

Proportional Lab

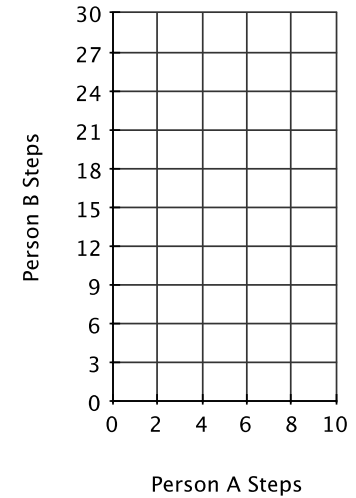
Big Steps

TASK 1

Scenario: On each turn, Person A will take 2 steps and Person B will take 6 steps.

Total # of Steps

Person A	0	2	4			
Person B	0	6				

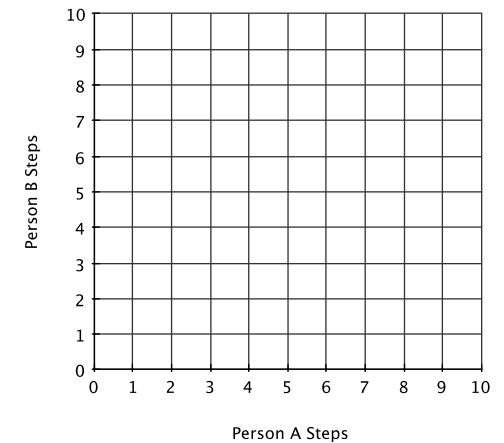


TASK 2

Scenario: Person A will take 2 steps each turn. Person B will take 3 steps on their first turn, and then 1 step on the next turn, then 3 steps, then 1 step, etc.

Total # of Steps

Person A	0	2	4			
Person B	0	3	4			



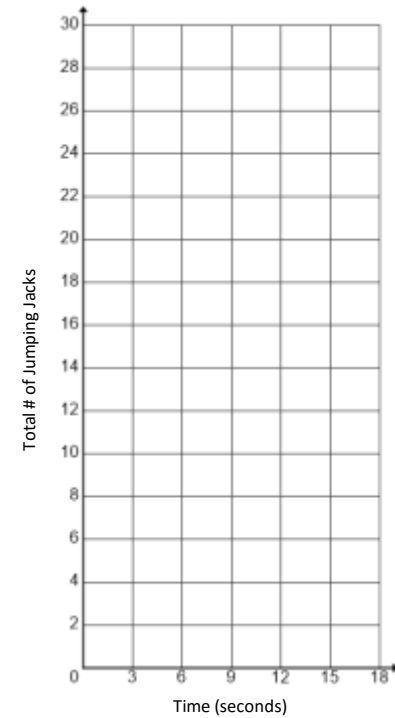
Jumping Jacks

TASK 1

Scenario: Every 3 seconds, Person A does 5 jumping jacks.

Jumping Jacks vs. Seconds

Time (seconds)	0	3					
Total # of Jumping Jacks	0	5					

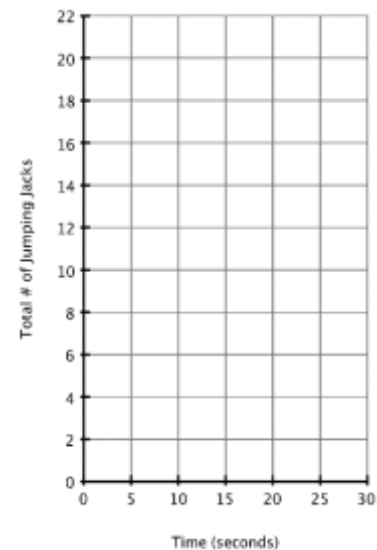


TASK 2

Scenario: Person B does 10 jumping jacks, and then 3 jumping jacks when time starts. After every other 5 seconds, Person B does 3 jumping jacks.

