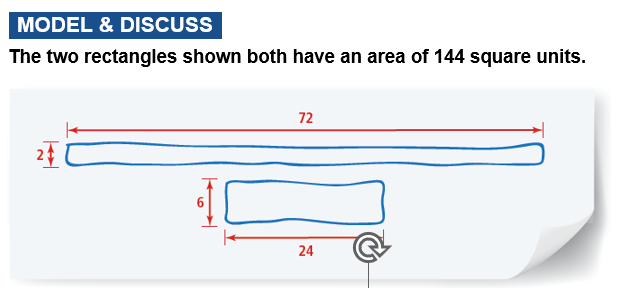
Lesson 4.1: **Inverse Variation and the Reciprocal Function**

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| Objectives | * Use inverse variation to write and graph reciprocal functions. * Identify the effect of transformations on the graph of the parent reciprocal function and define the effects of h and k on the function f(x) =1/(x-h) + k.. |
| Language Objective | * Students will write their own definition of key vocabulary. |
| Essential Understanding | A reciprocal function is used to model inverse variation, which is a proportional relationship between two variables such that when one variable increases, the other decreases. |

**Using words or pictures, define the following Vocabulary:  
  
Asymptote:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
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Constant of Variation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
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**Inverse variation:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
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reciprocal function:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
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1. **​Sketch as many other rectangles as you can that have the same area on a piece of graph paper. organize and record your data for the lengths and widths of the rectangles.**A graph paper with red line

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2. **Considering rectangles with an area of 144 square units, what happens to the width of the rectangle as the length increases? Show your reasoning below, use pictures, words, or mathematical expressions.**
3. **​Examine at least five other pairs of rectangles, each pair sharing the same area. How would you describe the relationship between the lengths and widths? Show your reasoning below, use pictures, words, or mathematical expressions.**

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**A stringed instrument with text and symbols

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**A black text on a white background

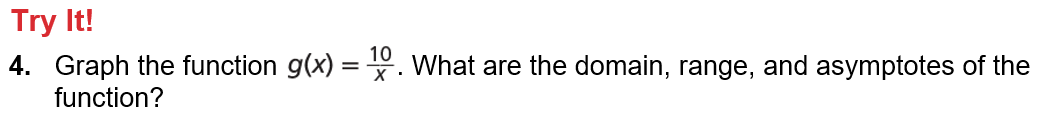
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**Practice & Problem Solving**

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| **Ex 1,2,3**  **A text on a white background  Description automatically generated** | **Ex 3**  **A math problem with black text  Description automatically generated with medium confidence** |
| **Ex 4**  **A white background with black text  Description automatically generated** | **Ex 4**  **A math problem with black text  Description automatically generated with medium confidence** |
| **Ex 4 A screenshot of a test  Description automatically generated** |  |
| **Ex 5**  **A white background with black text  Description automatically generated** | **Ex 5**  **A math problem with black text  Description automatically generated with medium confidence** |
| **Ex 5**  **A math problem with black lines and white text  Description automatically generated** | **Ex 5**  **A math problem with black text  Description automatically generated** |

**A screenshot of a graph

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