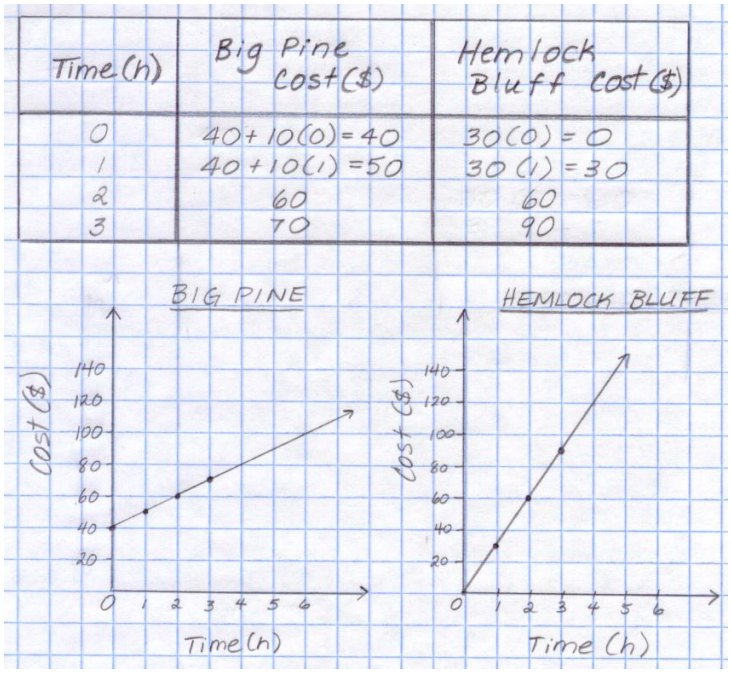
5.6.1: Outfitters

Jaraad wants to rent a canoe for a day trip. He gathers this information from two places and decides to make a table of values and graph each of these relationships.

- Big Pine Outfitters charges a base fee of $40 and $10 per hour of use.
- Hemlock Bluff Adventure Store does not charge a base fee, but charges $30 per hour to use the canoe.

Jaraad's Working Sheet



1. a) What is the cost of each canoe if Jaraad cancels his reservation?

   b) Compare the rate of change of cost for Big Pine and for Hemlock Bluff to the cost per hour for each outfitter.

2. Which graph illustrates a proportional relation? How do you know? This is called a direct variation.

3. Which graph has an initial value other than zero? This is called a partial variation.

4. Which outfitter company should Jaraad choose if he estimates he will canoe for 0.5 h?…1.5 h?…2.5 h?

Time (h)	Big Pine Cost ($)	Hemlock Bluff Cost ($)
0.5		
1.5		
2.5		

Explain how you determined your answers.

5. Write an equation to model the cost for each outfitter.
Let *C* represent the cost in dollars and *h* represent the time in hours.

Big Pine $C =$

Hemlock Bluff $C =$

6. If Big Pine Outfitters decided to change its base fee to $50 and charge $10 per hour, what effect would this have on the graph?

a) Draw a sketch of the original cost and show the changes on the same sketch.

b) Write an equation to model the new cost.

7. If Hemlock Bluff Adventure Store decided to change its hourly rate to $40, what effect would this have on the graph?

a) Draw a sketch of the original cost and show the changes on the same sketch.

b) Write an equation to model the new cost.

5.6.1: Outfitters (continued)

8. For Big Pine Outfitters, how are the pattern in the table of values, the description, the graph, and the equation related?

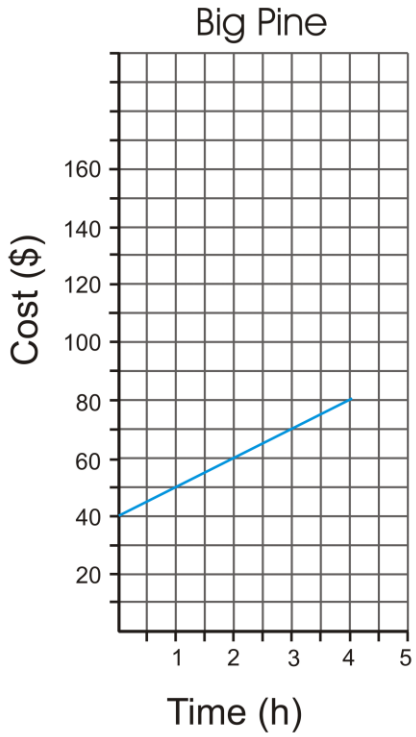
Description

Big Pine Outfitters charges a base fee of $40 to deliver the canoe to the launch site and $10 per hour of use.