Jumping Jacks vs. Seconds

Time (seconds)	0	5	10	15			
Total # of Jumping Jacks	10	13	13	16			



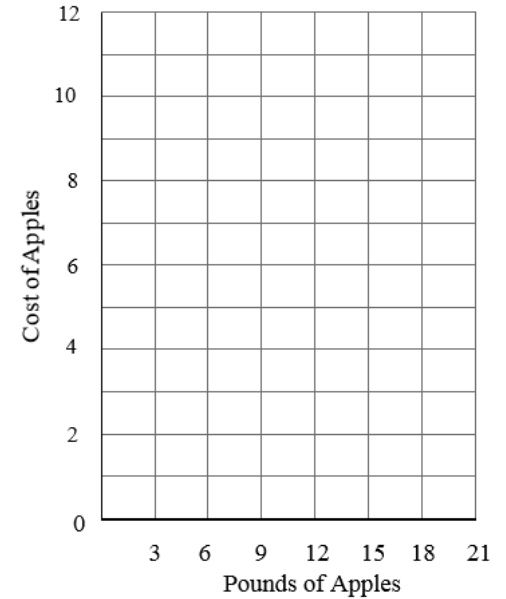
Buying Fruits

TASK 1

Scenario: You are shopping for fruits. The sign says 3 pounds of apples for \$1.50. Using that information, complete the table and graph below.

Cost of Apples

Pounds	0	3	6						
Cost	0	\$1.50							

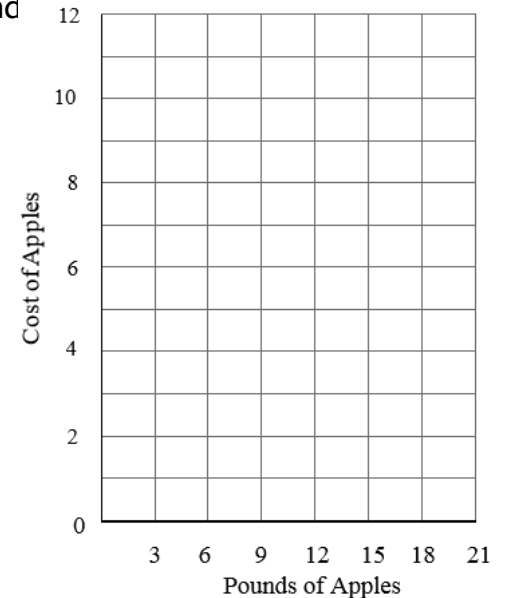


TASK 2

Scenario: You are shopping for fruits. The sign says buy 3 pounds of apples and get a pound. 3 pounds of apples cost \$2. Using that information, complete the table and graph below.

Cost of Apples

Pounds	0	3	4	7					
Cost	0	\$2	\$2	\$4					



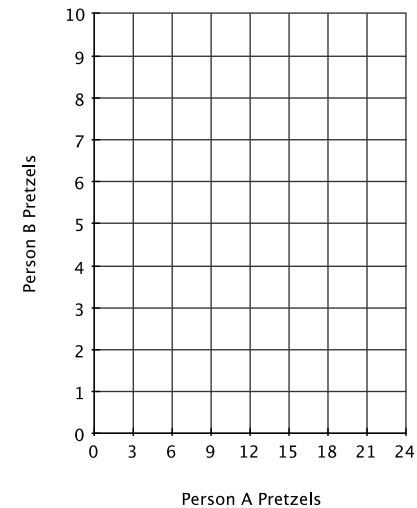
Pretzels

TASK 1

Scenario: On each turn, Person A will take 3 pretzels and Person B will take 1 pretzel.

Total # of Pretzels

Person A	0	3	6						
Person B	0	1							

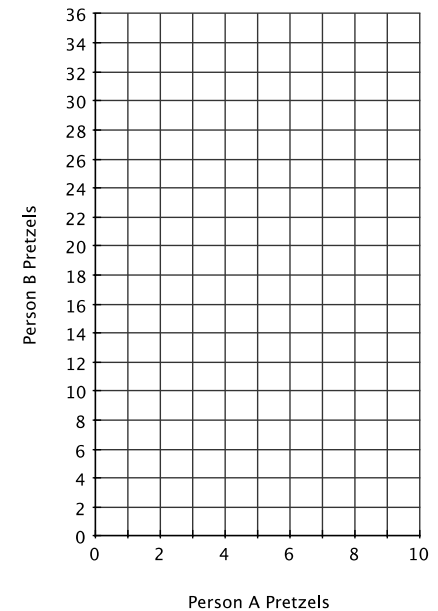


TASK 2

Scenario: On each turn, Person A will take 1 pretzel. Person B will take pretzel, then 2 pretzels, then 3 pretzels, etc.

