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# Ohm's law worksheet answer key 13.3

## Answer key ohm's law practice worksheet answers. Ohm's law worksheet answer key pdf. Ohm's law worksheet answers key. Ohm's law practice worksheet answers 13.3.

Live worksheets > English Finish!! Please allow access to the microphone Look at the top of your web browser. If you see a message asking for permission to access the microphone, please allow. Close Ohms law quiz is a simple test designed for you to test your knowledge of Ohm's Law. 1. The statement which correctly represents Ohm's law:  $V = IR$   $V = R/I$   $R = VI$   $I = R/V$  Correct answer: 1.  $V = IR$  2. A 10 ohms resistor is powered by a 5-V battery. The current flowing through the source is: 10 A 50 A 2 A 0.5 A Correct answer: 4. 2 A Solution: From  $I = V/R = 5\text{V}/10\text{ ohm} = 0.5\text{ A}$  3. If  $V = 50\text{ V}$  and  $I = 5\text{ A}$ , then  $R = \dots$ : 50  $\Omega$  5  $\Omega$  10  $\Omega$  2  $\Omega$  Correct answer: 3. 10  $\Omega$  Solution: From  $R = V/I = 50\text{ V}/5\text{ A} = 10\text{ }\Omega$  4. If  $P = 50\text{ watt}$  and  $R = 2\text{ ohms}$ , then  $I = \dots$ ? 50 A 5 A 10 A 2 A Correct answer: 3. 5 A Solution: From  $I = \sqrt{(P/R)} = \sqrt{(50\text{ W}/2\text{ A})} = \sqrt{25\text{ A}} = 5\text{ A}$  5. Unit of voltage is: Volt Watt Coulomb Ampere 6. Unit of current is: Volt Watt Coulomb Ampere Correct answer: 4. Ampere 7. Unit of power is: Volt Watt Coulomb Ampere 8. Unit of resistance is: Volt Watt Ohms Ampere 9. If  $V = 10\text{ V}$  and  $R = 15\text{ k}\Omega$ , then  $I = \dots$ ? 0.666 mA 666  $\mu\text{A}$  0.66 A a & b Correct answer: 4. a & b Solution: Here  $I = V/R = 10\text{ V}/15\text{ k}\Omega = 0.666\text{ mA} = 666\text{ }\mu\text{A}$  10. If  $I = 5\text{ A}$  and  $R = 10\text{ }\Omega$ , then  $P = \dots$ ? 50 watts 250 watts 350 watts 500 watts Correct answer: 2. 250 watt Solution: Here  $P = I^2R = (5\text{ A})^2 \times 10\text{ }\Omega = 250\text{ watts}$  11. Components which obey Ohm's law are known as: Resistors Ohmic components Non-ohmic components None of these Correct answer: 2. Ohmic components 12. Ohmic components have a  $\dots$  V-I curve: Straight line VI curve Parabolic VI curve Non-linear VI curve Sinusoidal VI curve Correct answer: 1. Straight line VI curve Ohms Law Quiz Numerical Problems 13. An electric kettle with 50- $\Omega$  heat element is powered by a 230-V wall outlet. The current flowing through kettle is: 0.217 A 4.6 A 10.86 A 11500 A 14. The water heating rod draws 10 A current when connected to certain power source. The resistance of rod is 12  $\Omega$ .

### OHM'S LAW WORKSHEET

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

For each question please make sure that you follow proper math format.

1. An Ipad uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.01 A?
2. What current flows through a hair dryer plugged into a 110 Volt circuit if it has a resistance of 25 ohms?
3. A 12 Volt car battery pushes charge through the headlight circuit resistance of 10 ohms. How much current is passing through the circuit?
4. An electric heater works by passing a current of 100 A through a coiled metal wire, making it red hot. If the resistance of the wire is 1.1 ohms, what voltage must be applied to it?
5. A subwoofer needs a household voltage of 110 V to push a current of 5.5 A through its coil (circuit). What is the resistance of the subwoofer?
6. A light bulb has a resistance of 5 ohms and a maximum current of 10 A. How much voltage can be applied before the bulb will break?
7. An electric toaster is connected to a 120-V outlet in the kitchen. If the heating element in the toaster has a resistance of 14 $\Omega$ , calculate the current flowing through it.
8. Calculate the voltage produced when 5, 1.5V batteries are combined in series? These are used to power a 10 $\Omega$  light bulb. Draw a circuit diagram with a switch. What is the current flowing through the closed circuit?
9. Calculate the voltage produced when 5, 1.5V batteries are combined in parallel? These are used to power a 10 $\Omega$  light bulb. Draw a circuit diagram with a switch. What is the current flowing through the closed circuit?
10. The current required to operate a coffee grinder is 1.20A. If the resistance is 100 $\Omega$ , calculate the voltage drop.