Table of Values

Time (h)	Cost ($)
0	40
1	50
2	60
3	70
4	80

Graph



Equation

$C = 40 + 10h$

9. For Hemlock Bluff, how are the pattern in the table of values, the description, the graph, and the equation related?

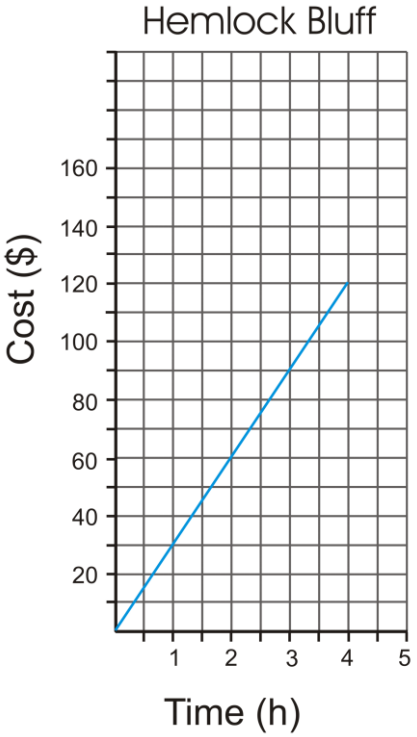
Description

Hemlock Bluff charges $30 per hour.

Table of Values

Time (h)	Cost ($)
0	0
1	30
2	60
3	90
4	120

Graph



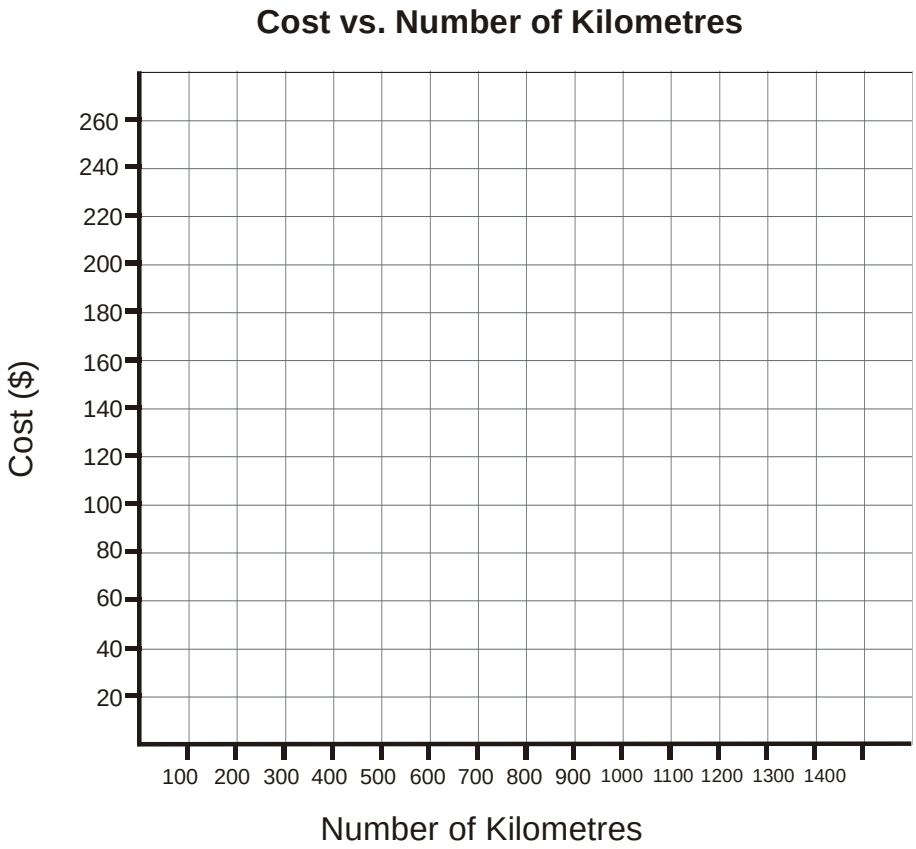
Equation

$C = 30h$

5.6.2: Descriptions, Tables of Values, Equations, Graphs

1. A rental car costs $50 per day plus $0.20 for each kilometre it is driven.
   a) What is the dependent variable?
   b) Make a table of values for the rental fee up to 1000 km.
   c) Graph the relationship.

Number of Kilometres	Cost ($)
0	
100	
200	



d) Write an equation to model the relationship. *C* is the cost and *n* is the number of kilometres.

