**Expansion Work Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Determine if each of the following relationships represents a proportion. Explain why or why not.**

1. 

|  |  |
| --- | --- |
| ***x*** | ***y*** |
| 3 | 0.25 |
| 5 | 0.75 |
| 8 | 1.5 |
| 11 | 2.25 |

1.



1. Paying $10 per month for a text messaging service, plus $0.17 for each text message sent.
2. {(3, 24), (5, 42), (7, 60), (10, 87)}

**Challenge**

1. Rob writes a sequence that represents the set of positive even integers. Do the integers form a proportional relationship with the positions in the sequence? Explain. Represent the relationship with an equation.
2. Kevin saves $2 during Month 1. He doubles his cumulative savings during each of the following months. Does this represent a proportional relationship? Explain.

**Expansion Work (KEY)**

1. Yes; $y=\frac{x}{4}$ is the same as $y=\frac{1}{4}x$. This equation is in the form *y = kx*.
2. No; the ratios of *x*-values to *y*-values are not consistent.
3. No; proportional graphs are linear—this graph is a curve.
4. No; the equation would be *y* = .17*x* + 10, which is not in the form *y = kx*.
5. No; the ratios of *x*-values to *y*-values are not consistent.

**Challenge**

1. Yes, the set of positive even integers and the term numbers represent a proportional relationship. The set of positive even integers may be represented by the sequence, 2, 4, 6, 8, 10, … (Notice 0 is neither negative nor positive.) The position numbers may be written as 1, 2, 3, 4, 5, … Thus, we have the ordered pairs, (1, 2), (2, 4), (3, 6), (4, 8), and (5, 10). The ratio of each *x*-value to its corresponding *y*-value is $\frac{1}{2}$. Thus, this set of ordered pairs represents a proportional relationship. The set of positive even integers may be represented by the equation *y* = 2*x*, where *x* represents the position number and *y* represents the positive even integer.
2. No, this does not represent a proportional relationship because his cumulative savings does not increase by a constant amount. The amount doubles each time, indicating a geometric sequence. The graph of this relationship is *not* linear.