LESSONS HOW MUCH CURRENT WILL MY ROBOT DRAW?

STUDENT

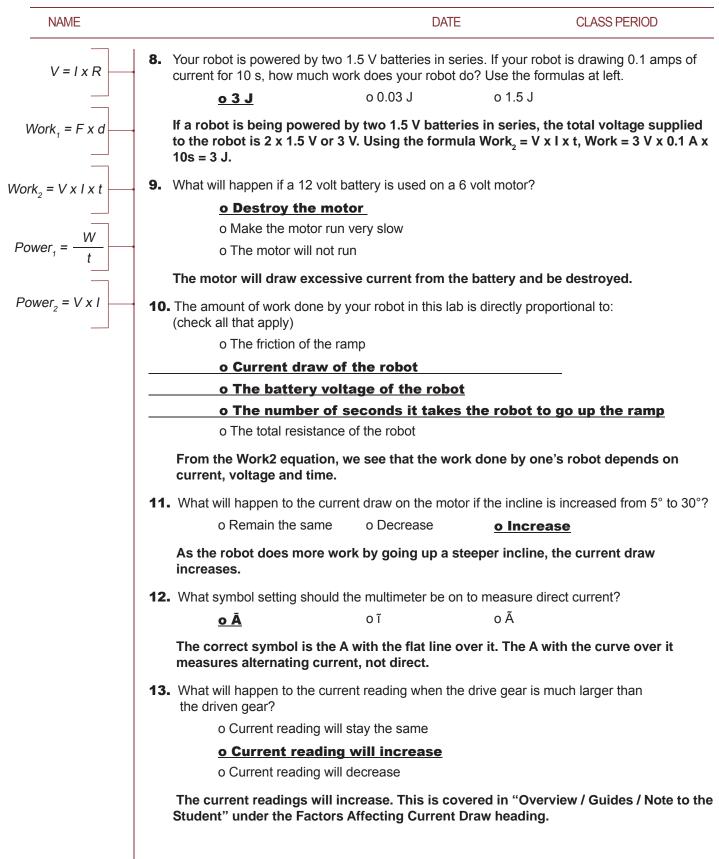
QUIZ / How much current will my robot draw?

NAME			DATE	CLASS PERIOD			
	Pu	It a check in the 0 next to t	he correct answer.				
	1. What is current?						
		o A movement of volts					
		o The flow of electric charge					
		o The splitting of electrons					
		o The electromotive force (pressure) of electricity					
		This is defined in "Background / Helper Link / Current".					
	2.	What is the voltage of a circuit Use the formulas at left.	with a resistance of 10	00 ohms and a current of 0.16 amps?			
		o 6250 V	o 0.00016 V	<u>o 160 V</u>			
		Using the formula $V = I \times R$, V	/ = 1000 ohms x 0.16	amps = 160 V.			
	3.	 What is the resistance of a circuit with a voltage of 1.5 V and a current of 0.16 amp the formulas at left. 					
		o 0.24 ohms	o 0.106667 ohms	<u>o 9.375 ohms</u>			
V = I x R	Using the formula R = V / I, R = 1.5 V / 0.16 amps = 9.375 ohms.						
	4.	A battery produces:					
ork – Evd		o Alternating current	o Direct current				
$rk_1 = F \times d$		A batteries terminals are always positive and negative respectively; current does not change direction in a battery circuit.					
$_{2} = V \times I \times t$	5. You have attached four AA (1.5 V) batteries together in series. If you use your mul measure the voltage of this circuit, what do you expect the reading to be?						
1//		<u>o 6 V</u>	o 1.5 V	o 0.375 V			
$ver_1 = \frac{vv}{t}$		Since the batteries are in series, we expect the voltages to add together. So 4 batteries at 1.5 V each would make us expect a reading of $4 \times 1.5 V = 6 V$.					
$ver_2 = V \times I$	6.	If your robot does 0.5 J of work the formulas at left.	for 10 milliseconds, h	ow much power does it produce? Use			
		o 5 Watts	o 0.005 Watts	<u>o 50 Watts</u>			
		Using the formula Power, = \	N / t, power is equal t	o 0.5 J / (10 x 10 ⁻³) = 50 Watts.			
	7.	If your robot is powered by a 7.2 V battery and produces 2.16 W of power, how much current is your robot drawing? Use the formulas at left.					
		o 3.33 A	<u>o 0.3 A</u>	o 15.552 A			
			/ V, I = (2.16 W) / (7.2				

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	14. List one factor that affects the curre affects current.	List one factor that affects the current drawn in your motor. Explain why this factor affects current.				
	This is covered in "Overview / Guides / Note to the Student" under the Factors Affecting Current Draw heading. There are many factors there including terrain, gear ratio, wheel size, weight and battery voltage.					
