

STOP! POLICE!



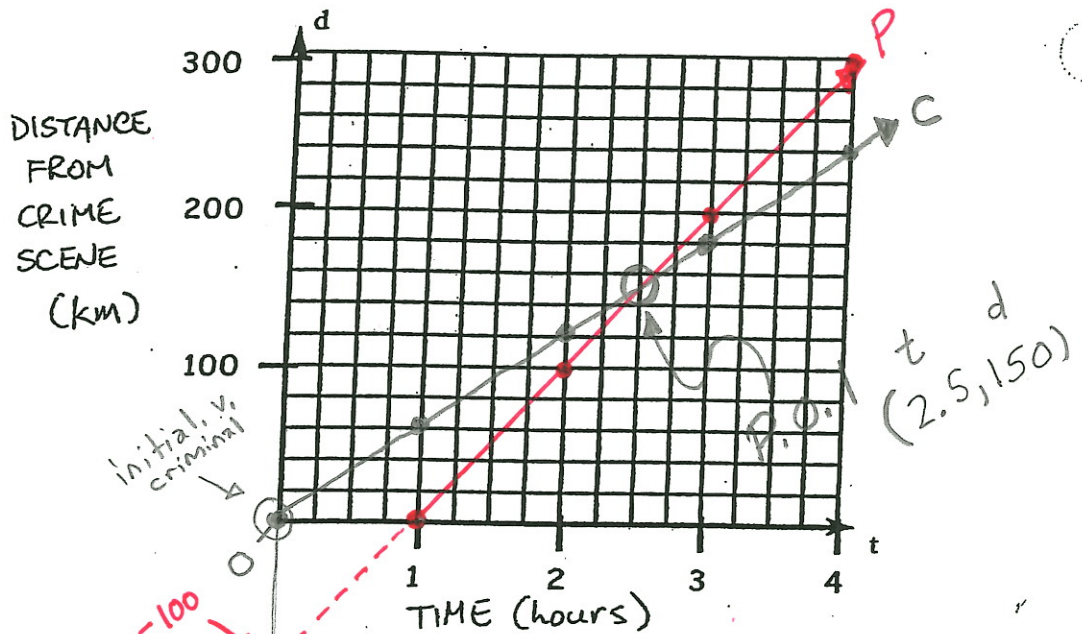
When the police arrived at the scene of the crime it was 1:00 pm. They could tell that they had missed the criminal by one hour. However, the police knew that the criminal was traveling north on highway-6. The police began pursuit immediately, traveling at 100 km/h. The criminal was traveling at 60 km/h.

1a) Complete the table below to show their distances from the scene of the crime.

CRIMINAL		
Time	# of hours since 12:00	Distance (km)
12:00	0	0
1:00	1	60
2:00	2	120
3:00	3	180
4:00	4	240
5:00	5	300
	t	

POLICE		
Time	# of hours since 12:00	Distance (km)
12:00	0	-100?
1:00	1	0
2:00	2	100
3:00	3	200
4:00	4	300
5:00	5	400
	t	

b) Graph the results from each table.



c) How far ^{4p} ~~down~~ highway-6 did the police catch up to the criminal? 150 km @ 2:30

d) Write equations for the criminal and police officer using "t" for time in hours and "d" for distance in kilometres. Use your chart for help.

