

Lesson 23: Problem Solving Using Rates, Unit Rates, and Conversions

Classwork

- If work is being done at a constant rate by one person, and at a different constant rate by another person, both rates can be converted to their unit rates and then compared directly.
- “Work” can include jobs done in a certain time period, rates of running or swimming, etc.

Example 1: Fresh-Cut Grass

Suppose that on a Saturday morning you can cut 3 lawns in 5 hours, and your friend can cut 5 lawns in 8 hours. Who is cutting lawns at a faster rate?

$$\frac{3 \text{ lawns}}{5 \text{ hours}} = \frac{0.6 \text{ lawns}}{1 \text{ hour}}$$

$$\frac{5 \text{ lawns}}{8 \text{ hours}} = \frac{0.625 \text{ lawns}}{1 \text{ hour}}$$

Example 2: Restaurant Advertising

$$\frac{350 \text{ menus}}{2 \text{ hours}} = \frac{175 \text{ menus}}{1 \text{ hour}}$$

$$\frac{510 \text{ menus}}{3 \text{ hours}} = \frac{170 \text{ menus}}{1 \text{ hour}}$$

Example 3: Survival of the Fittest

$$\frac{60 \text{ feet}}{4 \text{ seconds}} = \frac{15 \text{ feet}}{1 \text{ second}}$$

$$\frac{100 \text{ feet}}{8 \text{ seconds}} = \frac{12.5 \text{ feet}}{1 \text{ second}}$$

Example 4: Flying Fingers (Min.)

Secretary

$$\frac{225 \text{ words}}{3 \text{ min}} = \frac{75 \text{ words}}{1 \text{ min.}}$$

Computer Teacher

$$\frac{105 \text{ words}}{1.5 \text{ min.}} = \frac{70 \text{ words}}{1 \text{ minute}}$$

Secretary

$$\frac{105 \text{ words}}{90 \text{ sec.}} = \frac{1.1\bar{6} \text{ words}}{1 \text{ second.}}$$

Teacher

$$\frac{225 \text{ words}}{180 \text{ seconds}} = \frac{1.25 \text{ words}}{1 \text{ Second}}$$

The Secretary clearly types faster.