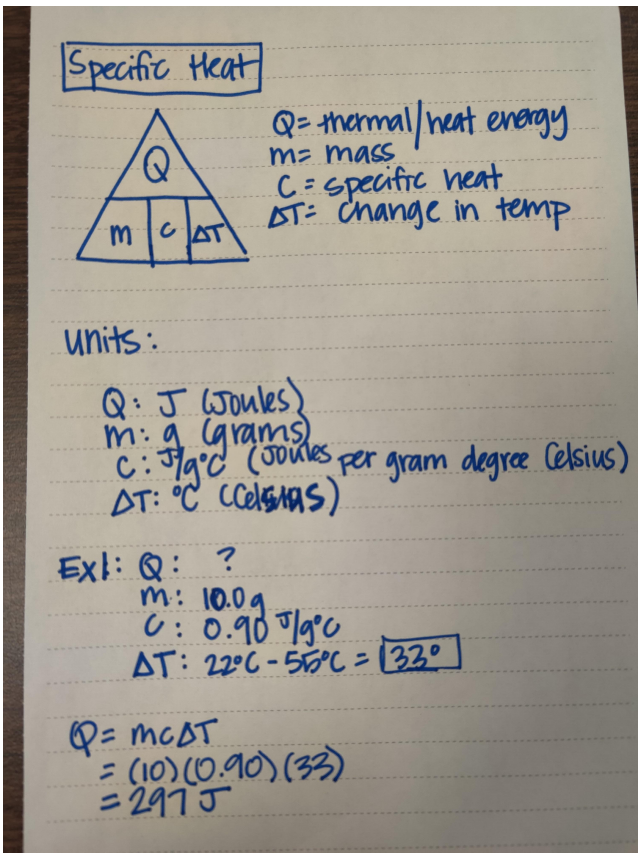
IN THIS ISSUE

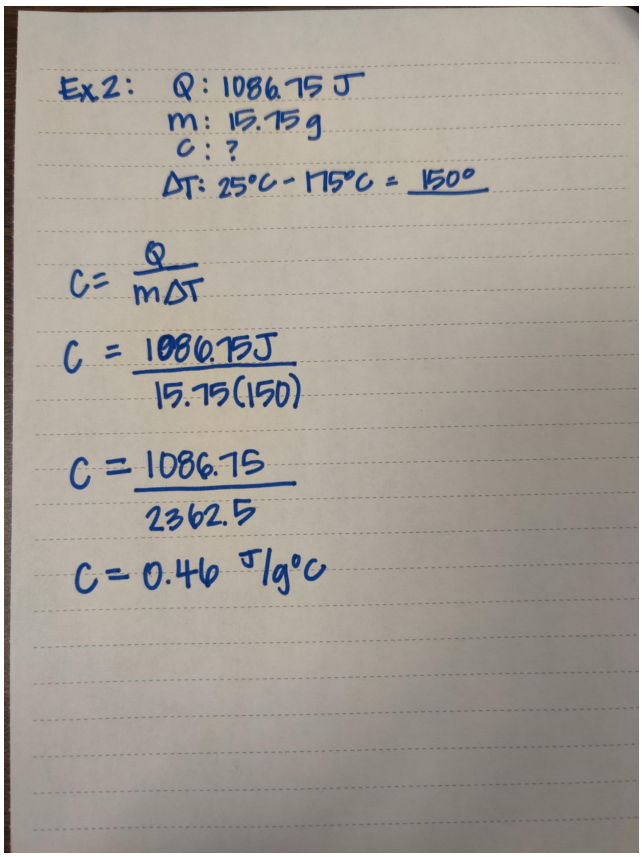
CALCULATIONS HELP- OHM'S LAW





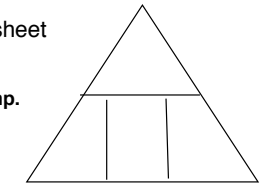
CALCULATIONS HELP- SPECIFIC HEAT





Name: _____ Date: _____ Period: _____

Calculating Specific Heat Extra PracticeWorksheet



$Q = mc\Delta T$, where **Q = heat energy**, **m = mass**, and **ΔT = change in temp.**
Remember, **$\Delta T = (T_{final} - T_{initial})$. <u>Show all work</u> and proper units.**

1. A 15.75-g piece of iron absorbs 1086.75 joules of heat energy, and its temperature changes from 25°C to 175°C. Calculate the specific heat capacity of iron.

2. How many joules of heat are needed to raise the temperature of 10.0 g of aluminum from 22°C to 55°C, if the specific heat of aluminum is 0.90 J/g°C?

3. Calculate the specific heat capacity of a piece of wood if 1500.0 g of the wood absorbs 67,500 joules of heat, and its temperature changes from 32°C to 57°C.

4. 100.0 g of 4.0°C water is heated until its temperature is 37°C. Calculate the amount of heat energy needed to cause this rise in temperature.

5. 25.0 g of mercury is heated from 25°C to 155°C, and absorbs 455 joules of heat in the process. Calculate the specific heat capacity of mercury.

6. What is the specific heat capacity of silver metal if 55.00 g of the metal absorbs 47.3J of heat and the temperature rises 15.0°C?

7. What mass of water will change its temperature by 3 ^{0}C when 525 J of heat is added to it? The specific heat of water is 4.18 J/g ^{0}C

8. A 0.3 g piece of copper is heated and fashioned into a bracelet. The amount of energy transferred by heat to the copper is 66,300 J. If the specific heat of copper is 390 J/g ^{0}C, what Is the change of the copper's temperature?

Electricity and Ohm's Law Worksheet

Name:_____

Using the formula for Ohm's law, solve the following problems. Show all work.