- Answers:
1.  $R = 150\Omega$
  2.  $I = 4.4\text{ A}$
  3.  $I = 1.2\text{ A}$
  4.  $V = 110\text{ V}$
  5.  $R = 20\Omega$
  6.  $V = 50\text{ V}$
  7.  $I = 8.6\text{ A}$
  8.  $I = 0.75\text{ A}$
  9.  $I = 0.15\text{ A}$
  10.  $V = 120\text{ V}$

The source voltage is: 1.2 V 120 V 1200 V None of these 15. A relay with 100  $\Omega$  resistance requires 50 mA to for operation. When connected to a 4 V source the relay will: Operate Not operate Correct answer: 2. Not operate Solution: At 4 V, the current will  $I = V/R = 40\text{ mA}$ , which is not enough for the operation 16. The potential difference across a 5 k $\Omega$  is 12 V. Find the current flowing through the resistor: 60 mA 2.4 mA 1.77 mA 0.998 mA Correct answer: 2. 2.4 mA Solution:  $I = V/R = 12\text{ V}/5\text{ k}\Omega = 2.4\text{ mA}$  17. An electrical bulb draws 5 A current when connected to a 100-V wall outlet, the resistance of bulb is: 5  $\Omega$  20  $\Omega$  100  $\Omega$  500  $\Omega$  18. An unknown resistor has 5 mA current flowing through it when 10 volts are applied to it. For the same resistor, the application of 20 volts will result in the current flow of: 2 mA 5 mA 10 mA 50 mA Correct answer: 3. 10 mA Solution: Here  $R = 10\text{ volts}/5\text{ mA} = 2\text{ k}\Omega$ . Now for 20 volts,  $I = 20\text{ volts}/2\text{ k}\Omega = 10\text{ mA}$  Prefixes are numbers which represent the mathematical quantity in the power of ten. We already shared basic of prefixes in Ohm's law article. In previous sections 'm' and 'k' are introduced. This section of MCQs involves other prefixes as well. Let's start learning: 19. If  $I = 50\text{ mA}$ ,  $R = 50\text{ k}\Omega$ , then  $V = \dots$ : 1 kV 2.5 kV 5 kV 10 kV Correct answer: 2. 2.5 kV Hint:  $1\text{ k} = 1000$ ,  $1\text{ m} = 0.001$  20. If  $I = 100\text{ }\mu\text{A}$ ,  $R = 50\text{ k}\Omega$ , then  $V = \dots$ : 5000 V 500 V 5 V 0.5 V Correct answer: 3. 5 V Hint:  $1\mu = 0.000001$  21. If  $I = 100\text{ }\mu\text{A}$ ,  $R = 50\text{ M}\Omega$ , then  $V = \dots$ : 5000 V 500 V 5 V 0.5 V Correct answer: 1. 5000 V Hint:  $1\text{ M} = 1\text{ }000\text{ }000$  22. If  $V = 50\text{ V}$ ,  $R = 10\text{ G}\Omega$ , then  $I = \dots$ : 5 A 5 mA 5  $\mu\text{A}$  5 nA Correct answer: 4. 5 nA Hint:  $1\text{ G} = 1\text{ }000\text{ }000\text{ }000$ ,  $1\text{ n} = 0.000000001$  23. If  $V = 99\text{ kV}$ ,  $R = 33\text{ G}\Omega$ , then  $I = \dots$ : 5 A 5 mA 5  $\mu\text{A}$  5 nA 24. If  $V = 22\text{ V}$ ,  $R = 11\text{ k}\Omega$ , then  $I = \dots$ : 5 A 5 mA 5  $\mu\text{A}$  5 nA Correct answer: 4. 5 nA Hint:  $1\text{ G} = 1\text{ }000\text{ }000\text{ }000$ ,  $1\text{ n} = 0.000000001$  25. If  $V = 10\text{ V}$ ,  $I = 1\text{ }\mu\text{A}$ , then  $R = \dots$ : 10 k $\Omega$  10 M $\Omega$  0.1 k $\Omega$  0.1 M $\Omega$  27. If  $V = 15\text{ kV}$ ,  $I = 2\text{ nA}$ , then  $R = \dots$ : 7500 k $\Omega$  7500 G $\Omega$  30 k $\Omega$  30 G $\Omega$  Correct answer: 4. 7500 G $\Omega$  28. If  $V = 50\text{ V}$ ,  $I = 25\text{ }\mu\text{A}$ , then  $R = \dots$ : 2 M $\Omega$  2 G $\Omega$  1250 M $\Omega$  1250 G $\Omega$  Ohm's law Quiz MCQs with Resistor Color Coding Technique Color coding technique is used to represent the values of resistors in the form of colored bands. 4, 5 or 6 bands are designed over the bodies of resistors.

