Name _____

Date _____ Pd_____

PROPORTIONAL RELATIONSHIPS: TABLES

A coffee shop displays their prices on a chalkboard menu. The prices are proportional, but some of the information got erased.

CUPS OF COFFEE	TOTAL COST
1	$2.75
2	$5.50
3	$8.25
4	$11.00

a. What is the constant of proportionality?

  2.75

b. How can you use the value of k to find the missing prices on the menu? Use this method to complete the table.

  multiply x values by k

c. How does the total cost change as the cups of coffee increase by 1?

  increases by $2.75

RATE OF CHANGE

- The rate of change describes how one quantity **changes** in relation to the other quantity.

- In a proportional relationship, the rate of change is equal to the **constant** of proportionality, k.

In 1-2, a representation of a proportional relationship is given. Use the information to create a table to represent the relationship. Then, find the rate of change.

1. $y = 9.5x$

x	y
0	0
1	9.5
2	19
3	28.5

Rate of change: ___9.5___

2. As the x-values increase by 2, the y-values increase by 60.

x	y
1	30
2	60
3	90
4	120

Rate of change: ___30___

Use your knowledge of proportional relationships to answer each question.

3. Camping Craze hires a graphic designer to create a new logo and marketing materials. The graphic designer charges Camping Craze $45.00 per hour. Complete the table and then answer questions a-c.

# OF HOURS	TOTAL CHARGE
1	$45
2	90
3	135
4	180
5	225

a. Find the rate of change. 45

b. What does the rate of change represent in the context of the situation?

  total charge increases by $45 each hour

c. Write an equation to show the relationship between x, the number of hours and y, the total charge of the graphic designer.

  $y = 45x$

4. Ronny earns $27.50 for each driveway he shovels. Create a table to show the sum of the amount Ronny will earn shoveling 4 driveways.

#driveways	1	2	3	4
earnings $	27.50	55	82.50	110

5. Gasoline is priced at $3.39 per gallon. Write an equation to represent the total cost, y, of purchasing x number of gallons.

$$y = 3.39x$$

6. Mrs. Dunn asked her students to represent $y = 5x$ in a table. Which student(s) correctly completed the task? Explain your reasoning.

SASHA

x	0	1	2	3	4
y	5	10	15	20	25

(RONALD)

x	0	1	2	3	4
y	0	5	10	15	20

7. Michelle reads a book for the school Read-A-Thon. The table shows the proportional relationship between x, the number of minutes and y, the total number of pages read.

# OF MINUTES	TOTAL PAGES READ	
30	15	0.5
60	30	0.5
90	45	0.5
120	60	0.5

a. Determine the rate of change and explain its meaning in the context of this situation.
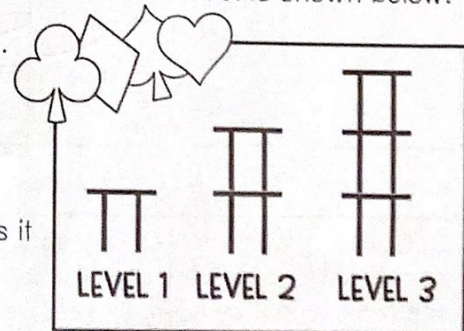
reads 0.5 each minute

b. Write an equation to represent the total number of pages as it relates to the number of minutes read.

$$y = 0.5x$$

8. Crystal creates a tower of playing cards. The number of cards at each level is shown below.

a. Complete the table below to represent the rate of change.

LEVEL	1	2	3	4	5
# OF CARDS	3	6	9	12	15

b. Write an equation to represent the number of cards, y, as it relates to the level of the tower, x.

$$y = 3x$$

LEVEL 1   LEVEL 2   LEVEL 3

9. Sue traveled by car at a constant rate. After 4 hours, she had traveled 272 miles. Circle any of the following that represent the relationship between the distance traveled and the hours of driving. $272 \div 4 = 68$

needs to be $d = 68t$

(A)

HOURS	5	6	7
MILES	340	408	476

68   66   68

B. d = 272t, where d is the distance in miles and t is the time in hours.

C. Sue is traveling 68 miles per hour.