MiSP Thermal Conduction Assessment L1

Name _____ Date _____

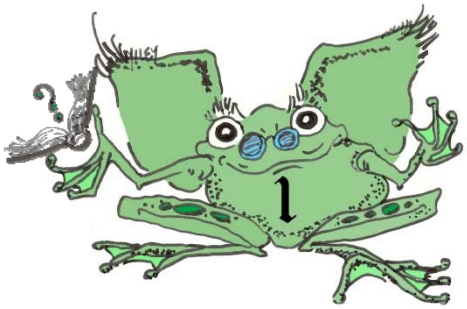
A sports clothing company is testing new materials to use to make winter gloves for skiing, snowboarding, etc. The company is looking for the material that is the poorest conductor of heat (the best insulator).

Equal masses of the test materials were used to make gloves. A thermometer (temperature probe) was placed inside each glove and the gloves were placed in a -20°C freezer. The temperature of the inside of all three gloves was 37°C (close to human body temperature) when the gloves were placed in the freezer.

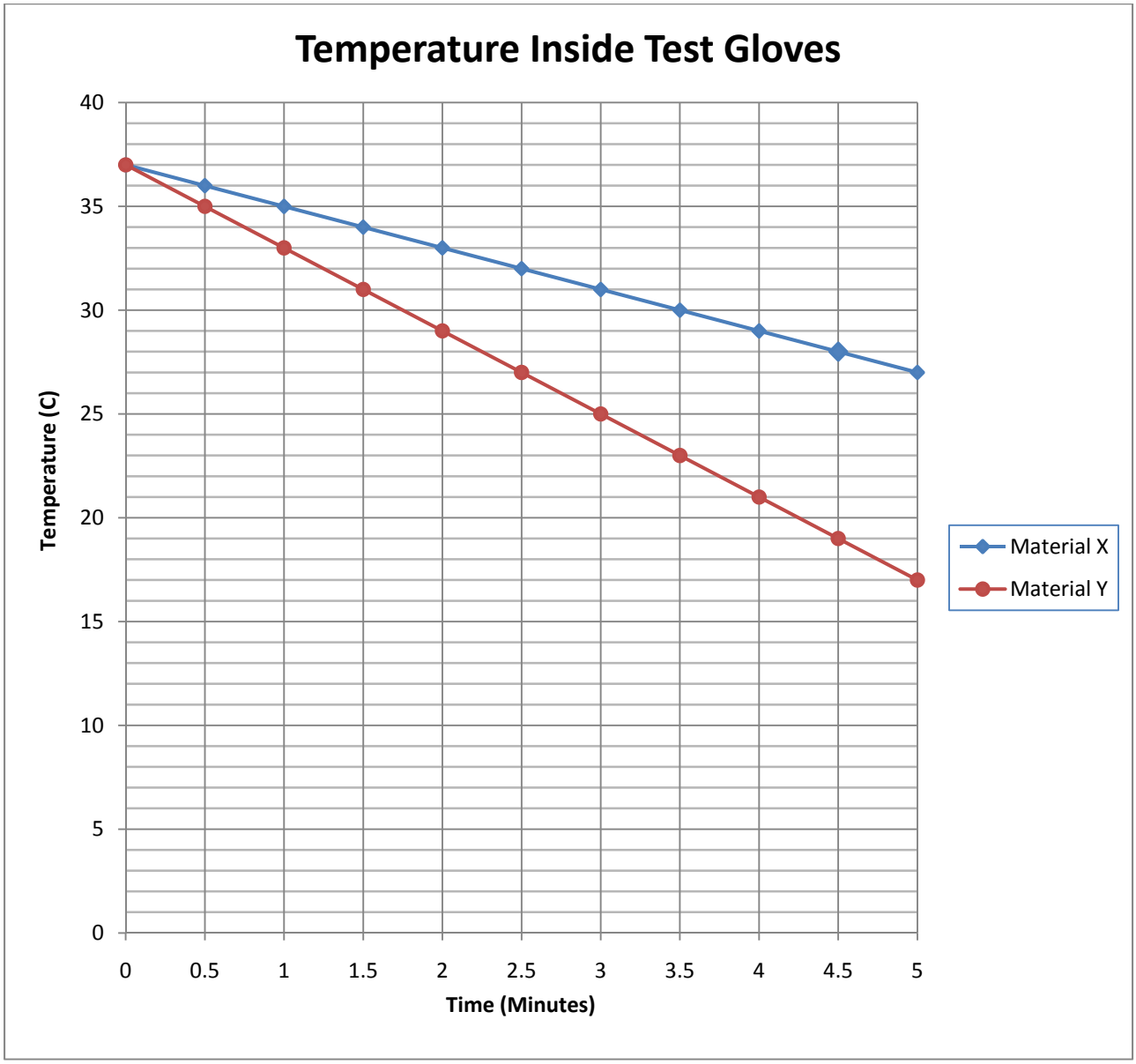
Temperature readings were taken every .5 minute (every 30 seconds) for 5 minutes.

The data is shown in the chart below.

Time (minutes)	Material X Temperature °C	Material Y Temperature °C	Material Z Temperature °C
0	37	37	37
.5	36	35	34
1.0	35	33	31
1.5	34	31	28
2.0	33	29	25
2.5	32	27	22
3.0	31	25	19
3.5	30	23	16
4.0	29	21	13
4.5	28	19	10
5.0	27	17	7



1. The data for materials X and Y were plotted on the graph below
   Graph the data for material Z on the chart.



2. How are the graphed lines for the three materials the same? How are they different?

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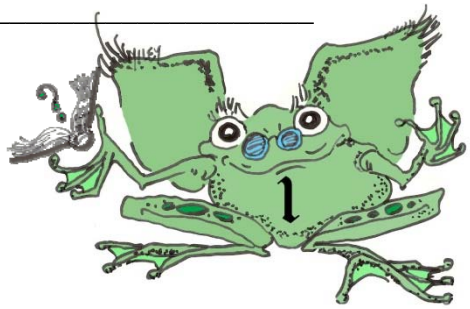

3. Which material is the worst conductor / the best insulator? Why?

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4. If the materials all cost about the same, which material would you recommend for use in winter gloves? Why? Use the word *conduction* in your explanation.

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