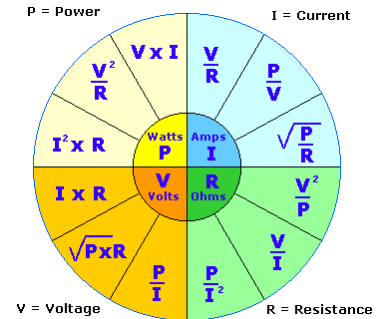


**2015 Cowboy Classic - Agricultural Technology and Mechanical Systems  
Electrical Systems Skill**

You and your brother started PM livestock off a section of your grandfathers' ranch outside of Hulett, Wyoming. In preparation of calving season you realized the old calving shed is having some issues running all the equipment. You decide to check the 240-volt system to make sure the heaters, ventilation, and equipment can effectively run through the cold spring. After checking the electrical systems, you determine it is necessary to change the 240V / 50A power outlet used to operate equipment with a higher electrical requirement. You determine that you have two available circuits in the main breaker box. **Complete the wiring project with the available circuit that best matches the required load.**

After you have completed the wiring project your Grandfather asked you to calculate the expected cost of operation for the equipment he intends to operate off of the new power outlet. **Using Ohm's law, calculate the expected cost of operation for the following equipment with the cost of electricity from Rocky Mountain Power being 16.5 cents per Kilowatt hr.**



**Complete the following table using the power wheel.** (Use the back of the sheet for calculations)

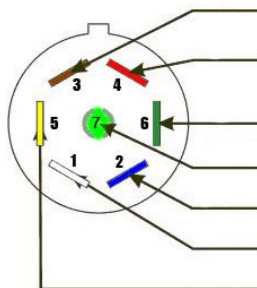
Tool	Volts	Amps	Watts / Kilowatts	Operation Hours	Cost
Drill Press	240	3.4	816 /1000 = .81 X	47 = 38.07 X .165	\$6.28
Table Saw	120	2.7	324 /1000 = .32 X	26 = 8.32 X .165	\$1.37
AC/DC Welder	240	6.8	1632 /1000 =1.63 X	90 = 146.7 X .165	\$24.20
Mig Welder	240	5.7	1368 /1000 =1.36 X	50 = 68 X .165	\$11.22

Total cost of equipment operation \$ 43.07

Your grandfather has asked you to identify two different circuit types in his shop. **Using your knowledge of household and workshop electricity identify the two light circuit types shown.**

Ex. 1 \_\_\_\_\_ Ex. 2 \_\_\_\_\_

After wiring your calving shed, your grandfather has asked you to rewire his new trailer plug on his trailer. **Match each of the 7-way connections to their functions in the space provided**



- 1   Ground
- 6   Right Turn / Stop Lights
- 4   12 Volt Charge
- 3   Tail / Running Lights
- 5   Left Turn / Stop Lights
- 7   Backup Lights
- 2   Trailer Brakes

Criterion	Points Possible	Points Earned
Wiring Skill	10	
Questions	18 (1 points ea.)	