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

**CFS for top quality work**

* + Problem is annotated for **independent** and **dependent variables** (units being compared)
  + Initial rate is written with independent variable in the denominator
  + Unit rate is **calculated** to determine the constant of proportionality

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

UNIT 5 LESSON 2

**AIM**: SWBAT apply a specific type of unit rate to solve proportional problems

**THINK ABOUT IT!**

Mike is travelling 100 miles every 2 hours. Write two different unit rates and describe what they represent in the context of the situation. Which unit rate compares the dependent variable to one of the independent variables.

Key Point

|  |
| --- |
| A constant of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a special \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ for proportional relationships that compares the \_\_\_\_\_\_\_\_\_\_\_\_\_ variable to 1 of the independent variables |

**Interaction with New Material**

Ex.) Jhaniece is running a race and covers 450 yards in the first 100 seconds at a constant rate. Use the constant of proportionality to determine the total distance of the race if she finishes the race 15 seconds later.

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**PARTNER PRACTICE**

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| --- |
| *Bachelor Level* |

1. Bananas are $0.59/pound. What is the cost of 25 pounds of bananas?

a) $42.37

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b) $25.59

c) $14.75

d) $0.02

1. Danielle is solving math fast facts at a proportional rate. She completes 35 fast facts in 5 minutes. Read each statement below and decide whether it is true or false.

**CFS for top quality work**

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  + Initial rate is written with independent variable in the denominator
  + Unit rate is **calculated** to determine the constant of proportionality

|  |  |  |
| --- | --- | --- |
| Statement | True | False |
| The constant of proportionality is and it represents that in of a minute she can complete 1 fast fact |  |  |
| The constant of proportionality is 7 and it represents that she can complete 7 fast facts in 1 minute |  |  |
| If she completed 63 fast facts, she was doing math for 9 minutes |  |  |
| If she was doing math for 14 minutes, she completed 2 fast facts |  |  |

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| *Master Level* |

1. Tori buys 5 apples for every 3 oranges she purchases. Can this context have a constant of proportionality? Why or why not?

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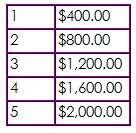
**INDEPENDENT PRACTICE**

**CFS for top quality work**

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  + Initial rate is written with independent variable in the denominator
  + Unit rate is **calculated** to determine the constant of proportionality

|  |
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| *Bachelor Level* |

1. The table below shows the salvage value for raw steel.



Part A: Based on the information in the table, what is the price per ton of steel?

* 1. $100
  2. $200
  3. $400
  4. $800

Part B: Explain why the price per ton represents the constant of proportionality between tons and dollars (include idenpedent variable and dependent variable in your answer)

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Part C: If I buy 12 tons fo steel, how much will I spend?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Part D: If I spend $3,200, how many tons of steel have I purchased?

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| *Master Level* |

1. Use the table of values to answer the questions that follow.

|  |  |
| --- | --- |
| **Time (days)** | **Money made ($)** |
| 2 | $230 |
| 3 | $345 |
| 4 | $460 |
| 5 | $575 |
| 6 | $690 |

Part A: What is the input and what is the output in this situation? Explain.

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Part B: What is the constant of proportionality in this relationship?

1. 230 b.) c.) d.) 115
2. Kelli bought 4 cupcakes for $8.60. Explain how you can use the constant of proportionality to determine how much it will cost for her to buy a total of two dozen (1 dozen = 12) and find the total cost.

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1. Each school year, the seventh graders who study Life Science participate in a special field trip to the city zoo. In 2010, the school paid $1,260 for 84 students to enter the zoo. In 2011, the school paid $1,050 for 70 students to enter the zoo. In 2012, the school paid $1,395 for 93 students to enter the zoo.

Part A: Is the price the school pays each year in entrance fees proportional to the number of students entering the zoo? Explain why or why not.

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Part B: Identify the constant of proportionality, and explain what it means in the context of this situation.

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Part C: What would the school pay if 120 students entered the zoo?

Part D: How many students would enter the zoo if the school paid $1,425?

|  |
| --- |
| *PhD Level* |

1. Amy can bake 81 cookies in 3 hours. Use the constant of proportionality to complete the table below.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cookies |  |  |  |  |  |  |  |  |  |
| Hours | 1 | 2 | 5 | 7 | 9 | 10 | 15 | 19 | 25 |

1. If you didn’t know that the table you created represented a proportional relationship, explain how you could test that the table did represent a proportional relationship using the constant of proportionality.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

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

**EXIT TICKET**

|  |  |  |  |
| --- | --- | --- | --- |
| 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. The dry cleaning fee for three pairs of pants is $18. How much will it cost to clean 11 pairs of pants? Explain how you used the constant of proportionality to solve the problem.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. It takes 2 hours to bake 8 sheets of cookies. Marcus starts baking at 10:00am. Read each statement below and determine whether it is true or false.

|  |  |  |
| --- | --- | --- |
| Statement | True | False |
| If he bakes 24 sheets of cookies, it will take him 3 hours |  |  |
| If he bakes 24 sheets of cookies, he will be done at 6pm |  |  |
| If he bakes 24 sheets of cookies, he will be done at 4pm |  |  |