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

**CFS for top quality work**

* + Constant of proportionality is calculated and annotated
	+ **Independent variable** (x) and **dependent variable** (y) are annotated
	+ Equation is written in the form of **y=kx**
	+ **Input** or **output** is substituted to solve for a given quantity

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

UNIT 5 LESSON 8

**AIM**: SWBAT represent proportions with equations and use them to solve.

**THINK ABOUT IT!**

Winnie is filling up her new salt water fish tank at a constant rate. After 4 minutes, the fish tank had 10 gallons of water in it.

Part A: Write an equation to determine how many gallons the fish tank holds,

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

Part B: It takes her a total of 14 minutes to completely fill up the tank. How many gallons of water are in the tank?

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Key Point

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| y =kx can be applied to solve real world \_\_\_\_\_\_\_\_\_\_\_\_ problems |

**Interaction with New Material**

Ex.1) Tariq has earned $54 for cutting the grass of three houses.

Step A: If he continues to earn money at this rate, how much will he make after cutting all 11 lawns on his street?

Step B: How many lawns would he need to cut if he wanted to earn enough money to buy an Xbox One that costs $324?

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**PARTNER PRACTICE**

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| *Bachelor Level* |

1. You get about 32 homework assignments every 4 weeks. Circle the equation that models this.

h = 32w w = 32h h = 8w w = 8h

1. Use your equation to determine the number of homework assignments you get after 9 weeks.

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1. Sheila is training her snail for a snail race. It can crawl 2 feet in 4 minutes, when crawling at a constant speed. Reach each statement below and determine whether it is “true” or “false.”

**Show your work.**

|  |  |  |
| --- | --- | --- |
| Statement | True | False |
| There is a Constant of Proportionality because the relationship is constant |  |  |
| The constant of proportionality is 2 |  |  |
| The equation F = $\frac{1}{2}$M can represent the relationship between feet and minutes |  |  |
| It will take the snail 8 minutes to crawl 16 feet |  |  |
| It will take the snail 32 minutes to crawl 16 feet |  |  |

|  |
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| *Master Level* |

1. If the equation d = 5s shows the relationship of cost in dollars per shirt purchased, which of the following could **NOT** be the cost for the number of shirts purchased?
	1. $15 for 3 shirts b. $25 for 5 shirts c. $12 for 4 shirts d. $100 for 20 shirts
2. Keonna is making cookies. The number of tablespoons of sugar she uses is proportional to the number of cookies she makes. Keianna uses 17$\frac{1}{2}$ tablespoons of sugar to make 10 cookies.

Part A: Select the equation which represents the relationship between *s*, the number of tablespoons of sugar Keianna uses, and *c*, the number of cookies she makes.

1. *s*= $\frac{3}{4}$ c
2. s= $1\frac{3}{4}$ c
3. s = 2 $\frac{1}{4}$ c
4. s = 10c

Part B: Use your equation to determine the number of cookies that can be made with 8 tablespoons of sugar.

**INDEPENDENT PRACTICE**

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| *Bachelor Level* |

1. Myles is working on his typing. He types for 3 minutes straight and is able to type 150 words.

Part A: Write an equation to show the relationship between minutes spent typing and the number of words typed for Myles.

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Part B: Determine the number of words Myles can type in 30 minutes.

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Step C: Determine how long it would take for Myles to type 900 words.

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| *Master Level* |

2. Oscar and Maria each wrote an equation that they felt represented the proportional relationship between distance in kilometers and distance in miles. One entry in the table paired 152 km with 95 miles. If 𝑘 represents the number of kilometers and 𝑚 represents the number of miles, who wrote the correct equation that would relate kilometers to miles? Explain. Determine how many kilometers are equal to 100 miles.

Oscar wrote the equation 𝑘 = 1.6𝑚, and he said that the unit rate 1.6/1 represents kilometers per mile.

Maria wrote the equation 𝑘 = 0.625𝑚 as her equation, and she said that 0.625 represents kilometers per mile.

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3. Aunt Helen is trying to learn 100 words in Spanish. She read somewhere that 15 minutes of practice will allow her to memorize 6 words correctly. How many **hours** of studying will Helen need in order to memorize all 100 words?

4. Mr. Legrand is trying to get ahead in his lesson planning and is able to plan one and a half lessons every 3 days. Select all the statements below that are true. **Show your work.**

a) In 9 days, he can plan 4.5 lessons

b) The constant of proportionality is 2

c) The constant of proportionality is $\frac{1}{2}$

d) The equation y = 0.5x can be used to represent this problem

e) It will take him 6 days to plan 12 lessons

f) It will take by 24 days to plan 12 lessons

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| *PhD Level* |

5. A ski resort is charging $37.50 to rent a snowmobile for 5 hours. At this rate, what will be the cost for a family of 5 to rent snowmobiles for 3 hours on the first day of their vacation and 4 hours for on the last day of their vacation?

**Show your work.**

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6. Robert can paint 2 ½ walls of one room in ¾ of an hour. How many walls can he can paint after 4 hours? How many rooms can he paint if each room has 4 walls?

**Show your work.**

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**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. Amy and Adam are both trying to solve the following problem:

*“How long will it take to walk 500 yards if you can walk 50 yards in 4 minutes?”*

Amy writes the equation y = 12.5m

Adam writes the equation y = 0.08m

Part B: Which scholar wrote the correct equation? What did the other scholar do wrong?

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Part B: How long will it take to walk 500 yards?

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