1. A 110 volt wall outlet supplies power to a stereo with a resistance of 10 ohms. How much current is flowing through the stereo?

2. Given I = 15 A, R = 2 ohms, find E.

3. A CD player with a resistance of 40 ohms has a current of 1 amp. How many volts supply the CD?

4. Given E = 250 volts , R = 5 ohms, find I

5. A 120 volt power source supplies a lamp with a resistance of 192 ohms. What is the current of the circuit?

6. Given E = 100 volts, I = 0.01 amps, find R.

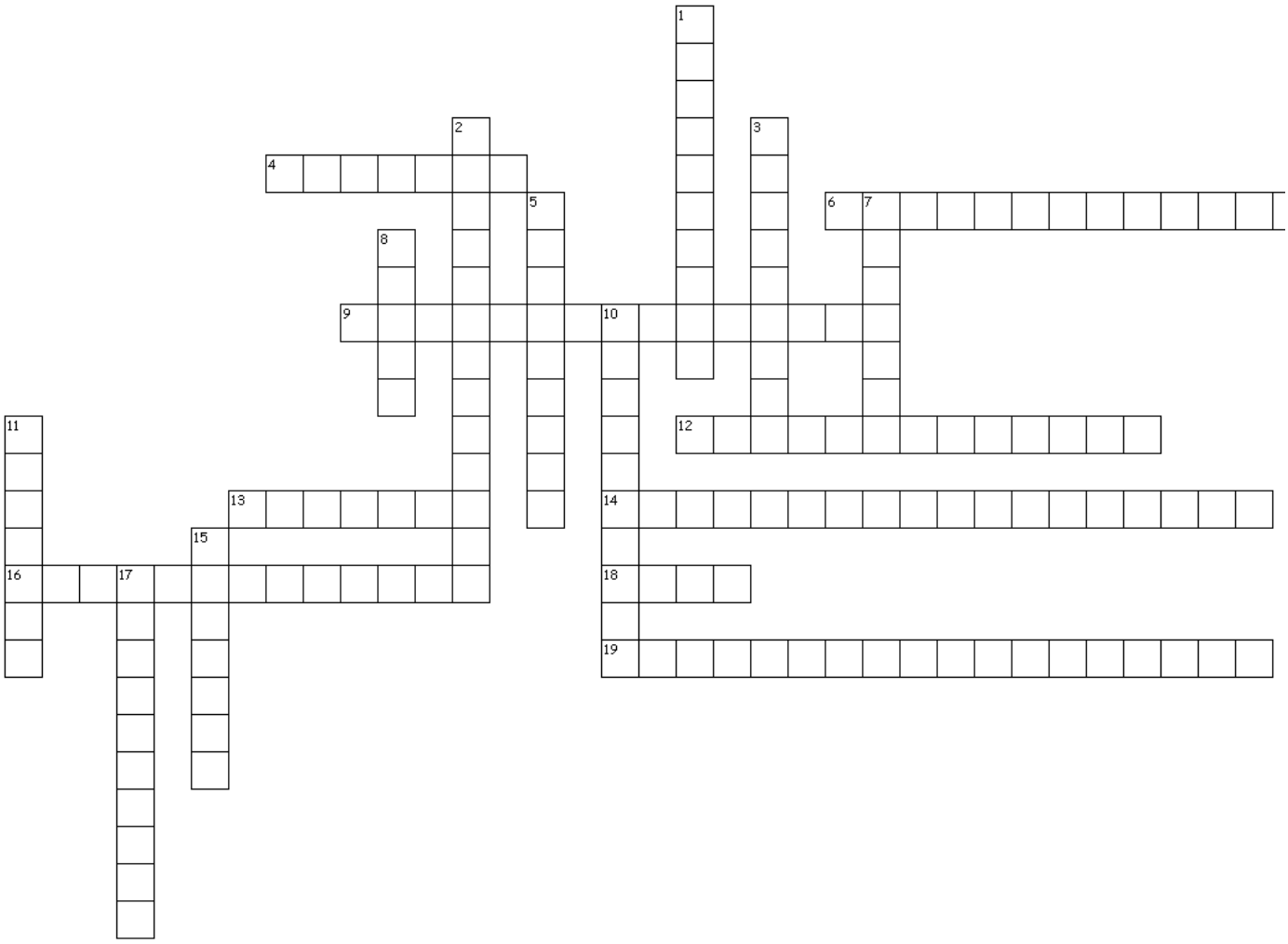
7. Given R = 5 ohms, I = 1.5 amps, find E.

8. Given I = 15 amps, R = 3 ohms, find E.

9. Given E = 220 volts, I = 4 amps, find R.

10. Given R = 10 ohms, E = 220 volts, find I.

ELECTRICITY & MAGNETISM



Across
4. a path for the flow of electrons
6. there are several branching paths to the components
9. occurs when there is a loss of static electricity
12. the components in a circuit are lined up along one path
13. the measure of energy give to the charge flowing in an circuit
14. where electrons flow in different directions in a wire
16. a magnet made from a current bearing coil of wire wrapped around an iron or steel core
18. the unit used to measure resistance
19. electrical potential energy

Down
1. the opposition to the flow of an electric current that produces heat
2. where electrons flow in the same direction in a wire
3. a machine that changes mechanical energy to electrical energy
5. atomic particles with a negative charge
7. current is measured in _____.
8. a device that changes electrical energy to mechanical energy that can do work
10. materials through which electric current cannot move
11. the flow of electrons from one place to another
15. atomic particles with a positive charge
17. materials that allow electric current flow through easily

19 of 19 words were placed into the puzzle.