Day 12

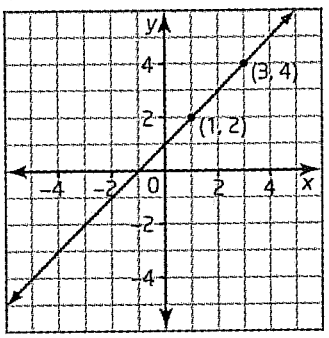
6.6 Find an Equation for a Line Given Two Points

Principles of Mathematics 9, pages 338–343

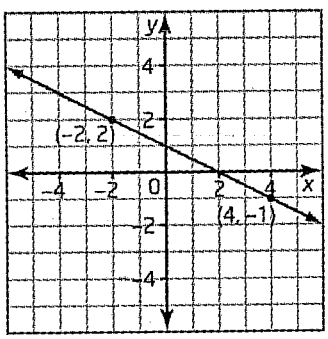
A

1. Find an equation for each line.

a)



b)



2. Find an equation for the line passing through each pair of points.

a) A(3, 4) and B(6, 10)

b) D(1, 5) and E(3, –3)

c) M(–3, 6) and N(1, –4)

d) P(–4, 7) and Q(2, –3)

B

3. **a)** Find an equation for a line that passes through (-3,0) and has a y-intercept of 5

b) Find an equation for a line that passes through (4,0) and has a y-intercept of -2

Day 12

5. Dajanth is walking at a constant speed in front of a motion sensor. Dajanth starts at a distance of 2.5 m from the sensor. 2 s later, he is 7.5 m from the sensor.

   a) Is Dajanth moving toward or away from the sensor? Explain how you know.

   b) How fast is Dajanth walking?

   c) Find the equation that describes Dajanth's motion in the form $d = mt + b$.

   d) What is the d-intercept? What does it mean?

6. Helen is walking at a constant speed in front of a motion sensor. Helen starts at a distance of 8 m from the sensor. 4 s later, she is 4 m from the sensor.

   a) Is Helen moving toward or away from the sensor? Explain how you know.

   b) How fast is Helen walking?

   c) Find the equation that describes Helen's motion in the form $d = mt + b$.

   d) What is the d-intercept? What does it mean?

7. Employees of a Department Store get the same raise each year. Patti, who has been working at the store for 2 years, earns \$16.75/h. Susan, who has been working at the store for 5 years, earns \$22.75/h. The equation relating salary and number of years worked is of the form $s = mn + b$, where s is the hourly wage and n is the number of years worked.

   a) (2, 16.75) and (5, 22.75) are two points on the line. Explain why.

   b) Find the slope and the s-intercept of this line, and explain what they mean.

   c) Write the equation of the line.

   d) Carol has been working at the store for 10 years. Determine her hourly wage.

   e) What wage does this linear model predict for a worker who has been with the store for 20 years? Does this seem reasonable? Explain. How might the store modify the raise policy?

Solutions for "Find an Equation for a Line Given Two Points"

Day 12

6.6 Find an Equation for a Line Given Two Points, pages 109–111

1. a) $y = x + 1$ **b)** $y = -\frac{1}{2}x + 1$ **c)** $y = 3$ **d)** $x = 1$

2. a) $y = 2x - 2$ **b)** $y = -4x + 9$

c) $y = -\frac{5}{2}x - \frac{3}{2}$ **d)** $y = -\frac{5}{3}x + \frac{1}{3}$

3. a) $y = \frac{5}{3}x + 5$ **b)** $y = \frac{1}{2}x - 2$

4. a) $y = -2x + 4$ **b)** $y = -x - 2$

5. a) Dajanth is moving away from the sensor because he is farther away from it after 2 s than he was at the start.

b) 2.5 m/s **c)** $d = 2.5t + 2.5$

d) The d-intercept, 2.5, means that Dajanth's initial position was 2.5 m away from the motion sensor.

6. a) Helen is moving towards the sensor because she is closer to it after 8 s than she was at the start.

b) 1 m/s **c)** $d = -t + 8$

d) The d-intercept, 8, means that Helen's initial position was 8 m away from the motion sensor.

7. a) The point (2, 16.75) represents Patti's wage of \$16.75/h with 2 years of experience, and the point (5, 22.75) represents Susan's wage of \$22.75/h with 5 years experience.

b) slope 2; x-intercept 12.75; The slope represents the yearly wage increase, and the s-intercept represents the starting wage.

c) $s = 2n + 12.75$ **d)** \$32.75

e) \$52.75. Answers will vary.