Number of 500 g Cartons	Number of 750 g Bags
50	1150
100	1117
150	1083
200	1050
:	:
:	:
1000	517
1500	183
:	:

Process | Checklist

✔ Questions 1 and 2: Did you **connect** and compare the **representations**?

✔ Questions 5 and 9: Did you **communicate** your thinking clearly?

✔ Questions 7 and 8: Did you **problem solve** by selecting and applying appropriate strategies?

1. The Rainin' Raisins company packs raisins in 500 g cartons and 750 g bags. One day, 887.5 kg of raisins were packed into full cartons and bags. Ben wondered how many cartons and how many bags could have been packed. He began to chart some possible combinations shown at the left. Use a graph and an equation to show all the possible combinations.

2. Milk is leaking from a carton at a rate of 4 mL/min. There is 1500 mL of milk in the carton at 8:30 a.m.
   a) Write an equation and draw a graph for this situation.
   b) Determine graphically when 1 L of milk will be left in the carton.
   c) Use your equation to determine algebraically when 1 L of milk will be left in the carton.

3. Solve each system of equations. Use a different strategy for each system.
   a) $3x + y = -2$
   $5x - y = -10$
   b) $2x + 7 = y$
   $-3x - 2y = 10$
   c) $3x + 5y = -9$
   $2x - y = 7$

4. Shannon needs 20 g of 80% gold to make a pendant. She has some 85% gold and some 70% gold, from broken jewellery, and wants to know how much of each she should use. Determine the quantity of each alloy that she should use.

5. How would you explain to someone why it makes sense that you can add two equations and subtract them to create an equivalent system of linear equations?

6. a) Create two linear systems that are equivalent to the system $3x + 4y = -8$ and $x - 2y = 9$.
   b) Verify that all three systems are equivalent.

7. In his spare time, Kim likes to go cycling. He cycles partly on paved surfaces and partly off-road, through hilly and wooded areas. He cycles at 25 km/h on paved surfaces and at 10 km/h off-road. One day, he cycled 41 km in 2 h. How far did he cycle off-road?

8. Last summer, Betty earned $4200 by painting houses. She invested some of the money in a savings account that paid 3.5%/year and the rest in a government bond that paid 4.5%/year. After one year, she has earned $174 in interest. How much did she invest at each rate?

9. Explain how you know that this system of equations has no solution.

$15 - 6y = 9x$
$3x + 2y = 8$