UNIT 1

Patterns

General Outcome

Develop algebraic and graphical reasoning through the study of relations.

Specific Outcomes

R9 Analyze arithmetic sequences and series to solve problems.

R10 Analyze geometric sequences and series to solve problems.

General Outcome

Develop trigonometric reasoning.

Specific Outcomes

T1 Demonstrate an understanding of angles in standard position [0° to 360°].

T2 Solve problems, using the three primary trigonometric ratios for angles from 0° to 360° in standard position.

T3 Solve problems, using the cosine law and sine law, including the ambiguous case.

***Pre-Calculus 11*, pages 2–3**

Suggested Timing
30–40 min

Blackline Masters
BLM U1–1 Unit 1 Project Checklist

What's Ahead

In Unit 1, students investigate and apply their knowledge of arithmetic sequences and series, geometric sequences and series, angles in standard position, trigonometric ratios, the cosine law, and the sine law. Students explore the concepts of arithmetic and geometric sequences and series, as well as finite and infinite geometric series. Students also learn to apply the concepts and skills of sequences and series to solve problems. They explore trigonometry by examining angles in standard position; making discoveries about reference angles; studying sine, cosine, tangent; and investigating trigonometric ratios. They also solve problems using trigonometric ratios.

Planning Notes

Introduce Unit 1 by reading and discussing the opening paragraph on page 2 of the student resource with the class.

You may wish to discuss the photo collage with students. They may be interested to know that the collage shows:

- the Leduc #1 oil well in Alberta (page 2)
- Freda Campbell from Iskut, British Columbia, examining gold mine core samples (page 2)
- a log boom and tow barge in British Columbia (page 3)
- a seismic exploration crew laying geophones in Northern BC (page 3)
- the Key Lake uranium mine in Saskatchewan (page 3)

The Looking Ahead box at the bottom of page 2 identifies the types of problems students will solve throughout the unit. You may wish to reactivate students' knowledge of these topics.

Unit 1 Project

For the Unit 1 project, students explore one of Canada's natural resources from the categories of petroleum, minerals, and forestry. They relate this natural resource to their knowledge of sequences and series and to the skills they develop with trigonometry, including the sine law and the cosine law.

With the class, read and discuss the introductory notes for the Unit 1 project. You may wish to point out the data presented in this unit that are related to the project. These data are identified throughout Chapters 1 and 2 as Project Corners. Note that these features are not mandatory but are recommended because they provide information needed to complete the Unit 1 Project. You may wish to provide students with **BLM U1–1 Unit 1 Project Checklist**. Students can use the checklist as they prepare their project.

Have students collect all their work for the Unit 1 project in a portfolio.

For additional information on the Unit 1 Project, see pages 71 and 131 in the student resource or TR pages 49 and 91 to 93.