____ = _____

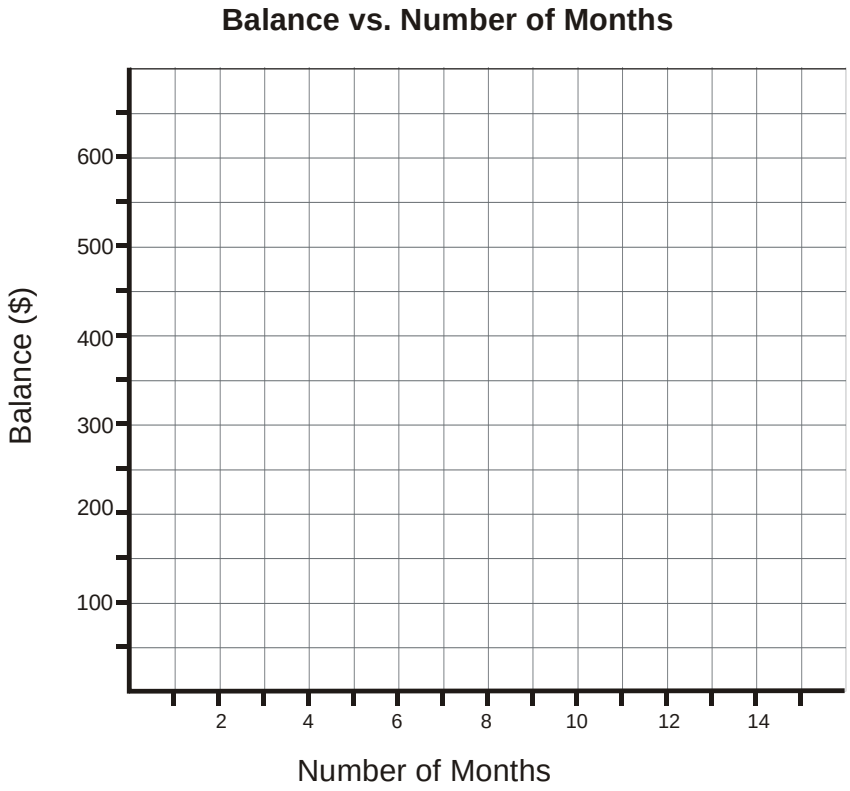
e) Does this relation represent a partial or direct variation? Explain.

f) Determine the rental fee for 45 km. Show your work.

5.6.2: Descriptions, Tables of Values, Equations, Graphs
(continued)

2. There is $500 in Holly's bank account. She takes out $50 from her account each month but doesn't put any back in.

   a) Make a table of values for up to 6 months.
   b) Graph the relationship.



   c) Write an equation to model the relationship.

   ____ = _____

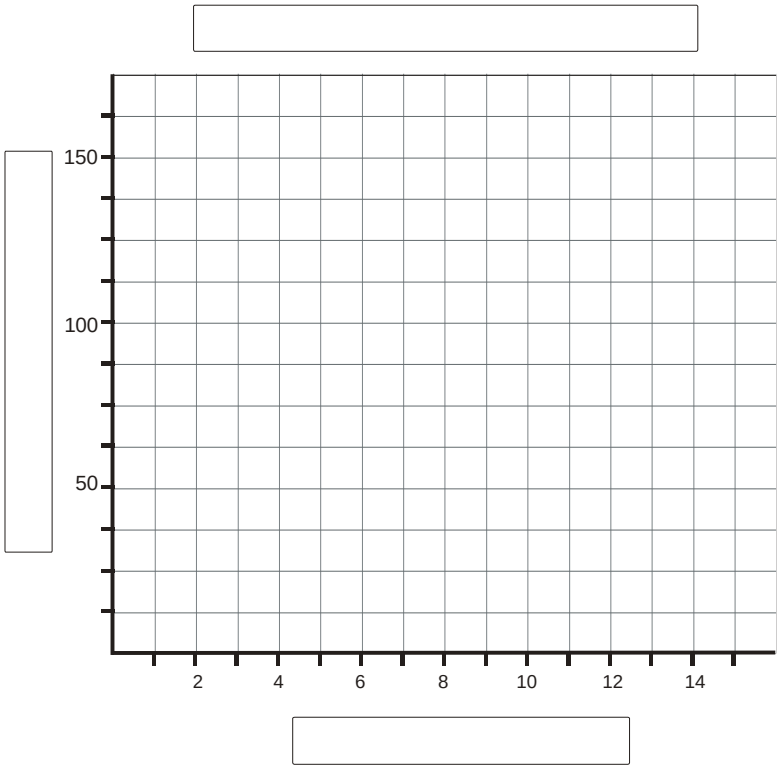
   d) Does this relation represent a partial or direct variation? Explain.

   e) How much will Holly have in her account after 8 months? Show your work.

   f) How many months will have passed when Holly has $50 in her account? Show your work.

5.6.2: Descriptions, Tables of Values, Equations, Graphs
(continued)

3. Nisha is just learning how to snowboard. White Mountain charges $10/hour for lessons and $40 for the lift ticket and snowboard rental.
   a) Make a table of values for up to 6 hours.
   b) Graph the relationship.



c) Write an equation to model the relationship.

___ = _____

d) Does this relation represent a partial or direct variation? Explain.

