



Distinguishing Between Proportional and Non-Proportional Relationships

Independent Practice – Answer Key

Directions: For each of the situations below, complete the tables. Answer the debriefing questions.

At Lake Sam Rayburn, there are two boat companies that rent boats for day use. Their schedule of charges is shown. Complete both tables, and use the process column to determine an expression that can be used to calculate the cost of renting a boat for x hours.

Cedar Bay Boat Rental

\$25 per Hour
No Deposit

Hours	Process	Cost	$\frac{y}{x} = \frac{\text{Cost}}{\text{Hours}}$
0	$25(0)$	0	n/a
1	$25(1)$	25	$\frac{25}{1} = 25$
2	$25(2)$	50	$\frac{50}{2} = 25$
3	$25(3)$	75	$\frac{75}{3} = 25$
4	$25(4)$	100	$\frac{100}{4} = 25$
x	$25x$	y	

Pine Island Boats

\$15 per Hour
\$50 Deposit

Hours	Process	Cost	$\frac{y}{x} = \frac{\text{Cost}}{\text{Hours}}$
0	$50 + 15(0)$	50	n/a
1	$50 + 15(1)$	65	$\frac{65}{1} = 65$
2	$50 + 15(2)$	80	$\frac{80}{2} = 40$
3	$50 + 15(3)$	95	$\frac{95}{3} \approx 31.67$
4	$50 + 15(4)$	110	$\frac{110}{4} = 27.50$
x	$50 + 15(x)$	y	

Debriefing Questions

- What patterns do you observe in the tables?
The rate per hour is a constant multiplier, and the deposit (if any) is a constant addend.
- For each row of each table divide cost by hours. What do you notice?
For Cedar Bay Boat Rental the result is always the same, but for Pine Island Boats the results are different.
- What are the similarities and differences in the algebraic expressions for each company?
For Big Boat Rental the expression is of the form kx , for We Rent Boats the expression is of the form $c + kx$.



4. A **proportional relationship** is a relationship between two sets of numbers, x and y , such that the ratio of y to x is constant. Which of these two boat rental companies appears to use a proportional relationship to determine their charges?

Cedar Bay Boat Rental appears to use a proportional relationship since the ratio of cost to hours is always \$25.

For questions 5-8, determine if the table of values represents a proportional relationship. If so, then identify the constant of proportionality.

5

x	2	3	5	6
y	7.5	11.25	18.75	22.5

yes; 3.75

7

x	4	5	8	10
y	13	22	61	97

no

6

x	y
1	1
2	4
3	9
4	16

no

8

x	y
1	0.8
2	1.6
5	4
8	6.4

yes; \$0.8