Total # of Pretzels

Person A	0	1	2						
Person B	0	1	3						



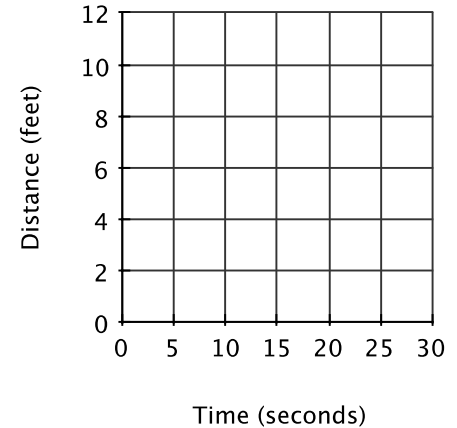
Pushing Cars

TASK 1

Scenario: Person A pushes the car 1 foot every 5 seconds for 30 seconds

Distance Traveled

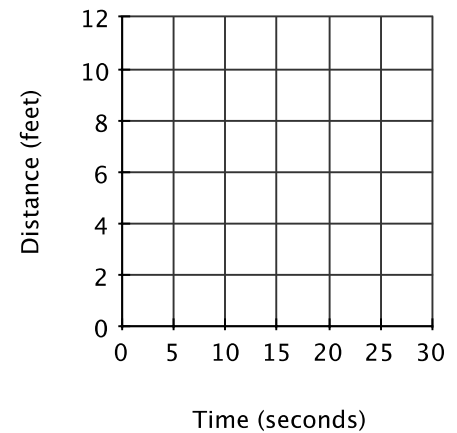
Time (seconds)	0	5	10				
Distance (feet)	0	1					



TASK 2

Scenario: Person A pushes the car 5 feet before the time starts.
Then Person A pushes the car 1 more foot every 5 seconds for 30 seconds.

Time (seconds)	0	5	10				
Distance (feet)	5	6					



Teacher Directions - Proportional Lab

Materials

- Stop Watches - 1 per group
- Pretzel Sticks (separated into 2 baggies labeled Task 1 and Task 2) - About 15 per person
- Cars (Matchbox or Hot Wheels) - 1 per group
- Rulers - 1 per group
- Piece of tape (to mark a starting line) - 1 per group

Objective

Students will do a series of activities and record their work as a table and as a graph. They will compare and contrast proportional and non-proportional experiments to come to an initial conceptual understanding of “proportional.”

Directions

For quicker groups, do all five activities;

for slower groups, choose the three activities that follow:

1. Big Steps or Jumping Jacks
2. Buying Fruits or Pretzels
3. Pushing Cars

Options for Structure:

- *Students work in pairs for this activity.*

- *Rotation Stations* - Before class on Day 1, set up several stations for each of 3 of the 5 activities. Ex - 3 stations of Jumping Jacks, 3 stations of Buying Fruits, and 4 stations of Pushing Cars. Quickly preview the instructions for each station with the whole class. Assign teams a starting station and set a timer. Every 12-15 minutes, have teams rotate. Before class on Day 2, set up 4-5 stations each of Big Steps and Pretzels.

- *Whole Class Focus on One Activity* - Before class on Day 1, gather supplies for the whole class to do Jumping Jacks, Buying Fruits, and Pushing Cars. As a whole group, give the directions for Jumping Jacks and then complete the tasks in teams, but at the same time. When the whole class is ready to move on, give directions for the next activity, and complete the next activity, etc until you have finished all 5 activities in two days.