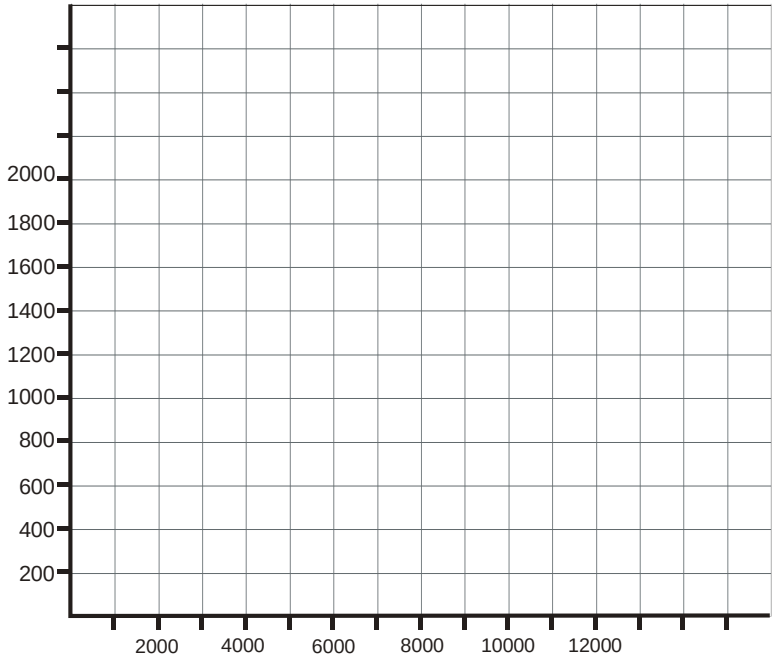
e) How much will it cost in total for Nisha to take 2.5 hours of lessons? Show your work.

f) If Nisha paid $75, how long was she at the White Mountain getting lessons? Show your work.

5.6.2: Descriptions, Tables of Values, Equations, Graphs
(continued)

4. Ishmal sells high-definition televisions. He is paid a weekly salary of 20% commission of his total weekly sales.
   a) Complete the table of values.
   b) Graph the relationship.

Weekly Sales ($)	Total Pay ($)
0	
1000	
2000	
3000	
4000	
5000	



c) Write an equation to model the relationship.

___ = _____

d) Does this relation represent a partial or direct variation? Explain.

e) Determine Ishmal's pay if his sales for the week were $8000. Show your work.

f) Ishmal made $975. How much were his weekly sales? Show your work.

5.8.1: Modelling Linear Relations with Equations

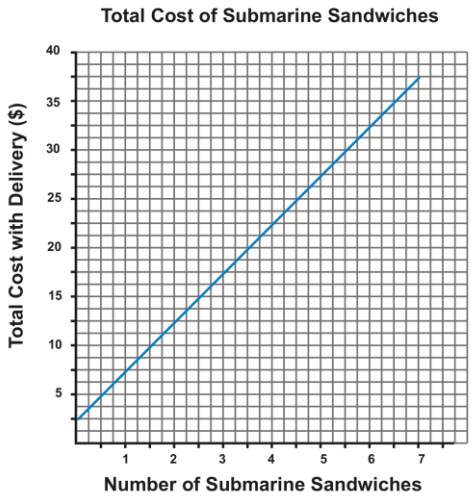
Food Frenzy

Write the **equation** for each relationship in the space provided. Show any calculations you made. Indicate if the relation is a partial or direct variation.

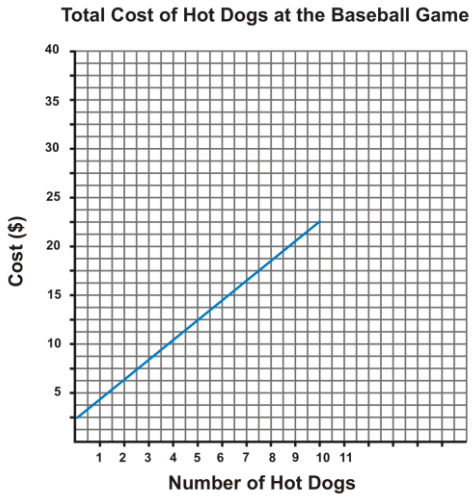
1. A family meal deal at Chicken Deluxe costs $26, plus $1.50 for every extra piece of chicken added to the bucket.

2. A Chinese food restaurant has a special price for groups. Dinner for two costs $24 plus $11 for each additional person.

3.



4.



5.

Number of Toppings	Cost of a Large Pizza ($)
0	9.40
1	11.50
2	13.60
3	15.70
4	17.80

6.

