

Mathematics 306/326
REVIEW 2

Annie, Gaby and Eric love to play pool. They play in various pool halls in town.

Cost
(\$)

Pool Hall Rates

Number
of hours played

Cos
\$

15.

Bill received an offer to work as a salesman at two competing department stores. Company A offered to pay him a salary of \$250 per week plus a commission of 6% on his total weekly sales. Company B offered to pay him a salary of \$350 per week plus a commission of 2% of his total weekly sales. Under what conditions would he earn more money working for Company A than working for Company B?

[illegible]

The earnings of three salesmen are calculated as follows:

- Mark receives a base pay of \$300 plus 5% commission on sales.
- Eric receives a base pay of \$200 plus 10% commission on sales.
- Joel earns only 30% commission on sales.

Show all your work.

Answer: Last week, Mark earned \$_____.

Linear Functions

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1- Contents

Question	Item	Objective	Type	Skill
1	0058	ALG.01.05	Extended answer	Problem solving
2	0174	ALG.02	Extended answer	Problem solving
3	0260	ALG.02	Extended answer	Problem solving

2- Correction key

Example of an appropriate solution

1

Number of Hours Played	0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
Cost at Annie's Favourite Place \$	0.00	3.00	6.00	9.00	12.00	15.00	18.00	21.00	24.00	27.00	30.00
Cost at Gaby's Favourite Place \$	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Cost at Eric's Favourite Place \$	0.00	6.00	6.00	12.00	12.00	18.00	18.00	24.00	24.00	30.00	30.00

Answer Annie's favourite place offers the best deal because, in comparison to the others, a game is less expensive if it lasts a fraction of an hour.

2

Example of an appropriate algebraic solution

Let x : amount of sales per week

Let y : salary earned

Company A $y_1 = 0.06x + 250$

Company B $y_2 = 0.02x + 350$

Solving the two equations by comparison

$$0.06x + 250 = 0.02x + 350$$

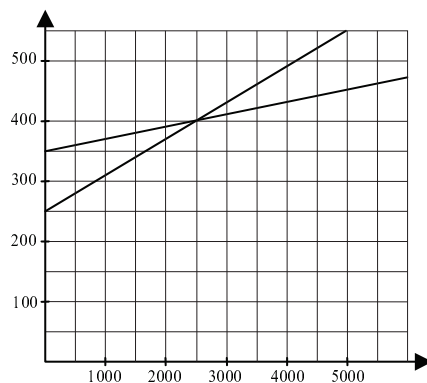
$$0.04x = 100$$

$$x = 2500$$

By substitution into either equation

$$y = 0.06(2500) + 250 = 400$$

Example of an appropriate solution by graphing



The intersection of the two graphs occurs at (2500, 400)

If he sells more than \$2500 he will be better off working for company A than for company B.

Answer He would earn more money working for company A under the condition that he would sell more than \$2500 worth of merchandise

Example of an appropriate solution

System of relations

Let S_M , S_E and S_J , be each salesman's salary
 v , the sales (\$).

$$\text{Mark's salary: } S_M = 300 + 0.05v$$

$$\text{Eric's salary: } S_E = 200 + 0.1v$$

$$\text{Joel's salary: } S_J = 0.3v$$

Eric and Joel earned the same amount

$$S_E = S_J$$

$$200 + 0.1v = 0.3v$$

$$0.2v = 200$$

$$v = 1000$$

Mark's earnings

$$S_M = 300 + 0.05v$$

$$S_M = 300 + 0.05 \times 1000$$

$$S_M = 350$$

Answer: Mark earned \$350.