Lesson 17: From Rates to Ratios

Classwork

Given a rate, you can calculate the unit rate and associated ratios. Recognize that all ratios associated with a given rate are equivalent because they have the same value.

Example 1

Write each ratio as a rate.

|  |  |
| --- | --- |
| 1. The ratio of miles to the number of hours is to . | 1. The ratio of the number of laps to the number of minutes is to . |

Example 2

* 1. Complete the model below using the ratio from Example 1, part (b).

**laps/minute**

**Unit Rate**

**Rate**

**Ratio**

* 1. Complete the model below now using the rate listed below.

**Ratio**

**Rate**

**Unit Rate**

**ft/sec**

**Examples 3–6**

1. Dave can clean pools at a constant rate of pools/hour.
   1. What is the ratio of the number of pools to the number of hours?
   2. How many pools can Dave clean in hours?
   3. How long does it take Dave to clean pools?
2. Emeline can type at a constant rate of pages/minute.
   1. What is the ratio of the number of pages to the number of minutes?
   2. Emeline has to type a -page article but only has minutes until she reaches the deadline. Does Emeline have enough time to type the article? Why or why not?
   3. Emeline has to type a -page article. How much time will it take her?
3. Xavier can swim at a constant speed of meters/second.
   1. What is the ratio of the number of meters to the number of seconds?
   2. Xavier is trying to qualify for the National Swim Meet. To qualify, he must complete a meter race in seconds. Will Xavier be able to qualify? Why or why not?
   3. Xavier is also attempting to qualify for the same meet in the meter event. To qualify, Xavier would have   
      to complete the race in seconds. Will Xavier be able to qualify in this race? Why or why not?
4. The corner store sells apples at a rate of dollars per apple.
   1. What is the ratio of the amount in dollars to the number of apples?
   2. Akia is only able to spend on apples. How many apples can she buy?
   3. Christian has in his wallet and wants to spend it on apples. How many apples can Christian buy?

Lesson Summary

A rate of gal/min corresponds to the unit rate of and also corresponds to the ratio .

All ratios associated with a given rate are equivalent because they have the same value.

Problem Set

1. Once a commercial plane reaches the desired altitude, the pilot often travels at a cruising speed. On average, the cruising speed is miles/hour. If a plane travels at this cruising speed for hours, how far does the plane travel while cruising at this speed?
2. Denver, Colorado often experiences snowstorms resulting in multiple inches of accumulated snow. During the last snow storm, the snow accumulated at inch/hour. If the snow continues at this rate for hours, how much snow will accumulate?