OHM'S LAW WORKSHEET

Other Name:  $V = IR$   
 $V$  = Voltage and units (V)  
 $I$  = Current and units (A)  
 $R$  = Resistance and units ( $\Omega$ )

Simple circuit to represent Ohm's Law equation

Equation derived in simple calculation

$R = \frac{V}{I} = \frac{10\text{V}}{2\text{A}}$

Build IOP calculation

1. Find voltage and IOP  
 $V = IR = 10\text{V}$   
 $I = \frac{V}{R} = \frac{10\text{V}}{2\text{A}}$

2. Apply Ohm's Law to determine value  
 $R = \frac{V}{I} = \frac{10\text{V}}{2\text{A}}$   
 $R = 5\text{ }\Omega$

While 4 band resistors are most commonly available we'll use them in next problems. The first and second bands represent a number while the third and fourth one represents a multiplier. 29. A resistor is color-coded with four bands, the first one being brown, second, black, third red, and fourth gold. The resistor connects to a 10 V source. Find the current flowing through the resistor. 1 mA 10 mA 100 mA 1 A Correct answer: 2. 10 mA Solution: The resistor can be color coded from the chart as shown below. It is 1k Ohms resistor. Neglecting the tolerance we can easily use the Ohm's statement  $I = V/R$  to find the current. 30 If 1st band = Yellow; 2nd band = Violet; 3rd band = Brown; and  $V = 44\text{ V}$ , then  $I = \dots$ ? 0.1 A 0.1 mA 100 mA 470 mA Correct answer: 1. 0.1 A Solution: From color coding of resistors the resistor is 470 ohms. Now  $I = V/R = 44/470 = 0.1\text{ A}$  31. If 1st band = Red; 2nd band = Red; 3rd band = Red; and  $V = 44\text{ V}$ , then  $I = \dots$ ? 20 A 20 mA 44 A 44 mA Correct answer: 2. 20 mA Solution: From color coding of resistors the resistor is 2.2 kohms.

Name: \_\_\_\_\_

1. A 100 ohm resistor is connected to a 1.5 volt battery. How much current is flowing through the circuit?

2. In the circuit below, if the lamp has a resistance of 2 ohms and the battery voltage is 15 volts, how much current is flowing through the lamp?

3. In the circuit below, the battery voltage is 3 volts, and there is 100 milliamperes flowing through the resistor. What is the value of the resistor to obtain?

4. A wet battery has a voltage of 15 volts and one of the load lamps has 1 amp of current flowing through it. What is the resistance of the load lamp?

5. The circuit below is connected to a voltage source of 12 volts. The values of the resistors are as follows:  $R_1 = 3\text{ ohms}$ ,  $R_2 = 4\text{ ohms}$ ,  $R_3 = 5\text{ ohms}$ . What is the current flowing through the circuit?

Now  $I = V/R = 44/2.2\text{ k} = 20\text{ mA}$  32. If 1st band = Brown; 2nd band = Black; 3rd band = Green; and  $V = 50\text{ V}$ , then  $I = \dots$ ? 1 mA 100  $\mu\text{A}$  5 mA 50  $\mu\text{A}$  Correct answer: 4. 50  $\mu\text{A}$  Here resistance = 1 M $\Omega$  33. If 1st band = Brown; 2nd band = Black; 3rd band = Brown; and  $I = 50\text{ mA}$ , then by using Ohm law find the value of source voltage: 0.5 V 5 V 50 V 500 V Correct answer: 2. 5 V Here resistance = 100 ohms 34. If 1st band = Brown; 2nd band = Black; 3rd band = Orange; and  $I = 50\text{ mA}$ , then by using the formula of Ohm's law find the value of voltage source which powers the source: 0.5 V 5 V 50 V 500 V Correct answer: 4. 500 V Here resistance = 10k ohms 35. If 1st band = Orange; 2nd band = Orange; 3rd band = Orange; and  $I = 10\text{ mA}$ , then by using the formula of Ohm's law find the value of voltage source which powers the source: 3 V 33 V 330 V 500 V Correct answer: 3.

