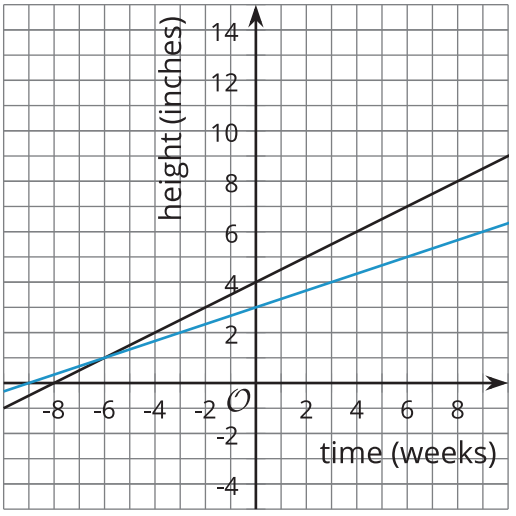
Unit 7 Lesson 24: Quadratic Situations

1 Growing Plants (Warm up)

Student Task Statement

Plant A's height over time is represented by $y = \frac{1}{2}x + 4$. Plant B's height is $y = \frac{1}{3}x + 3$ for which x represents the number of weeks since the plants were found, and y represents the height in inches.



1. Which graph goes with which equation? How do you know?
2. What is a pair of values that works for Plant A but not B? What does it represent?
3. What is a pair of values that works for Plant B but not A? What does it represent?
4. What is a pair of values that works for both plants? What does it represent?

2 Diego's Plant

Student Task Statement

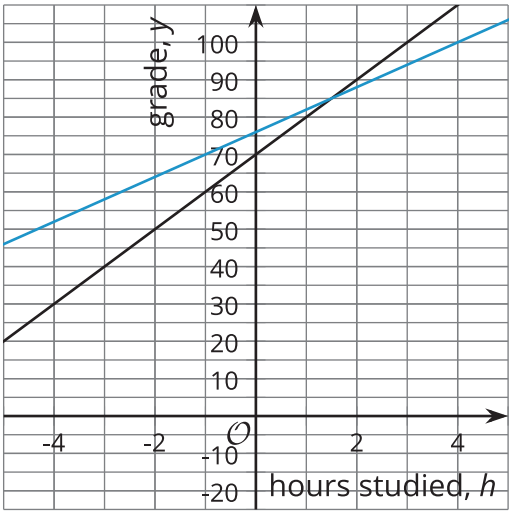
1. The height, in centimeters, of Diego's plant is represented by the equation $p(t) = -0.5(t - 10)^2 + 58$ where t represents the number of weeks since Diego has started nurturing the plant. Determine if each statement is true or false. Explain your reasoning.
    - Diego's plant shrinks each week.
    - Diego's plant is 8 cm tall when he starts to nurture it.
    - Diego's plant grows to be 58 cm tall.
    - The plant shrinks 4 weeks after Diego begins to nurture it.
2. Write your own true statement about Diego's plant.

3 Making the Grades

Student Task Statement

Jada's quiz grade after h hours of studying is given by the equation $Q(h) = 10h + 70$. Her test grade after h hours of studying is given by the equation $T(h) = 6h + 76$.

Here's a graph of both functions:



1. Which graph represents Jada's quiz grade after h hours of studying?
2. What do the y-intercepts of the lines mean in this situation?
3. Find the coordinates of the y-intercepts.
4. The 2 lines intersect at a point. What does that point represent in this situation?
5. Find the coordinates of the intersection point. Explain or show your reasoning.