4.7 Equations of Lines Using Two Points

PART A

1) A line passes through the points $(-5,-9)$ and $(3,7)$.
   a) Plot the two given points and draw the line that passes through them.
   b) Determine the slope of the line.
   c) Use your graph from part (a) to determine the line's y-intercept.
   d) Use the slope and y-intercept to write the equation of the line in $y = mx + b$ form.

2) A line passes through the points $(10,45)$ and $(12,57)$.
   a) Determine the slope of the line.
   b) Write the equation $y = mx + b$ with the line's slope substituted for m.
   c) Rewrite your equation from part (b) with the coordinates of a given point substituted for x and y.
   d) Solve your equation from part (c) to determine the line's y-intercept, b.
   e) Write the equation of the line.

PART B

3) Determine the equation of the line that passes through the given points.

   a) $(2,17)$ and $(5,26)$ b) $(-3,30)$ and $(1,14)$ c) $(3,-9)$ and $(12,-6)$

   d) $(-18,7)$ and $(-6,-3)$ e) $(8,-12)$ and $(-14,21)$ f) $(32,-17)$ and $(50,-17)$

4) A line passes through the points $(6,7)$ and $(6,10)$.
   a) Explain how we can quickly tell that the line is vertical.
   b) What is the slope of the line?
   c) Write the equation of the line.

5) Determine the equation of the line that has an x-intercept of 24 and passes through $(-16,40)$.

6) Determine the equation of the line that has a y-intercept of -10 and passes through $(18,-2)$.

7) Determine an equation for the linear relation described in each table of values.

a)

x	y
0	18
10	58
20	98
30	138
40	178

b)

x	y
−100	−325
−120	−335
−140	−345
−160	−355
−180	−365

c)

x	y
30	85
36	99
42	113
48	127
54	141

d)

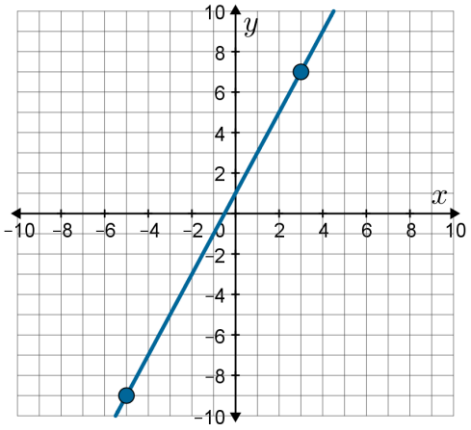
x	y
90	−95
54	−79
−18	−47
27	−67
−36	−39

PART C

8) A line passes through the points $\left(\frac{1}{2},\frac{1}{3}\right)$ and $\left(\frac{1}{4},-\frac{1}{12}\right)$. Determine the equation of the line.

9) Determine the equation of the line that passes through the point $(5,59)$ and is parallel to the line passing through $(1,-14)$ and $(-8,-104)$.

ANSWERS

1) a) 

b) 2 c) 1 d) $y=2x+1$

2) a) 6 b) $y=6x+b$ c) $45=6(10)+b$ or $57=6(12)+b$ d) -15 e) $y=6x-15$

3) a) $y=3x+11$ b) $y=-4x+18$ c) $y=\frac{1}{3}x-10$ d) $y=-\frac{5}{6}x-8$ e) $y=-\frac{3}{2}x$
f) $y=-17$

4) a) The line passes through more than one point with an x-coordinate of 6.
b) undefined
c) $x=6$

5) $y=-x+24$

6) $y=\frac{4}{9}x-10$

7) a) $y=4x+18$ b) $y=\frac{1}{2}x-275$ c) $y=\frac{7}{3}x+15$ d) $y=-\frac{4}{9}x-55$

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

9) $y=10x+9$