

6.6 Find an Equation for a Line Given Two Points Worksheet

MPM1D

Jensen

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

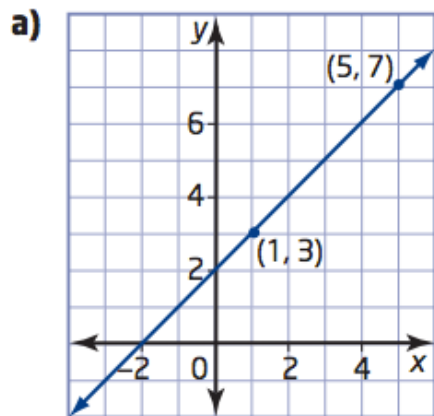
a) P(2,3) and Q(5,6)

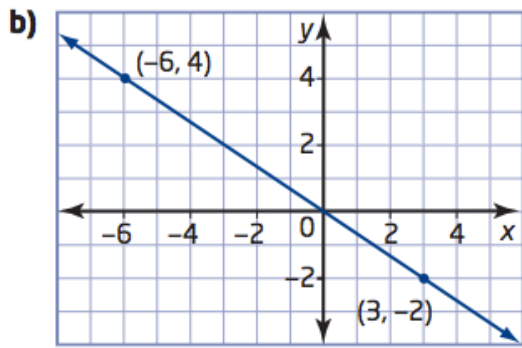
b) A(4,-1) and B(0,5)

c) U(-3,4) and V(-2,-6)

d) $L\left(\frac{1}{2}, 0\right)$ and $M\left(\frac{7}{2}, -5\right)$

2. Find the equation for each line





3. a) Find an equation for the line with an x -intercept of 4 and a y -intercept of -2.

b) Find an equation for the line whose x - and y -intercepts are both -5

4. Find the equation of a line passing through each pair of points.

a) M(0,3) and N(5,3)

b) K(-2,6) and L(-2,-4)

5. A bowling alley has a fixed base cost and charges a variable per game rate. It costs \$20.50 for five games and \$28.50 for nine games

a) What is the variable cost (slope)

b) Find an equation for the line relating, C , in dollars, and number of games, g , in the form $C = mg + b$

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

f) Use the equation to find the cost of 20 games

6. Fiona is walking at a constant speed in front of a motion sensor. After 2 s, she is 1.5 m from the sensor. 2 s later, she is 4.5 m from the sensor.

a) Is Fiona moving toward or away from the sensor? How do you know?

b) How fast is Fiona walking? (find the slope)

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

d) What is the d-intercept and what does it represent?

7. Workers at a laboratory get the same raise each year. Colette, who has been working at the lab for 5 years, earns \$17.25/h. Lee, who has been working at the lab for 1 year, earns \$14.25/h. The equation relating wage and number of years worked is of the form $w = mn + b$, where w is the hourly wage and n is the number of years worked.

a) (5, 17.25) and (1, 14.25) are two points on the line. Explain why.

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

c) Write the equation of the line

d) Maria has been working at the lab for 7 years. Determine her hourly wage.

e) What wage does the linear model predict for a worker who has been with the lab for 25 years? Does this seem reasonable? Explain.

8. Anil's family is driving home to Toronto. Anil hopes that they will make it back in time to see the hockey game on television. While travelling at a fairly constant speed, he observes two signs along the trip.

a) How fast Anil's family travelling?

At 4:30 P.M.:

Toronto 240 km

At 7:00 P.M.:

Toronto 40 km

b) Find a linear equation that relates distance from home, in kilometers, to time travelled, in hours.

c) The game starts at 7:45 P.M. Will they make it back to Toronto in time? If yes, how much spare time will Anil have to make it to the TV? If not, how late will he be? What assumptions must you make

Answers:

1) a) $y = x + 1$ b) $y = \frac{-3}{2}x + 5$ c) $y = -10x - 26$ d) $y = \frac{-5}{3}x + \frac{5}{6}$

2) a) $y = x + 2$ b) $y = \frac{-2}{3}x$

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

4) a) $y = 3$ b) $x = -2$

5) a) $m=2$ b) $C = 2g + 10.5$ d) (0,10.5) f) \$50.50

6) a) away b) 1.5 m/s c) $d = 1.5t - 1.5$ d) -1.5, this means her initial position was 1.5 m behind the sensor

7) a) x-coordinate=years experience, y-coordinate=wage b) $m=0.75$ =increase in pay per year, $b=13.5$ =initial pay with no experience c) $y = 0.75x + 13.5$ d) \$18.75 e) \$32.25

8) a) 80 km/h b) $y = -80x + 240$ c) yes, they will have 15 minutes to spare