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UNIT 4 LESSON 10

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| AIM: | SWBAT calculate Unit Rate |

**THINK ABOUT IT!**

Jordan is running a race that is 13 miles long. From his training, he knows that it takes him 72 minutes for every 12 miles he runs and he runs each mile in the same amount of time.

How long will it take for Jordan to run the 13th mile in the race (assuming he runs at the same speed as the first 12 miles)?

Write a ratio to represent his running speed and explain how you determined the ratio.

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Key Point

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be expressed as an \_\_\_\_\_\_\_\_\_\_ unit rate where the second term is 1 |

**Interaction with New Material**

Ex.1) The table below shows the final regular season NFL standings for 3 teams in 2015.

|  |  |
| --- | --- |
| **Team** | **Win-Losses** |
| Patriots | 12-4 |
| Jets | 6-10 |
| Dolphins | 11-5 |

Which team has the highest ratio of the number of games they won for every one game they lost?

**PARTNER PRACTICE**

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| *Bachelor Level* |

1. For every 2 minutes Kevin drove, he traveled 5 miles. At this speed, how many miles would he drive in one minute?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

1. For every 10 flowers, there are 36 butterflies resting on the flower with the same number on each flower. How many butterflies are on one flower? Select all that apply. Explain what concept you applied and why.

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed
  1. 3.6 butterflies per flower
  2. butterflies per flower
  3. butterflies per flower
  4. butterflies per flower

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| *Master Level* |

1. The bodega offers two deals on chicken nuggets. In deal #1 you can buy 5 chicken nuggets for $2.00. In deal #2 you can buy 8 chicken nuggets for $3.50. In which deal is each chicken nugget cheaper? How much cheaper?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

1. Marcella is a teacher at Endeavor Middle School. She can grade 8 papers every 4 minutes. Determine whether each answer choice below expresses a unit rate for this situation. Select Yes or No for each answer choice.

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

|  |  |  |
| --- | --- | --- |
|  | **Yes** | **No** |
| 2:1 |  |  |
|  |  |  |
| 0.5:1 |  |  |
| 4:1 |  |  |
| ½ minute per paper |  |  |

**INDEPENDENT PRACTICE**

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| *Bachelor Level* |

1. Jodi’s car used 12 gallons of gas to travel 456 miles. How many miles did her car travel per gallon of gas?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

1. The water level in an ocean bay changes at an average rate of 6 meters every 12 hours. How many meters does the ocean bay change every hour?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

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| *Master Level* |

1. If a recipe calls for 2 cups sugar for every 3 cups flour, how much sugar is used for every cup of flour?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

1. For which context below is the unit rate 2.2 pages per minute? Circle all that apply.

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed
  1. Janna reads 10 pages every 5 minutes
  2. Ed reads 22 pages every 10 minutes
  3. Lorenzo reads 20 pages every 44 minutes
  4. James reads 7.7 pages every 3.5 minutes

1. A high-speed elevator can rise 480 feet in 30 seconds. Which expression represents the rate, in feet per second, of the elevator?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed
  1. 480 x 30
  2. 480 ÷ 30
  3. 480 x 2
  4. 480 ÷ 2

1. There are two cell phone companies. Company A charges $45.12 for 30 minutes of calls. Company B charges $65.50 for 50 minutes of calls. Which company is a better deal?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

1. Felicity babysat 2 hours each night for 10 nights. She earned a total of $180 babysitting. Felicity wants to calculate her hourly rate. How much did Felicity earn per hour babysitting?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed
  1. $9
  2. $15
  3. $18
  4. $20

1. A group of students organized a car wash to raise money for a local charity. The students charged $5.00 for each car they washed. In 3 hours, they washed 12 cars. At that rate, how much money could they earn from washing cars for eight hours?
2. $40.00

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

1. $60.00
2. $85.00
3. $160.00

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| *PhD Level* |

1. Sebastian swam laps every day in the community swimming pool. He swam 45 minutes each day, 5 days each week, for 12 weeks. In that time, he swam 1,800 laps. What was his average rate in laps per hour?

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* CFS for top quality work
  + Annotations: put a box our starting ratio/rate
  + Ratio table/model drawn and labeled
  + Relationship between terms is identified
  + Answer statement boxed

**Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**EXIT TICKET**

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| Self-assessment | I mastered the learning objective today. | I am almost there. | Need more practice and feedback. |
| Teacher feedback | You mastered the learning objective today. | You are almost there. | You need more practice and feedback. |

1. For which example is the unit rate 7.5 miles per hour?
   1. 75 miles in 5 hours
   2. 7.5 hours for 6 miles
   3. 90 miles for 12 hours
2. Angela enjoys swimming and often swims at a steady pace to burn calories. At this pace, Angela can swim 1,700 meters in 40 minutes.
   1. At what speed, in meters per minute, does Angela swim?
   2. Explain how you determined the speed at which she swims. What mathematical concept did you apply? Why?

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