Number of Scoops	Cost of Ice Cream with Sugar Cone ($)
0	1.25
1	2.00
2	2.75
3	3.50
4	4.25

5.8.1: Modelling Linear Relations with Equations (continued)

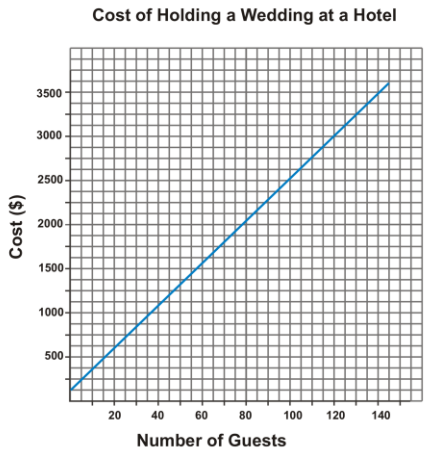
Planning a Special Occasion

Write the **equation** for each relationship in the space provided. Show any calculations you made. Indicate if the relation is a partial or direct variation and describe why these variables are discrete.

1. A banquet hall charges $100 for the hall and $20 per person for dinner.

2. The country club charges a $270 for their facilities plus $29 per guest.

3.



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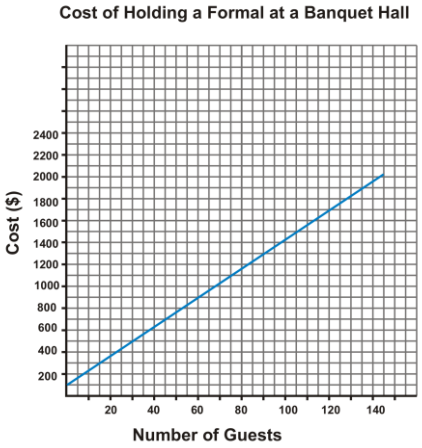


5.

Number of Athletes	Cost of Attending a Hockey Tournament
0	0
1	255
2	450
3	675
4	900

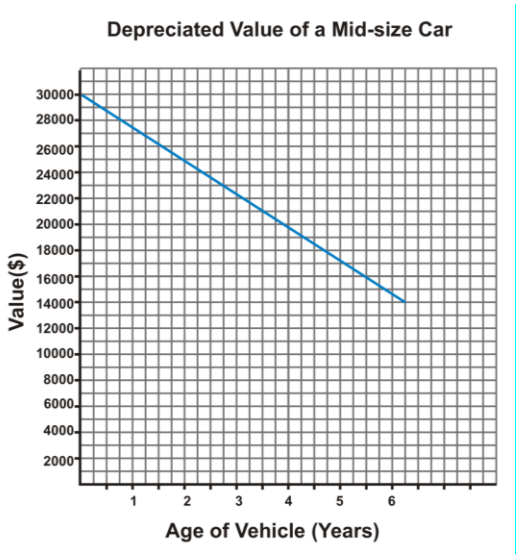
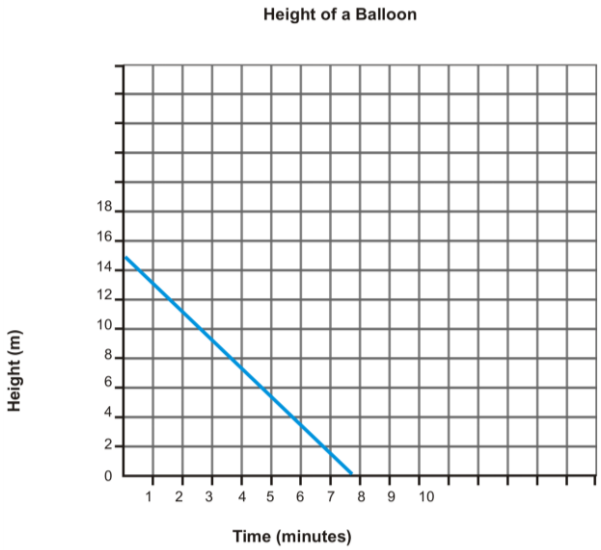
6.

Number of People	Cost of Holding an Athletic Banquet
0	75
20	275
40	475
60	675
80	875

5.8.1: Modelling Linear Relations with Equations (continued)

From Here to There

Write the equation for each relationship in the space provided. Show any calculations you made. Indicate if the relation is a partial or direct variation.

