We will identify proportional relationships in tables. | Concept Development

Proportional relationships have the same **equivalent ratios** and **unit rate**.

Non-proportional relationships have different ratios.

Unit Rates	
$\frac{1}{\text{amount}}$	$\frac{\text{amount}}{1}$

Proportional Relationship

Distance Walked (mile)	4	8	16	24
Time (hour)	1	2	4	6
Equivalent Ratio (mi/hr)	$\frac{4 \text{ mi}}{1 \text{ hr}}$	$\frac{8 \text{ mi}}{2 \text{ hr}}$	$\frac{16 \text{ mi}}{4 \text{ hr}}$	$\frac{24 \text{ mi}}{6 \text{ hr}}$
Unit Rate	4 mph	4 mph	4 mph	4 mph

Non-Proportional Relationship

Distance Walked (mile)	3	8	20	36
Time (hour)	1	2	4	6
Equivalent Ratio (mi/hr)	$\frac{3 \text{ mi}}{1 \text{ hr}}$	$\frac{8 \text{ mi}}{2 \text{ hr}}$	$\frac{20 \text{ mi}}{4 \text{ hr}}$	$\frac{36 \text{ mi}}{6 \text{ hr}}$
Unit Rate	3 mph	4 mph	5 mph	6 mph

CFU

Determine if the **cost** of **coffee** is **proportional** to the number of **pounds** bought. Explain.

Cost (dollar)	3	6	9	12
Coffee (pound)	1	2	3	4
Equivalent Ratio ($/lb)	$\frac{\$3}{1 \text{ lb}}$	$\frac{\$6}{2 \text{ lb}}$	$\frac{\$9}{3 \text{ lb}}$	$\frac{\$12}{4 \text{ lb}}$
Unit Rate	$3/lb	$3/lb	$3/lb	$3/lb

Determine if the **cost** for renting a boat is **proportional** to the **rental time**. Explain.

Cost (dollar)	27	42	57	64
Rental Time (hour)	1	2	3	4
Equivalent Ratio ($/hr)	$\frac{\$27}{1 \text{ hr}}$	$\frac{\$42}{2 \text{ hr}}$	$\frac{\$57}{3 \text{ hr}}$	$\frac{\$64}{4 \text{ hr}}$
Unit Rate	$27/hr	$21/hr	$19/hr	$16/hr

1 Calculate the equivalent ratio in each row. (write)
2 Calculate unit rates in each row. (write)
3 Determine if the table shows a proportional relationship. (write)

1. Does the table show a proportional relationship between profits and days worked? Explain.

Profit (dollar)	5	10	15	20
Time (day)	1	2	3	4
Equivalent Ratio ($/day)				
Unit Rate				

"The table (does/does not) _____ show a proportional relationship because..."

2. Does the table show a proportional relationship between profits and days worked? Explain.

Profit (dollar)	5	12	24	28
Time (day)	1	2	3	4
Equivalent Ratio ($/day)				
Unit Rate				

"The table (does/does not) _____ show a proportional relationship because..."

1 Calculate the equivalent ratio in each row. (write)
2 Calculate unit rates in each row. (write)
3 Determine if the table shows a proportional relationship. (write)

3. For how many days do profits show a proportional relationship to number of days worked? Explain.

Profit (dollar)	5	10	15	20
Time (day)	1	2	3	4
Equivalent Ratio ($/day)				
Unit Rate				

"Profits per day were proportional for ____ days because…"

4. For how many days do profits show a proportional relationship to number of days worked? Explain.

Profit (dollar)	5	12	24	28
Time (day)	1	2	3	4
Equivalent Ratio ($/day)				
Unit Rate				

"Profits per day were proportional for ____ days because…"

Skill Closure

1 Calculate the equivalent ratio in each row. (write)
2 Calculate unit rates in each row. (write)
3 Determine if the table shows a proportional relationship. (write)

1. Is distance traveled proportional to time? Explain.

Distance (foot)	8	21	30	35
Time (second)	1	3	5	7
Equivalent Ratio (ft/sec)				
Unit Rate				

"Distance traveled (is/is not) _____ proportional to time because…"

2. Is distance traveled proportional to time? Explain.

Distance (foot)	5	20	40	60
Time (second)	1	4	8	12
Equivalent Ratio (ft/sec)				
Unit Rate				

"Distance traveled (is/is not) _____ proportional to time because…"

Concept Closure

Read the problem and write your explanation.

