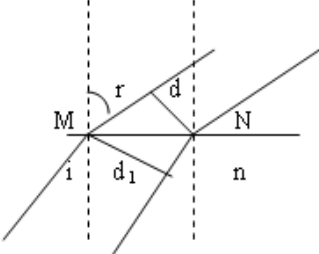
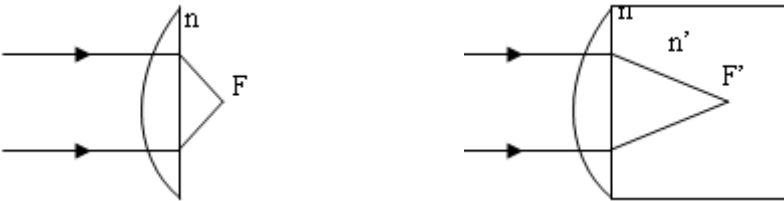
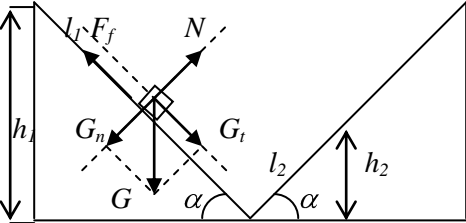
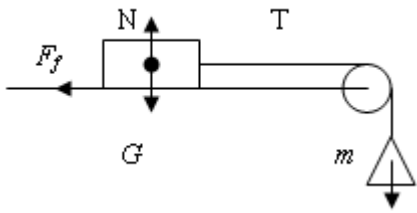


BAREM CLASA A IX-A

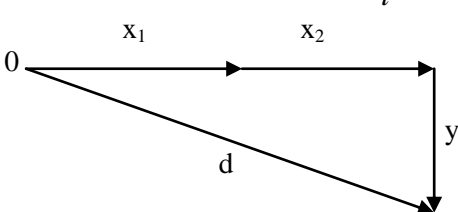
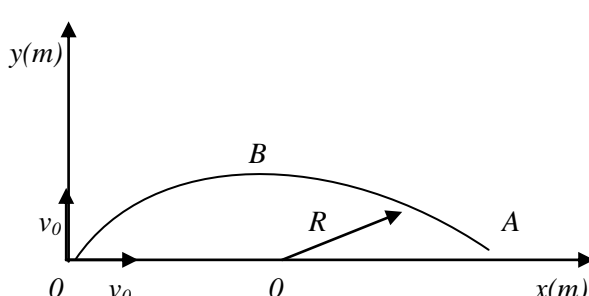
CONCURSUL INTERJUDEȚEAN DE FIZICĂ « T. A. EDISON » 2013

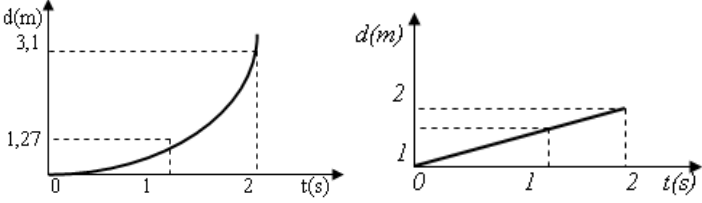
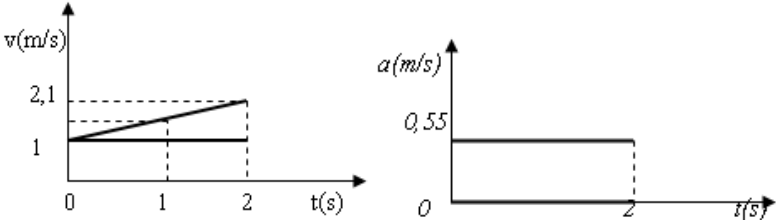
SUBIECTUL I		
	REZOLVARE	PUNCTAJ
a)	 <p> <math>\cos i = \frac{d_1}{MN}; \cos r = \frac{d}{MN};</math>  <math>d_1 = MN \cos i; d = AB \cos r;</math>  <math>\frac{d_1}{d} = \frac{\cos i}{\cos r};</math>  <math>\sin i = n \sin r;</math>  <math>\cos i = \sqrt{1 - \sin^2 i};</math>  <math>\cos r = \sqrt{1 - \frac{\sin^2 i}{n^2}};</math>  <math>d = d_1 \frac{\sqrt{1 - \frac{\sin^2 i}{n^2}}}{\sqrt{1 - \sin^2 i}} = 0.94d_1;</math>  <math>d = 1,88\text{cm}</math>  <math>\sin l = \frac{1}{n} = \frac{2}{3}.</math> </p>	<p>3p</p> <p>3p</p> <p>3p</p> <p>3p</p> <p>3p</p>
b)	 <p> <math>\frac{1}{f} = (n-1)\frac{1}{R};</math>                      Pentru primul dioptru:  <math>\frac{n}{x_2} - \frac{1}{\infty} = (n-1)\frac{1}{R} = \frac{1}{f};</math>                      Pentru al doilea dioptru:  <math>\frac{n'}{f'} - \frac{n}{x_2} = (n'-n)\frac{1}{\infty};</math> </p>	<p>3p</p> <p>3p</p> <p>3p</p>