Criminal: $d = 60t + 0$

Police: $d = 100t - 100$

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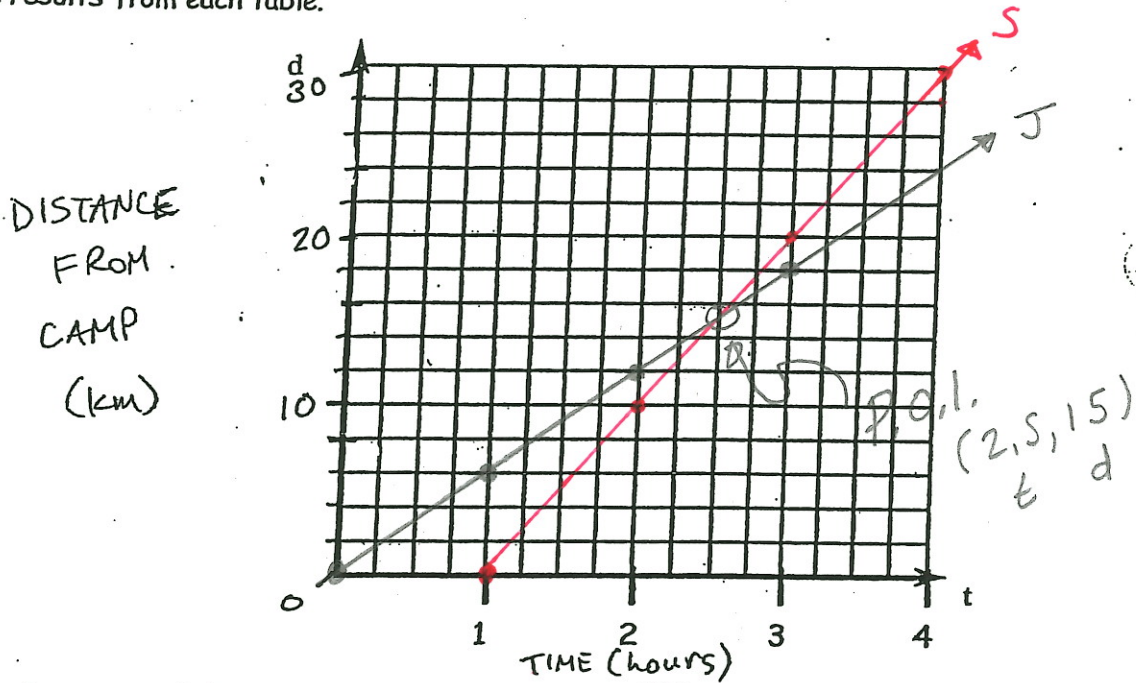
2. Jayme left camp, on a bicycle, at 09:00. She rode at 6km/h. Sandra left the camp at 10:00. Since she was trying to catch up with Jayme, she rode at a rate of 10 km/h.

a) Complete the table below to show their distances from camp.

Jayme		
Time	# of hrs since 09:00	Distance (km)
09:00	0	0
10:00	1	6
11:00	2	12
12:00	3	18
13:00	4	24
	t	

Sandra		
Time	# of hrs since 09:00	Distance (km)
09:00	0	—
10:00	1	0
11:00	2	10
12:00	3	20
13:00	4	30
	t	

b) Graph the results from each table.



c) How far away from camp did Sandra catch up to Jayme? 15 km

d) Write two equations that represent the distances Jayme and Sandra rode.

Jayme: $d = 6t$
 Sandra: $d = 10t - 10$

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3. Two truck rental companies in Guelph are competing against one another. Royalty truck rental charges \$20.00 plus \$0.20/km. Gryphon Rentals charges \$0.60/km.

a) Write an equation for each company's rental in terms of the distance driven.

Royalty: $C = 0.20d + 20$

Gryphon: $C = 0.60d$

b) Graph both of these equations on the same set of axes. (Make 2 tables of values first.)

$$C = 0.20(20) + 20$$

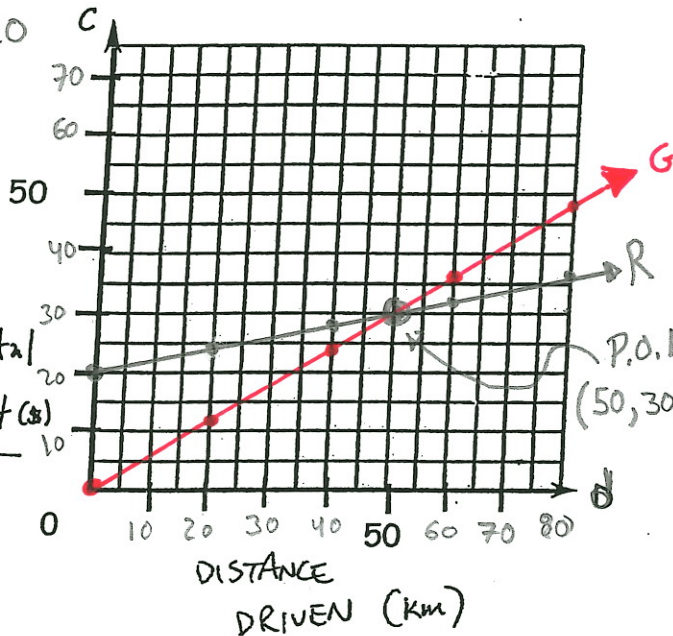
$$= 4 + 20$$

$$= 24$$

COST (\$)

Royalty Rental

distance (km)	Cost (\$)
0	20
20	24
40	28
60	32
80	36



$$C = 0.60(20)$$

$$= 12$$

Gryphon Rentals

distance (km)	Cost (\$)
0	0
20	12
40	24
60	36
80	48

c) What is the point of intersection and what does it represent?

