Task Careers in Mathematical Modelling

Strand
Mathematical Models

Student Text Pages
396–397

Suggested Timing
80 min

Tools
- computers with Internet access
- graphing calculators

Related Resources
BLM 6-21 Chapter 6 Task Rubric

Specific Expectations

Solve Exponential Equations

MM3.05 gather, interpret, and describe information about applications of mathematical modelling in occupations, and about college programs that explore these applications

Teaching Suggestions

- Have students read the Task and ensure they understand what they are being asked to do.
- Have students work in groups to brainstorm strategies for completing the Task. Discuss the strategies and review necessary skills and concepts for completing the problem.
- Review the requirements for writing a report.
- Students will need computers with Internet access for their research.
- Circulate as students complete the Task and assist them as necessary.

Prompts for Getting Started

Ask students the following questions:

- What is the Task asking you to do?
- Is the given information complete enough to begin the Task?
- Where can you find information on careers and college programs?
- Which presentation method will you choose?
- What are the requirements for a complete report?

Hints for Evaluating a Response

Student responses are being assessed for the level of mathematical understanding they represent. As you assess each response, consider the following questions:

- How much assistance did the student need to understand what information was required?
- How much assistance did the student need to find information on the career and the education required?
- How much assistance did the student need to complete the Task?
- What parts of the Task did the student complete or not complete?
- Did the student present work that is clear and easy to follow and understand?
- Are the student's answers supported by references to Internet sources used?

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Level 3 Sample Response

1. Mathematical modelling would be used in any career that involves forecasts: the availability of jobs in the future, weather patterns such as global warming, inflation, and so on.
2. I choose Biological Technician. Fanshawe College offers a three-year diploma in Science Laboratory Technology. Go to *http://www.fanshawec.ca/EN/slt1/program/next.asp?zoom_highlight=science+laboratory+technology* to learn more about the program.

Admission Requirements

OSSD, ACE, or GED with

- Any Grade 12 Mathematics, C or U, minimum final grade of 60 (Grade 12 Mathematics for College Technology (C) preferred)
- Grade 11 or Grade 12 Chemistry (C or U)

OR

- Pre-Technology Ontario College Certificate and minimum final grade of 'C' or 60 in the required Mathematics

OR

- Mature student who has the required courses and grades stated above

Recommended Academic Preparation

For OSSD

- Grade 11 or Grade 12 Physics, C or U
- Grade 11 or Grade 12 Biology, C or U
- Grade 11 or Grade 12 Computer Engineering (U/C) OR Grade 11 or Grade 12 Computer and Information Science (U/C)
- Grade 12 English (C) OR Grade 12 Business and Technological Communication (O)

For ACE

- one Technical or Apprenticeship Mathematics course

First Year Courses

Semester 1

BIOL-1016 Cytology
CHEM-1003 General Chemistry 1
WRIT-1039 Reason & Writing 1—Technology
MATH-1172 Math 1
ENVR-1014 Environmental & Science Issues

Semester 2

Gen Ed—Choose one General Education elective course
BIOL-3001 Microbiology 1—Bacteriology
CHEM-1012 General Chemistry 2
MATH-3062 Mathematics 2
PHYS-1001 Physics

Level 3 Notes

Look for the following:

- at least two careers are described that use mathematical modelling
- entry requirements are appropriate and current
- names of first year courses are listed
- report is logically organised and clearly presented
- sources for additional information are listed
- use of mathematical language relating to mathematical modelling is effective

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What Distinguishes Level 2

Look for the following:

- one or more careers are described but the connection to mathematical modelling is not clear
- entry requirements are not specific to a relevant college program
- names of first year courses are listed for a general area and not for a specific program
- report lacks logical organisation somewhat; some statements may be confusing
- few (if any) sources for additional information are listed
- use of mathematical language relating to mathematical modelling is somewhat effective

What Distinguishes Level 4

Look for the following:

- three or more careers are described with the connection to mathematical modelling clearly explained using examples
- entry requirements are appropriate and current; alternate entry requirements are listed
- names of first year courses are listed; contents of course are detailed, particularly for courses involving mathematical modelling
- report is logically organised and clearly presented with written and visual forms
- many sources for additional information are detailed
- use of mathematical language relating to mathematical modelling is highly effective

Ongoing Assessment

Use **BLM 6-21 Chapter 6 Task Rubric** to assess student achievement.

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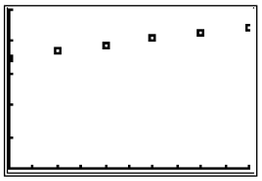
College Preparation Test Answers (page 397)

1. A
2. A
3. D
4. B
5. C
6. D
7. B
8. A
9. C
10. C
11. D
12. D
13. $\frac{y^4}{4x^2}$
14. $3a^3x^2y$
15. $\frac{a^3}{b^7}$
16. 280 days
17. 

Xmin = 0, Xmax = 100, Xscl = 10, Ymin = 0, Ymax = 50, Yscl = 10
Line of best fit: $R = 0.0983T + 34.986$

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