# Grade 7 Mathematics
Week of January 25 – January 29

### **Lesson 4.3: Rates**

**Lesson Materials**
- Lessons for Section [4.3 Rates](4.3-rates)
- Learning Guide (This PDF)

Use the link above to open the lessons for this section. Remember: on the lesson page, use the arrow next to the "Table of Contents" at the **top of the page** to move through the lessons. You can also click on the Table of Contents to open the menu so you can jump to a specific lesson page.
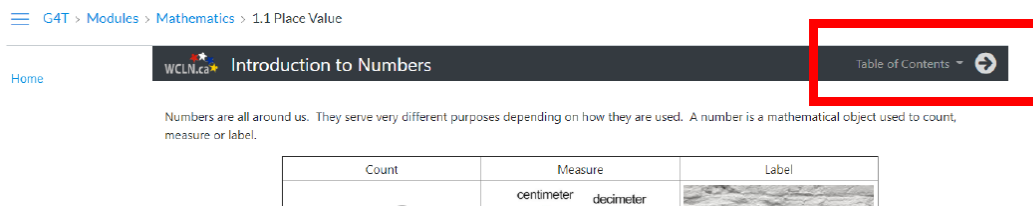


Work through the online lessons for this section. You can work at your own pace or follow the suggested schedule below. Complete the activities in your Learning Guide as you work through the lessons. You can print the Learning Guide, or, copy out the questions on a separate piece of paper. Be sure to try the games and practice quizzes as you make your way through the online lesson book.

**Suggested Lesson Schedule**

| Monday | Thursday |
|---|---|
| • Rates<br>• Find the Unit Rate<br>• Practice #1 | • Changing the units<br>• Practice #2<br>• LG p. 8, #3-4 |
| **Tuesday** | **Friday** |
| • LG 4.3 p. 7, #1 | • Unit Rate Media<br>• LG p. 8-9, #5-6 |
| **Wednesday** | |
| • Converting Rates<br>• LG p. 7-8, #2 | |

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### 4.3 RATES

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1. Follow the steps to find the unit rate in each instance below. Round your answers to the nearest hundredth.

    **Step 1:** Write the ratio of the given information
    **Step 2:** Find the unit rate using division
    **Step 3:** State your answer in words

    **Ex.** 25 mm of rain in 6 hours
    **Step 1: 25:6**
    **Step 2: $25 \div 6 = 4.17$**
    **Step 3: 4.17 mm of rain per hour**

    e. 40 points scored in 9 games

    a. 180 words typed in 3 minutes
    **Step 1:**
    **Step 2:**
    **Step 3:**

    f. 330 pages read in 7 days

    b. $30 for 5 magazines

    g. $1.50 for 20 candies

    c. 1560 mL of yogurt in 12 containers

    d. 525 metres in 30 minutes

2. Circle the correct conversion factor to use for each of these conversions, then complete the conversion.

    **Ex. 209 feet = 63.53 metres**

    $$209\,\text{ft.} \times \frac{3.29\,\text{ft.}}{1\text{m}} \quad \text{or} \quad \boxed{209\,\text{ft.} \times \frac{1\text{m}}{3.29\,\text{ft.}}} \qquad \frac{209\,\text{m}}{3.29} = 63.53\,\text{m}$$

    a. **17 metres = _____ feet**

    $$17\,\text{m} \times \frac{1\text{m}}{3.28\,\text{ft.}} \quad \text{or} \quad 17\,\text{m} \times \frac{3.28\,\text{ft.}}{1\text{m}}$$

    b. **1362 grams = _____ pounds (lb.)**

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$$1362\text{g} \times \frac{1\text{lb.}}{454\text{g}} \quad \text{or} \quad 1362\text{g} \times \frac{454\text{g}}{1\text{lb.}}$$

c. **5 years = _____ months**

$$5\,\text{yr} \times \frac{1\text{yr}}{12\,\text{mth}} \quad \text{or} \quad 5\,\text{yr} \times \frac{12\,\text{mth}}{1\text{yr}}$$

3. Use a conversion factor to solve each problem.

   **Ex.** How many weeks is 84 days?

   $$84\,\cancel{\text{days}} \times \frac{1\,\text{week}}{7\,\cancel{\text{days}}}$$

   $$\frac{84}{7} = 12\,\text{weeks}$$

   b. How many months is 7 years?

   a. How minutes is 5100 seconds?

   c. How many minutes is 9.5 hours?

4. a. Determine the mistake that was made in the calculation below when converting 336 hours to weeks.

   $$336\text{h} \times \frac{1\text{d}}{24\text{h}} \times \frac{7\text{d}}{1\text{w}} = 98\,\text{weeks}$$

   b. Calculate the correct answer. (336 hours = ? weeks)

5. Convert. _Hint: More than one conversion factor will need to be used._

   **Ex.** 86 400 seconds to days

   $$86400\,\cancel{\text{sec}} \times \frac{1\,\cancel{\text{m}}}{60\,\cancel{\text{sec}}} \times \frac{1\,\cancel{\text{h}}}{60\,\cancel{\text{m}}} \times \frac{1\text{d}}{24\,\cancel{\text{h}}}$$

   $$\frac{86400}{60 \times 60 \times 24} = \frac{86400}{86400} = 1$$

   b. 3 hours to seconds

   _**1 day**_

   a. 20 160 minutes to weeks

c.   2 years to minutes

6.  Convert each rate. _Reminder: The units for rates are stated as x/y. Ex. km/h, $/unit, etc._

**Ex.** 90 km per hour to kilometres per minute

$$\frac{90km}{1\cancel{h}} \times \frac{1\cancel{h}}{60\,min}$$

$$\frac{90km}{60\,min} = 1.5\,km\,/\,min$$

c.   $22 for 100 to $ per unit

a.  15 km per hour to kilometres per minute

d.  1500 seconds per kilometre to seconds per metre

b.  $7 per dozen to $ per unit

e.  6 minutes per centimetre to seconds per centimetre