

Source Notes:

This lab was modeled after demonstrations given with the Pasco linear expansion kit Instruction Manual and Experiment Guide for the PASCO scientific Model TD-8558A
Created by Pasco for their Science Workshop Software in 1990

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1997(?)
Modified 2010

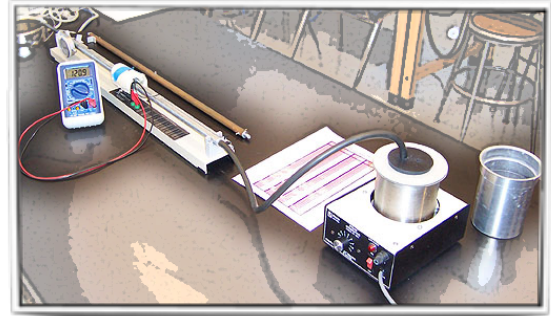
Teacher Notes:**Modifications:**

Pasco switched software to Data Studio so some modifications were added. The original .sws files were modified to the new .ds format. (around 2005?)

Materials:

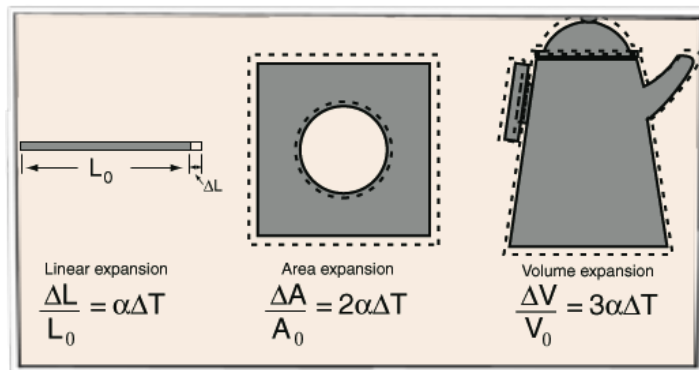
Name each piece of the experiment and describe its use and precision.

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Data:

	Material?	L unknown	R₁	R₂	Δ L
1					
2					
3					
4					
5					
6					



**THERMISTOR CONVERSION TABLE:
Temperature versus Resistance**

Res. (Ω)	Temp. (°C)	Res. (Ω)	Temp. (°C)	Res. (Ω)	Temp. (°C)	Res. (Ω)	Temp. (°C)
351,020	0	95,447	26	30,976	52	11,625	78
332,640	1	91,126	27	29,756	53	11,223	79
315,320	2	87,022	28	28,590	54	10,837	80
298,990	3	83,124	29	27,475	55	10,467	81
283,600	4	79,422	30	26,409	56	10,110	82
269,080	5	75,903	31	25,390	57	9,767.2	83
255,380	6	72,560	32	24,415	58	9,437.7	84
242,460	7	69,380	33	23,483	59	9,120.8	85
230,260	8	66,356	34	22,590	60	8,816.0	86
218,730	9	63,480	35	21,736	61	8,522.7	87
207,850	10	60,743	36	20,919	62	8,240.6	88
197,560	11	58,138	37	20,136	63	7,969.1	89
187,840	12	55,658	38	19,386	64	7,707.7	90
178,650	13	53,297	39	18,668	65	7,456.2	91
169,950	14	51,048	40	17,980	66	7,214.0	92
161,730	15	48,905	41	17,321	67	6,980.6	93
153,950	16	46,863	42	16,689	68	6,755.9	94
146,580	17	44,917	43	16,083	69	6,539.4	95
139,610	18	43,062	44	15,502	70	6,330.8	96
133,000	19	41,292	45	14,945	71	6,129.8	97
126,740	20	39,605	46	14,410	72	5,936.1	98
120,810	21	37,995	47	13,897	73	5,749.3	99
115,190	22	36,458	48	13,405	74	5,569.3	100
109,850	23	34,991	49	12,932	75		
104,800	24	33,591	50	12,479	76		
100,000	25	32,253	51	12,043	77		



Calculations

Accepted Values	
Material	α ($\times 10^{-6}$)
Copper	17.6
Steel	11.3 to 13.5
Aluminum	23.4

	T₁	T₂	ΔT	α unknown	α accepted	% Error
1						
2						
3						
4						
5						
6						

Error Analysis

Speculate on the possible sources of error in your experiment. How might you improve the accuracy of the experiment?