(50, 30)
to C

→ IF you drive 50km, both rental companies cost \$30 (equal).

d) If a person asked for your advice about which company would be cheaper for them to use, what would you say? It depends.

- if you drive less than 50km, G is cheaper ✓
- if you drive more than 50km, R is cheaper ✓
- if you drive exactly 50km, G and R are the same cost. ✓

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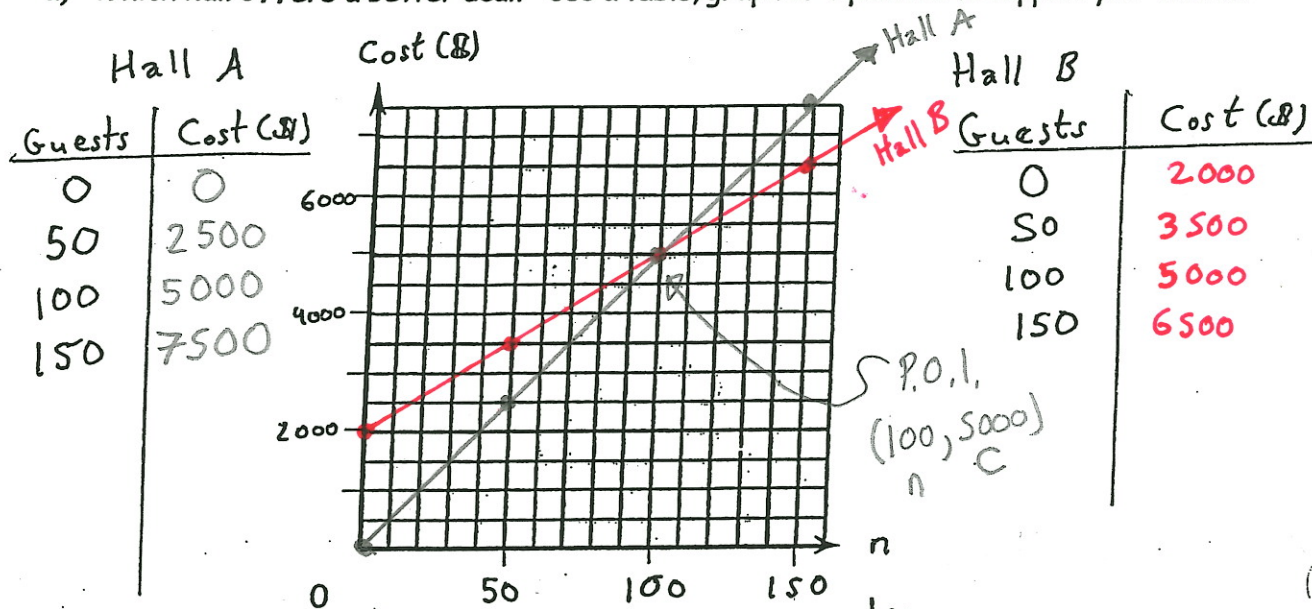
4. Two banquet halls are considered for a party.

The halls have these charges:

Hall A: \$50 per person

Hall B: A fixed charge of \$2000, plus \$30 dollars per person

a) Which hall offers a better deal? Use a table, graph or equations to support your answer.



- if $n < 100$ guests, Hall A is cheaper
- if $n > 100$ guests, Hall B is cheaper
- if $n = 100$ guests, both Halls are the same price

Advanced

b) Suppose the charges change. How would your answer in part (a) be affected in each case? Explain.

i) For Hall A, the charge increased to \$60 per person.

The P.O.I. would move left and down.

ii) For Hall B, the fixed charge decreased to \$1000.

The P.O.I. would move left and down.

iii) For Hall B, the charge per person increased to \$40.

The P.O.I. would move right and up.