$\frac{1}{\infty} \rightarrow 0; \frac{n'}{f'} = \frac{1}{f}; n = 1;$	3p
$f = \frac{1}{C} = 10\text{cm};$	
$f' = f \cdot n' = 19\text{cm}$	3p

<b>SUBIECTUL II</b>		
	<b>REZOLVARE</b>	<b>PUNCTAJ</b>
a)	<p>-La coborarea pe primul plan înclinat:</p>  $a_1 = g(\sin \alpha - \mu \cos \alpha);$ $v_1^2 = 2a_1 l_1;$ $l_1 = \frac{a_1 t_c^2}{2};$ $v_1^2 = 2g(\sin \alpha - \mu \cos \alpha)l_1;$ $\sin \alpha = \frac{h_1}{l_1};$ <p>-La urcarea pe al doilea plan înclinat:</p> $a_2 = -g(\sin \alpha + \mu \cos \alpha);$ $0 = v_1 - a_2 t_u$ $l_2 = v_1 t_u - \frac{a_2 t_u^2}{2};$ $v_1^2 = 2g(\sin \alpha + \mu \cos \alpha)l_2;$ $\sin \alpha = \frac{h_2}{l_2};$ $\mu = \frac{h_1 - h_2}{h_1 + h_2} \operatorname{tg} \alpha;$	<p>3p</p> <p>6p</p> <p>6p</p>
b)	 $v = ct; F_f = \mu N;$ $F_f = T$ $\mu Mg = (m + n_1 m')g;$	<p>3p</p> <p>6p</p>

$\mu Mg + \mu m' n_2 g = (m + n_3 m') g;$ $\mu n_2 = n_1 - n_3; \quad \mu = \frac{n_3 - n_1}{n_2}$	6p
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<b>SUBIECTUL III</b>		
	REZOLVARE	PUNCTAJ
A	$F - F_f = ma; \quad F = \mu mg + ma; \quad a = \frac{v}{t}; \quad a = \mu g; \quad F = 2F_f = 2ma = 0,83N$  $v = at; \quad x_1 = x_2 = \frac{at^2}{2} = \frac{vt}{2}; \quad x_1 = x_2 = 150m$ $y = \frac{gt^2}{2}; \quad d^2 = (x_1 + x_2)^2 + y^2; \quad d^2 = 300^2 + 500^2; \quad d = 583,09m$	3p  2p  2p  3p
B. a)	 $2R = v_0 t; \quad t = \frac{2R}{v_0} = 2s;$ $\pi R = v_0 t + \frac{at^2}{2};$ $a = \frac{(\pi - 2)v_0^2}{2R} = 0,55 \frac{m}{s^2}$	3p  3p  4p
b)	$d = \pi R = 1t + \frac{0,55}{2} t^2;$ $t = 0s \Rightarrow d = 0m$ $t' = 1s \Rightarrow d' = 1,27m$ $t'' = 2s \Rightarrow d'' = 3,1m$	2p

	 <p> <math>v = 1 + 0,55t</math>  <math>t = 0s \Rightarrow v = \frac{1m}{s}</math>  <math>t' = 1s \Rightarrow v' = 1,55 \frac{m}{s}</math>  <math>t'' = 2s \Rightarrow v'' = 2,1 \frac{m}{s}</math> </p> 	<p>3p</p> <p>2p</p> <p>3p</p>
Oficiu		10p
TOTAL		100p