

# Information for Teachers:

- ▶ Suggested grade level: 6th
- ▶ Suggested materials: paper, pencil, calculators.
- ▶ Skills addressed:
- ▶ Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- ▶ Use ratio and rate reasoning to solve real-world and mathematical problems e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations
  - a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pair of values on on the coordinate plane.
- ▶ Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
- ▶ Skills addressed:
  - ▶ Students will be able to solve a real-world problem involving ratios and proportional reasoning.
  - ▶ Students will be able to transform nautical miles into feet.

# Math in Action: Military Service Members

Ratios

# Act 1

Noticings and Wonderings

# Dawn, Air Force

Video Link:

<https://msubillings.box.com/s/jzw7d82nq25lcnho1s5z9wkfxb6ub88z>

# A career in the military

What did you notice?

Type your thoughts here:

What did you wonder?

Type your thoughts here:

Have you ever wondered how pilots determine when to start their landing descent so that they land on the airstrip? How quickly do you think an aircraft descends toward a runway?



# Terminology and Conversions:

1 Nautical Mile

- 6,076.118 feet

Descent Ratio

- $(\text{Altitude} / \text{Distance to Airport})$

Preferred Descent Ratio  
(Rule of 3)

- For every 1000 feet the plane is above the ground, the plane must be at least 3 nautical miles away from the airport.

Descent Rate %

- $(\text{Altitude} \div \text{Distance to Airport}) \times 100$

# Descent Ratio



**Distance to Airport**

**Altitude  
Height  
of Plane**



# Act 2

Estimating and Solving

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