Foundations of Math 10 LG 8
RELATIONS AND FUNCTIONS

INTRODUCTION:

One of the strengths of mathematics is showing the relationship between two different sets of data on a graph. Graphs are often used as a visual representation of a situation. To find out how scientists use graphs to help study our world, check out the cool dinosaur information on page 292, as well as the avalanche awareness info on page 315.

LEARNING GUIDE EXPECTATIONS:

On the completion of this learning guide you will be able to:

1) explain and express the meaning of domain and range in a variety of ways
2) sort relations into functions and non-functions
3) use function notation
4) graph linear functions
5) determine the slope of a line and use slope to draw lines
6) explain how slope represents a rate of change
7) solve problems involving slope

EVALUATION:

You are ready to progress to the next learning guide when you can demonstrate your understanding of the above expectations. Please refer to your Foundations of Mathematics 10 Marks Record Sheet to determine the assessment.

RESOURCES NEEDED:

Mathematics 10 Text

LEARNING ACTIVITIES:

Expectation 1: Explain and express the meaning of domain and range in a variety of ways

1. Watch and take notes on instructional video on Domain and Range.

2. Read the Link the Ideas on pages 294 – 295. In your Math Journal,
   a) give definitions to explain what is meant by domain and range.
   b) describe where to find values for domain and range in a set of ordered pairs and on a graph.
   c) The textbook lists five ways to express the domain and range of a relation in a variety of ways. In your math journal, list the five ways and give an example of each way.

2. In the Mathematics 10 text, read Example 1 (on pages 295-296) and Example 3 on page 299. Then do # 1 - 3 on pages 301-302.
3. Read Example 2 (on pages 297 -298). Now do #5, 6 on page 303.
4. In the Mathematics 10 text, read Example 4 (on page 300). Then do # 4, 9 on pages 302-304.
5. There is not much practice in the textbook for domain and range so here is a lot more practice.
6. For extra practice, click here. For the answers to the extra practice, click here.

Expectation 2: sort relations into functions and non-functions
Expectation 3: use function notation
Expectation 4: graph linear functions

1. Watch and take notes on instructional video on Functions.

2. Read the Link the Ideas on page 306 and the Key Ideas on page 310. In your Math Journal, describe what a function is by defining it.

3. In the Mathematics 10 text, read Example 1 (on pages 306 - 307). Then do # 1 on page 311.

4. In your Math Journal:
   a) describe and give an example to show how the vertical line test works.
   b) describe what function notation is and give an example to show how it works

5. In the Mathematics 10 text, read Example 2 on page 308. Then do #2 - 6 on page 311.
6. Read Example 3 on page 309 -310. Then do # 7, 8, 10, 11, 13, 14.
7. For extra practice, click here. For the answers to the extra practice, click here.

Expectation 5: determine the slope of a line and use slope to draw lines
Expectation 6: explain how slope represents a rate of change
Expectation 7: solve problems involving slope

1. Watch and take notes on instructional video on Slope.

2. Read the Link the Ideas on page 317 – 318 and the Key Ideas on page 324.
In your Math Journal:
a) define slope. What does slope tell you about a line and what units are used?
b) write a method/formula that can be used to calculate the slope of a line
c) draw four lines which show the four different types of slope that a line can have (positive slope, negative slope, zero slope, and undefined slope).

3. In the Mathematics 10 text, read Example 1 on page 319. Then do #1 on page 325.
4. In the Mathematics 10 text, read Examples 2 and 3 on pages 320-321. Then do #2, 3 on page 325.
5. In the Mathematics 10 text, read Example 4 on page 322. Then do #4 on page 325.
6. In the Mathematics 10 text, read Example 5 on page 323. Then do #5, 8 – 12, 14, 16 on pages 326 – 328.
7. For extra practice, click here. For the answers to the extra practice, click here.

REVIEW AND CHALLENGE

1. In the Mathematics 10 text, complete Ch 6 Review questions # 7 - 8, 10 - 14, 16, 17, 18 on pages 332 – 334.

PRACTICE QUIZZES

Practice quiz #1 (only do questions #5, 7-13)
Practice quiz #2
Practice quiz #3
Practice quiz #4
Practice quiz #5