

Science 10

Monday June 5/17

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1. Assignment - Tangled Web: **4 Days Late**
 2. Article - Indicator Species: **2 Days Late**
 3. The Carbon Cycle: More Processes - P4
 4. Last Assignment - **Wednesday, June 7/17**
 5. Practice Exam - Physics and Chemistry
 6. Roller Coasters
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Physics 112

Monday, June 5/17

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
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1. Exam Review - Second Law Problem
 2. Case #3 - Continue
 3. Snell's Law
 4. Critical Angle
 5. Total Internal Reflection - To Be Continued


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6. Worksheet - Refraction
 7. Last Assessment!
SA - U4S2 -> Thursday, May 8/17
 8. Optional Assessment - **Friday, May 9/17**
 9. Review Problems for Final Exam

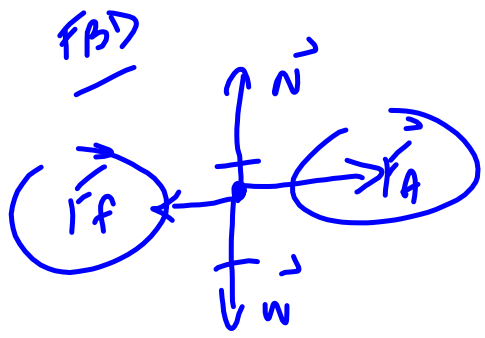
Exam Review - 2nd Law Problem

 4.52 kg

In a physics lab, Ernesto and Amanda apply a 34.5 N rightward force to a cart to accelerate it across a horizontal surface at a rate of 1.28 m/s². The coefficient of friction between the cart and surface is 0.648. Determine the mass of the cart.

$F_A = 34.5 \text{ N}$
 $a = 1.28 \text{ m/s}^2$
 $\mu = 0.648$
 $m = ?$

sketch

 WCC.



$N = W$ | $W = mg$ ✓
 $F_A \neq F_f$ | $F_f = \mu N$ ✓

$F_{\text{net}} = ma$
 $F_A - F_f = m(a)$
 $F_A - \mu N = ma$
 $F_A - \mu W = ma$
 $F_A - \mu mg = ma$
 $F_A = \mu mg + ma$
 $F_A = m(\mu g + a)$
 $\frac{F_A}{\mu g + a} = m$

$m = 4.52 \text{ kg}$
 ✓✓✓

Physics 122

Monday, June 5/17

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Grad Meeting -> 11:30 Main Theatre

Exam Review - Relative Velocity

1. Series Circuits
2. Worksheet - Series Circuits -> Started in Class on Friday
3. Parallel Circuits - To Be Continued

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4. Worksheet - Parallel Circuits
 5. Combination/Complex Circuits
 6. Worksheet - Complex Circuits

Exam Review - Relative Velocity

A boat heading due south crosses a river with a velocity of 3.0 m/s relative to the water. The river has a uniform velocity of 1.52 m/s due west. The river is 45 m wide.

- a) Determine the boat's velocity with respect to an observer on shore.
- b) How far down stream is the boat once it makes it to the other side if the river?

Diameters/Resistances of Some Gauges of Copper Wire

Gauge	Diameter (mm)	Resistance ($\times 10^{-3}\Omega/\text{m}$)
0	9.35	0.31
10	2.59	2.20
14	1.63	8.54
18	1.02	21.90
22	0.64	51.70

Table 15.1 Resistivity of Some Conductor Materials

Material	*Resistivity, ρ ($\Omega \cdot \text{m}$)
silver	1.6×10^{-8}
copper	1.7×10^{-8}
aluminum	2.7×10^{-8}
tungsten	5.6×10^{-8}
Nichrome™	100×10^{-8}
carbon	3500×10^{-8}
germanium	0.46
glass	10^{10} to 10^{14}

*Values given for a temperature of 20°C

Example - Model Problem Page 718 (MHR)

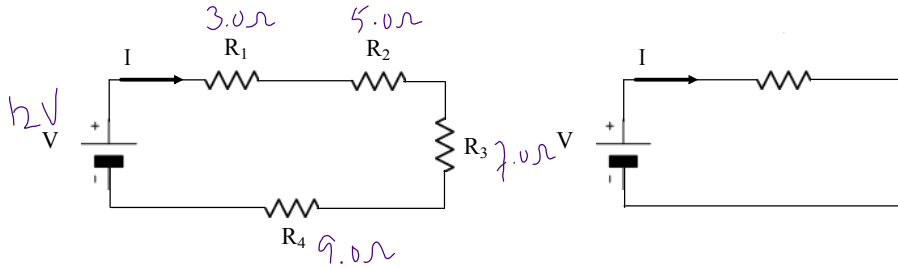
MODEL PROBLEM

Resistances in Series

Four loads (3.0 Ω, 5.0 Ω, 7.0 Ω, and 9.0 Ω) are connected in series to a 12 V battery. Find

- (a) the equivalent resistance of the circuit
- (b) the total current in the circuit
- (c) the potential difference across the 7.0 Ω load

718 MHR • Unit 6 Electric, Gravitational, and Magnetic Fields



	V	I	R
R ₁			3.0 Ω
R ₂			5.0 Ω
R ₃	3.50 V	0.500 A	7.0 Ω
R ₄			9.0 Ω
Total	12 V	0.500 A	24.0 Ω

a) $R_{eq} = R_1 + R_2 + R_3 + R_4$

$R_{eq} = 3.0\Omega + 5.0\Omega + 7.0\Omega + 9.0\Omega$

$R_{eq} = 24.0\Omega$

b) $V_T = I_T R_{eq}$ $V = I R_{eq}$

$I_T = \frac{V_T}{R_{eq}} = \frac{12V}{24.0\Omega}$

$I_T = 0.500 A$

c) $V_3 = I R_3$

$V_3 = 0.500 A \times 7.0\Omega$

$V_3 = 3.5 V$