



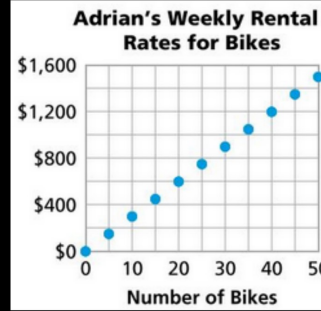
7.EE.1

I can put data in a table and see the pattern. I can take the data and graph it and write an equation.

Warm-Up

In your graph paper, answer the following questions:

Does the graph below represents a proportional relationship? How do you know?

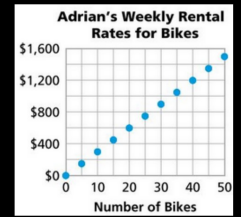


Investigation 1

Walking Rates

In *Variables and Patterns*, you read about a bicycle touring business. You used contextual situations, tables, graphs, and equations to represent patterns relating variables such as cost, income, and profit. You looked at some linear relationships, like the relationship between cost and number of rental bikes represented in this graph:

A relationship between two variables for which all points lie on a straight line is called a **linear relationship**. From the graph, you see that the relationship between the number of bikes rented and the total rental cost is a linear relationship. In this Investigation, consider these questions:



- How can you determine whether a relationship is linear by examining a table of data or an equation?
- How do changes in one variable affect changes in a related variable? How are these changes captured in a table, a graph, or an equation?

1.2 Walking Rates and Linear Relationships

Tables, Graphs, and Equations

Think about the effect a walking rate has on the relationship between time walked and distance walked. This will provide some important clues about how to identify linear relationships from tables, graphs, and equations.

1. Make a table showing the distance walked by each student for the first ten seconds.

Time (seconds)	Distance Walked (meters)		
	Alana	Gilberto	Leanne

Name	Walking Rate
Alana	1 meter per second
Gilberto	2 meters per second
Leanne	2.5 meters per second

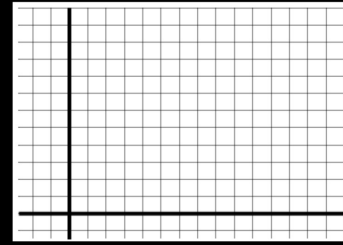
How does the walking rate appear as a pattern in the table?

Class Work Answers:

1. In the table, the walking rate affects how much the distance changes by each second.

Time (seconds)	Distance (meters)		
	Alana	Gilberto	Leanne
0	0	0	0
1	1	2	2.5
2	2	4	5
3	3	6	7.5
4	4	8	10
5	5	10	12.5
6	6	12	15
7	7	14	17.5
8	8	16	20
9	9	18	22.5
10	10	20	25

2. Graph the time and distance on the same coordinate axes. Label each student's line.



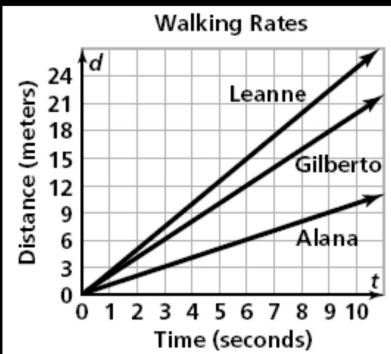
Time (seconds)	Distance (meters)		
	Alana	Gilberto	Leanne
0	0	0	0
1	1	2	2.5
2	2	4	5
3	3	6	7.5
4	4	8	10
5	5	10	12.5
6	6	12	15
7	7	14	17.5
8	8	16	20
9	9	18	22.5
10	10	20	25

Name	Walking Rate
Alana	1 meter per second
Gilberto	2 meters per second
Leanne	2.5 meters per second

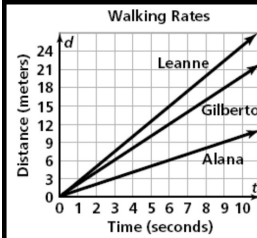
How does the walking rate affect the graph?

Class Work Answers:

2. In the graph, the walking rate affects the steepness of the graph (the bigger the number, the steeper the graph).



3. Write an equation that gives the relationship between the time t and the distance d walked by each student.



Name	Walking Rate
Alana	1 meter per second
Gilberto	2 meters per second
Leanne	2.5 meters per second

Time (seconds)	Distance (meters)		
	Alana	Gilberto	Leanne
0	0	0	0
1	1	2	2.5
2	2	4	5
3	3	6	7.5
4	4	8	10
5	5	10	12.5
6	6	12	15
7	7	14	17.5
8	8	16	20
9	9	18	22.5
10	10	20	25

Alana:
Gilberto:
Leanne:

How is the walking rate represented in the equations?

Class Work Answers:

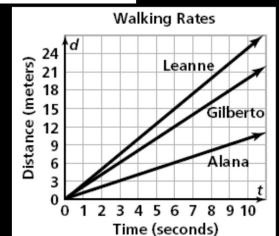
3. Alana: $d = t$
Gilberto: $d = 2t$
Leanne: $d = 2.5t$

In the equation, the walking rate is the number in front of t .

4. Are any of these proportional relationships? If so, what is the constant of proportionality?

Time (seconds)	Distance (meters)		
	Alana	Gilberto	Leanne
0	0	0	0
1	1	2	2.5
2	2	4	5
3	3	6	7.5
4	4	8	10
5	5	10	12.5
6	6	12	15
7	7	14	17.5
8	8	16	20
9	9	18	22.5
10	10	20	25

Alana: $d = t$
Gilberto: $d = 2t$
Leanne: $d = 2.5t$



Alana:
Gilberto:
Leanne:

Homework:

finish 1.2 worksheet

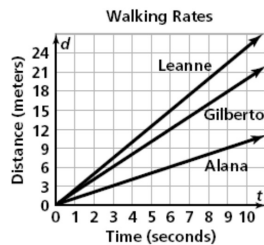
Class Work Answers:

4. All of these are proportional relationships.
The constants of proportionality are
Alana: 1
Gilberto: 2
Leanne: 2.5

Class Work Answers:

1. In the table, the walking rate affects how much the distance changes by each second.
2. In the graph, the walking rate affects the steepness of the graph (the bigger the number, the steeper the graph).

Time (seconds)	Distance (meters)		
	Alana	Gilberto	Leanne
0	0	0	0
1	1	2	2.5
2	2	4	5
3	3	6	7.5
4	4	8	10
5	5	10	12.5
6	6	12	15
7	7	14	17.5
8	8	16	20
9	9	18	22.5
10	10	20	25



3. Alana: $d = 1t$, Gilberto: $d = 2t$, Leanne: $d = 2.5t$
In the equation, the walking rate is the number in front of t .
4. The constants of proportionality are
Alana: 1
Gilberto: 2
Leanne: 2.5

