Mathematical Modeling and Consulting

Sponsor

Sponsor Name

Final Report

Insurance Redlining

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Abstract

Acknowledgments

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	25%	50%	75%
t=0.5 mins	15	25	32
t=2 mins	14	24	34
t=5 mins	14	27	31
t=30 mins	18	36	18

Table 1: Experiment results for Coke

	25%	50%	75%
t=0.5 mins	15	27	30
t=2 mins	20	19	33
t=5 mins	14	29	29
t=30 mins	17	30	25

Table 2: Experiment results for Sprite

	25%	50%	75%
t=0.5 mins	15	23	34
t=2 mins	19	23	30
t=5 mins	18	27	27
t=30 mins	12	35	25

Table 3: Experiment results for Fanta Orange

	25%	50%	75%
t=0.5 mins	15	24	33
t=2 mins	21	19	32
t=5 mins	16	24	32
t=30 mins	18	22	32

Table 4: Experiment results for Diet Coke

Appendix A

Lemmas

q=mCΔT,
where C = specific heat capacity (J/g C)
q = quantity of heat in joules
m = mass in grams
ΔT= change in temperature
so C= q/(m*Δ T)

Appendix B

Glossary

Specific heat capacity. Amount of heat per unit mass required to raise the temperature by one degree Celsius
Heat of fusion. Amount of heat needed to change its state from a solid to a liquid per unit mass

Appendix C

Abbreviations

RAAN. Right ascension of the ascending node

Selected Bibliography Including Cited Works

[1] American Mathematical Society. *MathSciNet: Mathematical Reviews on the Web.* ⟨`http://www.ams.org/mathscinet/`⟩. Accessed June 17, 2009.

Because an online reference may be changed at any time, it is conventional to tie the reference to the date when the resource was accessed.

[2] Roger R. Bate, Donald D. Mueller, and Jeremy E. While. *Fundamentals of Astrodynamics.* Dover, 1971.

A standard textbook on astrodynamics. It provided a reference for orbital mechanics and satellite propagation.

[3] Ingrid Carlbom and Joseph Paciorek. Planar Geometric Projections and Viewing Transformations. *Computing Surveys*, 1978.

Gives a thorough background to projective geometry and vertical perspective projection. This includes details about calculating projections using homogeneous coordinates and projection matrices.

[4] Gelfand and Fomin. *Calculus of Variations.* Prentice-Hall, 1963.

Discusses the essential principle of variational method for optimal path problems.

[5] George Grätzer. *More Math Into LaTeX.* Birkhäuser, Boston, MA, fourth edition, 2007.

[6] Jacob Kogan. *Introduction to Clustering Large and High-Dimensional Data.* Cambridge, 2007.

Focuses on a few of the most important clustering algorithms, providing also some useful optimization techniques for high-dimensional objective functions.

[7] David A. Vallado. *Fundamentals of Astrodynamics and Applications.* Space Technology, 2007.

A professional astrodynamics reference. It emphasizes the practical use of astrodynamics in space missions.

[8] Emo Welzl. Smallest Enclosing Disks (Balls and Ellipsoids). *New Results and New Trends in Computer Science*, 1991.

Outlines a smallest circle algorithm that runs in linear time using recursion.