2. Jacob has $15 to buy muffins and doughnuts at the school bake sale, as a treat for the Camera Club. Muffins are 75¢ each and doughnuts are 25¢ each. How many muffins and doughnuts can he buy?
   a) Create a table to show the possible combinations of muffins and doughnuts.
   b) What is the maximum number of muffins that Jacob can buy?
   c) What is the maximum number of doughnuts that he can buy?
   d) Write an equation that describes Jacob's options.
   e) Graph the possible combinations.

3. Refer to question 2. Which representation do you think is more useful for Jacob? Justify your choice.

PRACTISING

4. State two ordered pairs that satisfy each linear relation and one ordered pair that does not.
   a) $y = 5x - 1$
   b) $3x - 4y = 24$
   c) $y = -25x + 10$
   d) $5x = 30 - 2y$

5. Define suitable variables for each situation, and write an equation.
   a) Caroline has a day job and an evening job. She works a total of 40 h/week.
   b) Caroline earns $15/h at her day job and $11/h at her evening job. Last week, she earned $540.
   c) Justin earns $500/week plus 6% commission selling cars.
   d) Justin is offered a new job that would pay $800/week plus 4% commission.
   e) A piggy bank contains $5.25 in nickels and dimes.

6. Graph the relations in question 5, parts a) and b).

7. Refer to question 5, parts c) and d). Justin usually has about $18 000 in weekly sales. Should he take the new job? Justify your decision.

8. Deb pays 10¢/min for cell-phone calls and 6¢/text message. She has a budget of $25/month for both calls and text messages.
   a) Create a table to show the ways that Deb can spend up to $25 each month on calls and text messages.
   b) Create a graph to show the information in the table.

9. Leah earns $1200/month plus 3.5% commission.
   a) Create an equation that she can use to check her paycheque each month.
   b) Last month, Leah had $96 174 in sales. Her pay before deductions was $4566.09. Is this amount correct? Explain your answer.

10. Ben's Bikes rents racing bikes for $25/day and mountain bikes for $30/day. Yesterday's rental charges were $3450.

A

a) Determine the greatest number of racing bikes that could have been rented.

b) Determine the greatest number of mountain bikes that could have been rented.

c) Write an equation and draw a graph to show the possible combinations of racing and mountain bikes rented yesterday.

11. Abigail is planning to fly to Paris and then travel through Switzerland and Austria to Italy by train. On the day that she goes to buy the foreign currencies she needs, one euro costs $1.40 and one Swiss franc costs $0.90. What combinations of these currencies can Abigail buy for $630? Use two different strategies to show the possible combinations.

12. A student council invested some of the money from a fundraiser in a savings account that pays 3%/year and the rest of the money in a government bond that pays 4%/year. The investments earned $150 in the first year.

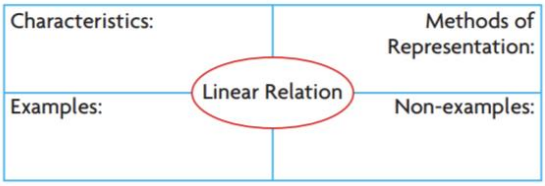
a) Define two variables for the information, and write an equation.

b) Graph the information.

13. Maureen pays a $350 registration fee and an $85 monthly fee to belong to a fitness club. Lia's club has a higher registration fee but a lower monthly fee. After five months, both Maureen and Lia have paid $775. Determine the possible fees at Lia's club.

T

14. **a)** Use the chart to show what you know about linear relations.



b) List the advantages and disadvantages of each of the three ways to represent a linear relation. Describe situations in which each representation might be preferred.

Extending

15. Create a situation that can be represented by each equation.

a) $0.10x + 0.25y = 4.65$ **b)** $y = 900 + 0.025x$

16. Allan plans to create a new coffee blend using Brazilian beans that cost $12/kg and Ethiopian beans that cost $17/kg. He is going to make 150 kg of the blend and sell it for $14/kg. Write and graph two equations for this situation.