




Check Your Understanding – Solving a System of Linear Equations

The table below identifies the key concepts from this unit.

1. Check your understanding by completing these questions.
2. Check your answers in the key provided.
3. In the table below, highlight the questions you got correct.
4. Ask peers/Dr. James about concepts where you can improve.

Key Concepts	 Mild	 Medium	 Spicy
Solving a System of Linear Equations	1,2	3,4,5	6

1. Determine the solution to the system of equations given below.

$$y = 2x + 10$$
$$y = 6x - 14$$

2. Determine the solution to the system of equations given below.

$$y = \frac{1}{2}x + 40$$
$$y = \frac{3}{4}x + 2$$

3. John has been offered two different jobs. At the first job, John would make a weekly salary of \$1000 plus 20% commission on their weekly sales. At the second job, John would make a weekly salary of \$800 plus 30% commission on their weekly sales. What would the weekly sales be where John would earn the same amount of money at both jobs?

4. Jennifer and Chris are planning on going jet skiing this summer. Jennifer likes to go to Club Jets. The club charges a certain amount per hour to go jet skiing and a fixed amount for equipment rental. Three hours costs \$61. Five hours costs \$85.

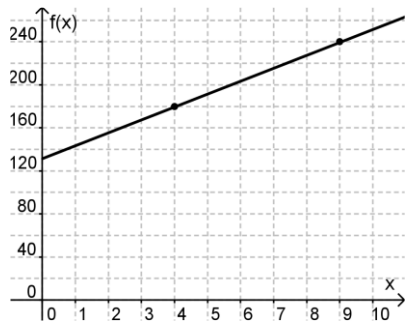
Chris likes to use Ski Hawks. The cost of jet skiing is \$6 per hour plus \$67 to rent the equipment.

After how many hours of jet skiing would it cost the same amount at both facilities and what would the cost be?

5. A giant tank of water is leaking! The tank contains 6500L of water and empties at a rate of 95 L/min. Workers find a large barrel to hold the leaking water. If the barrel already contains 80 L of water, when will the tank and the barrel hold the same amount of water?

6. Jack and Jill filled up their pools with many pails of water. Jack and Jill decide to fill their pools at the same time. Jack's pool already contains some water but Jill's pool is empty initially. The volume of water in either pool can be represented by a linear function where x is the time elapsed in minutes and $f(x)$ represents the volume of water in the pool (in litres).

Jack's Pool



Jill's Pool

x	$f(x)$
2	32
5	80
9	144
11	176

At the moment when both pools contain the same amount of water, how much water has Jack added to his pool?

Answer Key

1. (6, 22)

2. (152, 116)

3. Weekly sales would be \$2000

4. After 7 hours, both facilities will cost \$109.

5. After 33.8 minutes, the tank and the barrel will hold the same amount of water.

6. After 33 minutes, Jack's pool and Jill's pool will hold the same amount of water (528 L). Jack will have added 396 L to his pool.