Optional: (Valuable!) Have pairs finished early (or whole class with extra time) complete a poster for a particular activity that lists scenario, both tables, and one graph with both tasks graphed in different colors. Save one poster per activity per class for reference later in unit.

Note: Save these student pages for future days in the unit

(unit rate, slope and equations).



Individual Activity Notes:

Big Steps

Set-Up:

- Best done outside the classroom (blacktop/lunch area)
- Chalk/tape starting lines 10'-20' long that multiple teams can use to start
- Have a box of stopwatches/timers/ or let student use a phone to time

Task 1

Scenario: On each turn, Person A will take 2 steps and Person B will take 6 steps.

Task 2

Scenario: Person A will take 2 steps each turn. Person B will take 3 steps on their first turn, and then 1 step on the next turn, then 3 steps, then 1 step, etc.

Buying Fruits

Set-Up:

- Worksheet only (can be done in class at desks)

Task 1

Scenario: You are shopping for fruits. The sign says 3 pounds of apples for \$1.50.

Using that information, complete the table and graph below.

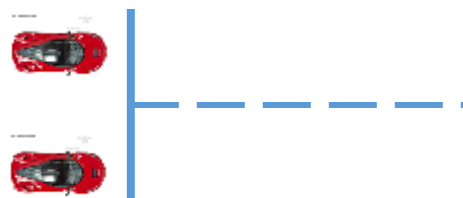
Task 2

Scenario: You are shopping for fruits. The sign says buy 3 pounds of apples and get a pound free. 3 pounds of apples cost \$2. Using that information, complete the table and graph below.

Pushing Cars

Set-Up:

- Best done outside or long cleared area of classroom
- Chalk/tape starting line
- Measuring tape/metersticks lined up perpendicular to the starting line in the center (2 pairs can work per meterstick/measuring tape)



Task 1

Scenario: Person A pushes the car 1 foot every 5 seconds for 30 seconds

Task 2

Scenario: Person A pushes the car 5 feet before the time starts.

Then Person A pushes the car 1 more foot every 5 seconds for 30 seconds.



Jumping Jacks

Set-Up:

- Best done outside the classroom (blacktop/lunch area)

Task 1

Scenario: Every 3 seconds, Person A does 5 jumping jacks.

Task 2

Scenario: Person B does 10 jumping jacks, and then 3 jumping jacks when time starts. After every other 5 seconds, Person B does 3 jumping jacks.

Pretzels

Set-Up:

- Snack baggies of pretzels (per pair)

Task 1

Scenario: On each turn, Person A will take 3 pretzels and Person B will take 1 pretzel.

Task 2

Scenario: On each turn, Person A will take 1 pretzel. Person B will take pretzel, then 2 pretzels, then 3 pretzels, etc.

Explain that they need to first use the pretzels for the activity and then they can eat once they show you their work.



Name: _____ Date: _____ Period: _____

Summary of Tables and Graphs

Task 1 Tables

Big Steps

Person A	0	2	4	6	8	10
Person B	0	6	12	18	24	30

Pretzels

Person A	0	3	6	9	12	15	18
Person B	0	1	2	3	4	5	6

Buying Fruit

Pounds	0	3	6	9	12	15	18	21
Cost	0	1.5	3	4.5	6	7.5	9	10.5

Jumping Jacks

Time	0	5	10	15	20	25	30
Total	0	3	6	9	12	15	18

Pushing Cars

Time	0	5	10	15	20	25	30
Distance	0	1	2	3	4	5	6

Task 2 Tables

Big Steps

Person A	0	2	4	6	8	10
Person B	0	3	4	7	8	11

Pretzels

Person A	0	1	2	3	4	5	6	7	8
Person B	0	1	3	6	10	15	21	28	36

Buying Fruit

Pounds	0	3	4	7	8	11	12	15	16	19	20
Cost	0	2	2	4	4	6	6	8	8	10	10

Jumping Jacks

Time	0	5	10	15	20	25	30	35
Total	10	13	13	16	16	19	19	22

Pushing Cars

Time	0	5	10	15	20	25	30
Distance	5	6	7	8	9	10	11