Name	Class	Date
Chemical Reaction and Equation Practice Problems		
Balancing Equations		
Balance the equations below.		
(1)	$\text{Fe} + \text{S}_8 \rightarrow \text{FeS}$	
(2)	$\text{AgNO}_3 + \text{NaBr} \rightarrow \text{AgBr} + \text{NaNO}_3$	
(3)	$\text{KNO}_3 \rightarrow \text{KNO}_2 + \text{O}_2$	
(4)	$\text{Fe}_2\text{O}_3 + \text{C} \rightarrow \text{Fe} + \text{CO}$	
(5)	$\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$	
(6)	$\text{Ni}_3\text{O}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{NiO}_3 + \text{H}_2$	
(7)	$\text{KNO}_3 \rightarrow \text{KNO}_2 + \text{O}_2$	
(8)	$\text{Cu} + \text{H}_2\text{O} \rightarrow \text{Cu}_2\text{O} + \text{H}_2$	
(9)	$\text{Cu}_2\text{O} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$	
(10)	$\text{H}_2 + \text{CuSO}_4 \rightarrow \text{Cu} + \text{H}_2\text{SO}_4$	
(11)	$\text{H}_2 + \text{CuSO}_4 \rightarrow \text{Cu} + \text{H}_2\text{SO}_4$	

330 V Here resistance = 33k ohms Problems for Series and Parallel Circuits This portion of quiz involves series circuits. A series circuit contains two or more in which head of the one joins the tail of other and there is no other connection in between them. To solve such circuits simply add the resistors and obtain a single equivalent resistor, then apply the law to find either current or voltage. 36. Two resistors having values 5 ohms and 10 ohms are connected in series to a 10 V source. Find the current flowing through the circuit: 0.66 A 1.5 A 2 A 2.5 A Correct answer: 1.5 A Solution:  $R_{\text{total}} = R_1 + R_2 = 5\text{ ohms} + 10\text{ ohms} = 15\text{ ohms}$ , Now  $I = V/R_{\text{total}} = 10\text{ V}/15\text{ ohms} = 0.66\text{ A}$  37. Two resistors having values 18 ohms and 50 ohms are connected in series to an unknown source. An ammeter is connected to the circuit which reads 2 A. Find the input voltage to the circuit: 36 V 100 V 136 V 168 V Correct answer: 136 V Solution:  $R_{\text{total}} = R_1 + R_2 = 18\text{ ohms} + 50\text{ ohms} = 68\text{ ohms}$ , Now  $V = I \times R_{\text{total}} = 2\text{ A} \times 68\text{ ohms} = 136\text{ V}$  A parallel circuit involves the configuration in which two resistors have their heads joined at common point and tail at another common point. The solution of two or more resistors in parallel follows a simple formula:  $R_{\text{total}} = 1/((1/R_1) + (1/R_2))$  38. Two parallel resistors both having their values 28 ohms are connected in parallel. The overall current provided by the 28 V source is: 1 A 2 A 4 A 8 A Correct answer: 2. 2 A Solution:  $R_{\text{total}} = 1/((1/28\text{ }\Omega) + (1/28\text{ }\Omega)) = 14\text{ ohms}$ ,  $I = V/R = 28/14 = 2\text{ A}$  39. Two parallel resistors both having their values 50 and 60 ohms are connected in parallel. The overall current provided by the 100 V source is: 1.72 A 2.88 A 3.66 A 4.52 A Correct answer: 3. 66 A Solution:  $R_{\text{total}} = 1/((1/50\text{ }\Omega) + (1/60\text{ }\Omega)) = 27.27\text{ ohms}$ ,  $I = V/R = 100/27.27 = 3.66\text{ A}$  40. Repeat the above problem for resistor values of 30 ohms each when the source is 60 V. 0.25 A 0.5 A 2 A 4 A