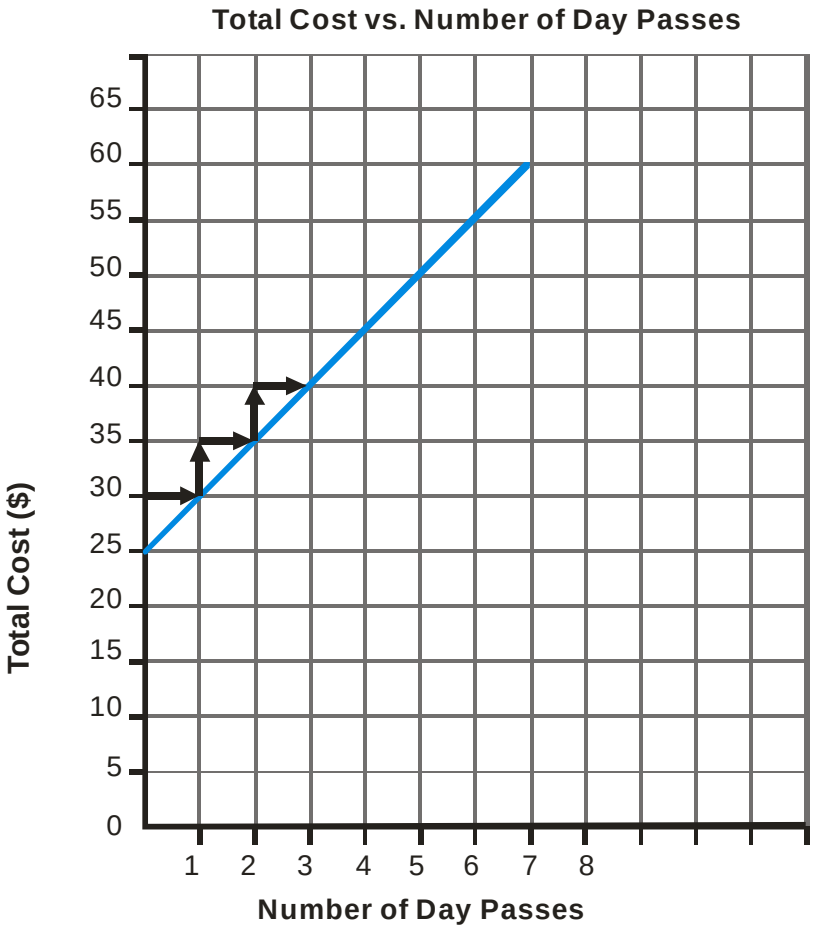
A coaches B	B coaches A
1. Rent a car for the weekend costs $50 plus $0.16/km.	2. A race car travels at a constant speed of 220km/h. Write an equation for the total distance travelled over time.
3. 	4. 
5.	6.

Distance (km)	Cost of a Taxi Fare ($)
0	3.50
10	6.50
20	9.50
30	12.50
40	15.50

Distance (km)	Cost of Bus Charter ($)
0	170
100	210
200	250
300	290
400	330

5.9.1: Graphing Linear Relations

A tennis club charges $25 initial membership fee plus $5 per day. The equation of this relation is $C = 25 + 5d$, where C is the cost and d is the number of days.



Indicate where the rate of change is displayed on the graph.

If the initial membership fee is changed to $15 and daily cost to $10, graph the new relation on the same grid.

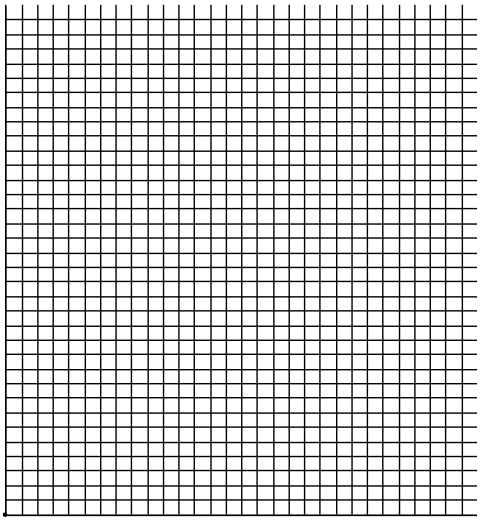
Indicate the procedure you followed to graph the line.

5.9.2: The Speedy Way to Graph

Partner A _____ **Partner B**_____

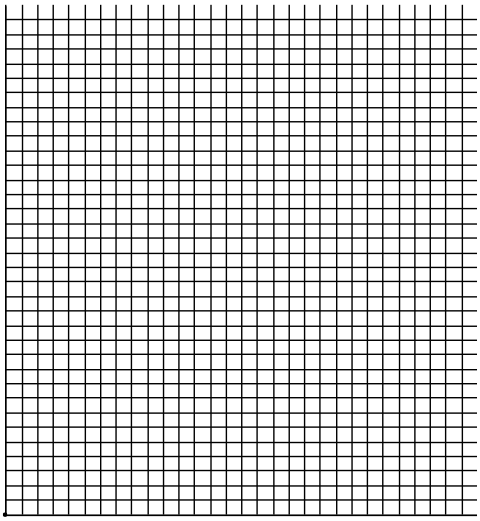
Write the equation for the relationship and graph the relationship.