Daniel believes the missing y-value should be 3 for the table to show a proportional relationship. Is he correct? Explain.

x	y	Unit Rate (k)
1	5	5
4	20	5
15	?	5
20	100	5

Summary Closure

What did you learn today about identifying proportional relationships in tables?

Word Bank
proportional relationship
non-proportional relationship
equivalent ratios
unit rate

1 Calculate the equivalent ratio in each row. (write)
2 Calculate unit rates in each row. (write)
3 Determine if the table shows a proportional relationship. (write)

1. Is cost proportional to pounds bought? Explain.

Cost (dollar)	9	18	45	72
Weight (lbs)	1	2	5	8
Equivalent Ratio ($/lb)				
Unit Rate				

"Cost (is/is not) _____ proportional to pounds bought because…"

2. Is cost proportional to pounds bought? Explain.

Cost (dollar)	14	21	28	35
Weight (lbs)	2	3	4	5
Equivalent Ratio ($/lb)				
Unit Rate				

"Cost (is/is not) _____ proportional to pounds bought because…"

1 Calculate the equivalent ratio in each row. (write)
2 Calculate unit rates in each row. (write)
3 Determine if the table shows a proportional relationship. (write)

3. Does the table show a proportional relationship between the distance insect "A" moved and time? Explain.

Researcher Notes – Insect "A"

Distance (foot)	8	14	15	16
Time (minute)	1	2	3	4
Equivalent Ratio (ft/min)				
Unit Rate				

"The table (does/does not) _____ show a proportional relationship because..."

4. Does the table show a proportional relationship between the distance insect "B" moved and time? Explain.

Researcher Notes – Insect "B"

Distance (foot)	6	10	18	30
Time (minute)	3	5	9	15
Equivalent Ratio (ft/min)				
Unit Rate				

"The table (does/does not) _____ show a proportional relationship because..."

Determine if the relationship is proportional.

1. **Silver chains are sold by the inch. Is their cost proportional to their length purchased? Explain.**

Cost (dollar)	9	18	45	72
Weight (lbs)	1	2	5	8
Equivalent Ratio ($/lb)				
Unit Rate				

"The cost of silver chains (is/is not) _____ proportional to their length purchased because…"

2. **Gold chains are sold by the inch. Is their cost proportional to their length purchased? Explain.**

Cost (dollar)	14	21	28	35
Weight (lbs)	2	3	4	5
Equivalent Ratio ($/lb)				
Unit Rate				

"The cost of gold chains (is/is not) _____ proportional to their length purchased because…"

Read the problem and write your explanation.

Winston believes that the table does not show a proportional relationship. Is he correct? Explain.

Time (years)	Height (inches)
5	60
15	180
35	420
50	600

Determine if the relationship is proportional.

1. **Is the cost of a "Type A" water pipe proportional to its length purchased? Explain.**

Cost (dollar)	12	21	30	39
Length (foot)	4	7	10	13
Equivalent Ratio ($/ft)				
Unit Rate				

"The cost of a "Type A" water pipe (is/is not) _____ proportional to its length purchased because…"

2. **Is the cost of a "Type B" water pipe proportional to its length purchased? Explain.**

Cost (dollar)	9	18	24	35
Length (foot)	1	2	3	5
Equivalent Ratio ($/ft)				
Unit Rate				

"The cost of a "Type B" water pipe (is/is not) _____ proportional to its length purchased because…"

Read and solve the problem.

Fill in the missing values to make the tables show proportional relationships.

Boxes	Apples
7	56
8	
	80
11	

Apples per box = _____

Volume (gallons)	Time (minutes)
1	
2	400
3	
	1000

Gallons per minute = _____

Create your own proportional relationships.
Be ready to explain to the class.

1.

Equivalent Ratio				
Unit Rate				

"This is a proportional relationship because…"

2.

Equivalent Ratio				
Unit Rate				

"This is a proportional relationship because…"