

Modeling Daylight Hours

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Activity overview

Students are provided with data on the daylight hours for two Canadian cities measured three times per month in 2007. The student's task is to create graphical and algebraic models of the data and to interpret the meaning of each of the parameters in the algebraic models. The student will also determine how the models for the two cities differ and justify the reasons.

Concepts

Graphing sinusoidal models

Creating sinusoidal algebraic models

Transformations of sinusoidal models

Teacher preparation

- *Students need prior knowledge on graphing sinusoidal functions and performing transformations of the amplitude, period, and horizontal and vertical translations.*

Classroom management tips

Have students work in pairs to facilitate communication and the comparison of solutions.

TI-Nspire Applications

Daylight Hours – Student.tns

Daylight Hours – Teacher.tns

Step-by-step directions

- *Copy **Daylight Hours– Student.tns** to Nspire handheld units*
 - *Make copies of student sheets **Daylight Hours – Student.pdf***
 - *Distribute student activity sheets and Nspire handheld units.*
 - *Students work in pairs on the investigation*
 - *Consolidate student understanding with a discussion afterwards.*
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Assessment and evaluation

- *During the activity assess students on their use of the mathematical processes **representing, connecting and reasoning and proving***
- *This activity could be used as a summative evaluation*

Activity extensions

- *Provide students with data on other Canadian cities and have them predict the algebraic model and confirm using technology their hypothesis. (see **Daylight Hours.xls**)*
 - *Provide latitude for the cities and determine the relationship between latitude and amplitude.*
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