

living with the lab

Currents Through Parallel Resistors

470Ω 220Ω

5V Gnd

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Select Resistors

Find the 220Ω and the 470Ω resistors from your parts kit.

color	digit
black	0
brown	1
red	2
orange	3
yellow	4
green	5
blue	6
violet	7
gray	8
white	9

gold = ±5%
silver = ±20%

Example: 470Ω resistor

4 = yellow
7 = violet
Add 1 zero to 47 to make 470, so 1 = brown

So, 470 = yellow violet brown

Now, find the 220Ω resistor.

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build the parallel circuit below

measure the total current from the power source

current flow

current measurement

Vo = 5V

220Ω

470Ω

Compute the current after you make your measurement.

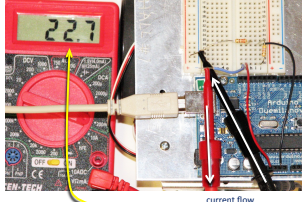
use Ohm's law:
 $V = I \cdot R$ or $I = V/R$ $R_{eq} = 1/1/220\Omega + 1/470\Omega = 149.9\Omega$

$I = V/R_{eq} = 5V/149.9\Omega = 0.033A$ compare

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modify the parallel circuit as show

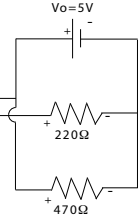
measure the total current through the 220Ω resistor



current flow

Compute the current after you make your measurement.

use Ohm's law:
 $V = I \cdot R$ or $I = V / R = 5V / 220\Omega = 0.023A$ **compare**



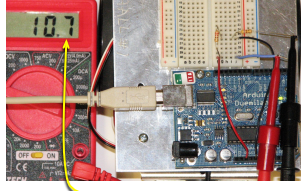
Vo=5V
 220Ω
 470Ω

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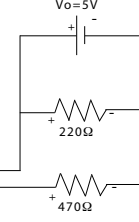
modify the parallel circuit as show

measure the current through the 470Ω resistor



Compute the current after you make your measurement.

use Ohm's law:
 $V = I \cdot R$ or $I = V / R = 5V / 470\Omega = 0.011A$ **compare**




Vo=5V
 220Ω
 470Ω

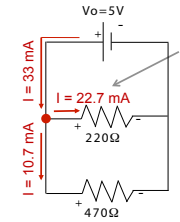
5

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check for conservation of charge



Vo=5V



more current goes through smaller resistor

Kirchoff's Current Law (KCL)
 The algebraic sum of currents entering a node is zero.
Current In = Current Out

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