1. A golf club charges an annual membership fee of $1000 plus $100 for a green fee to play golf.



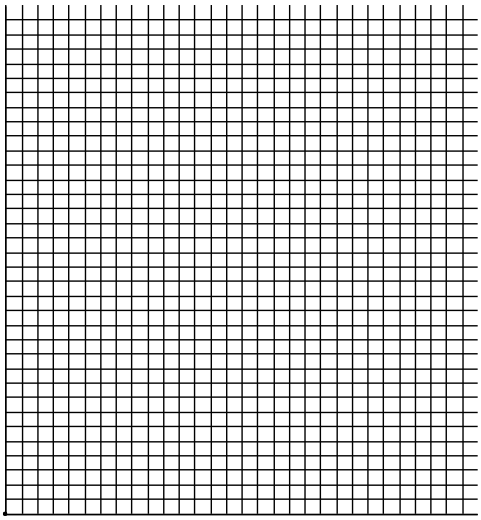
Equation:

2. Repair-It charges $60 for a service call plus $25/h to repair the appliance.



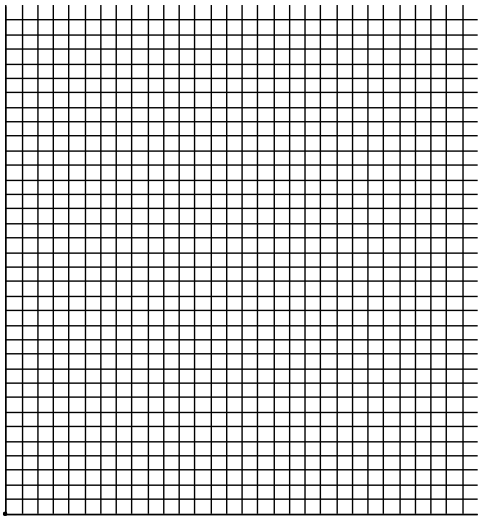
Equation:

3. Movie House charges $5 to rent each DVD.



Equation:

4. A kite is 15 m above the ground when it descends at a steady rate of 1.5 m/s.



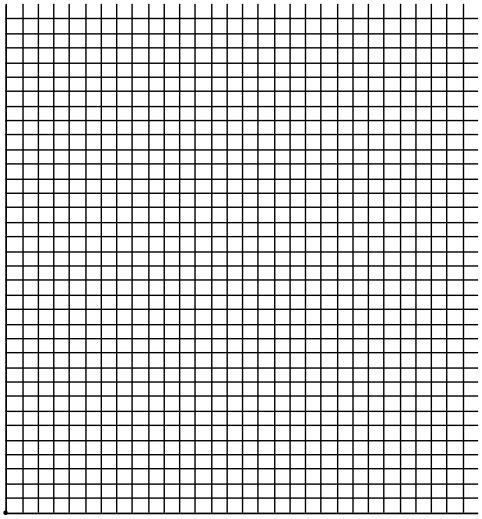
Equation:

5.9.2: The Speedy Way to Graph (continued)

Partner A _____ **Partner B**_____

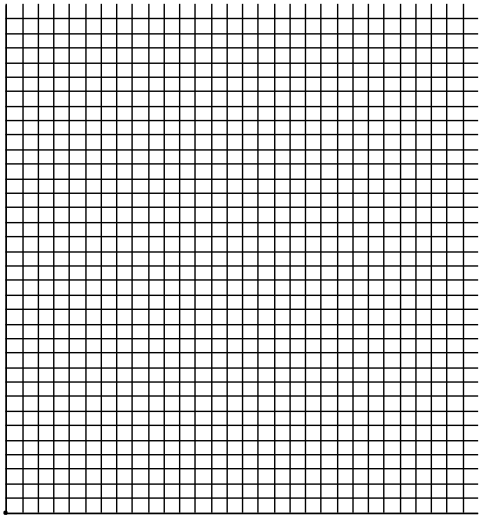
Write the equation for the relationship and graph the relationship.

1. The Recreation Centre charges a monthly membership fee of $20 plus $5 per class. Show the relationship for one month.



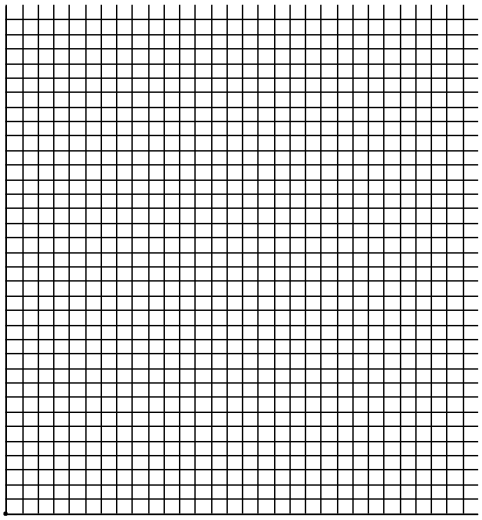
Equation:

2. Repair Window charges a $20 service fee plus $10/h to fix the window pane.



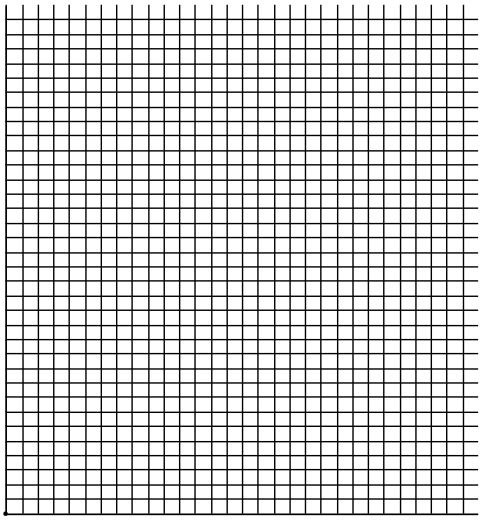
Equation:

3. Yum-Yum Ice Cream Shop charges $0.50 for the cone plus $1 per scoop of ice cream.



Equation:

4. A submarine model starts 6.5 m above the bottom of the pool. It gradually descends at a rate of 0.25 m/s.

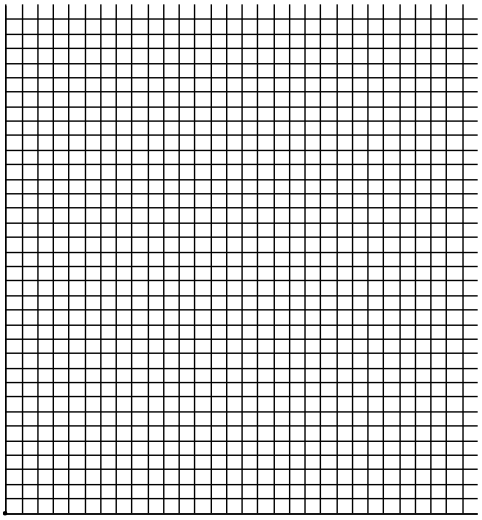


Equation:

5.9.3: Relationships: Graphs and Equations

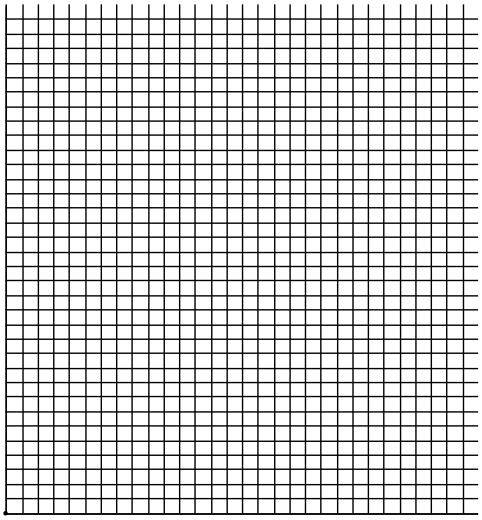
Write the equation for the relationship and graph the relationship.

1. A taxi cab company charges $3.50 plus $0.50/km.



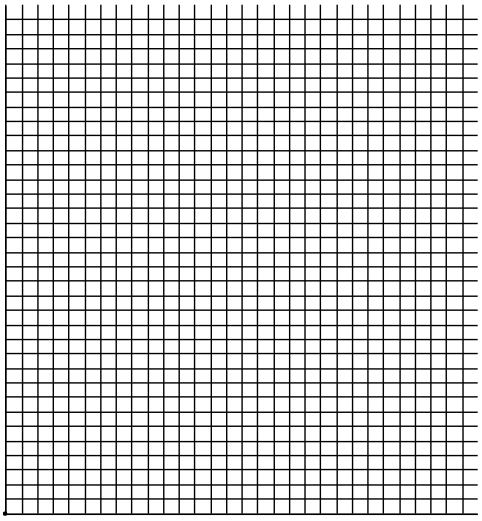
Equation:

2. Shelly has $250 in her bank account. She spends $10/week on snacks.



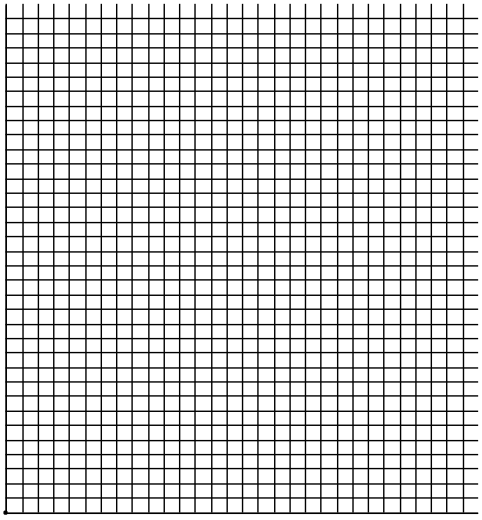
Equation:

3. Dino's Pizza charges $17 for a party-sized pizza plus $2 per topping.



Equation:

4. Katie sells programs at the Omi Arena. She is paid 50 cents for every program she sells.



Equation