

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 $(9, -5)$ and $(-6, 5)$.
 - 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.

- 3) 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.

- 4) A line passes through the points $(-16, -43)$ and $(20, -25)$.
 - 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

- 5) 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 $(50, -17)$

- 6) 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.

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

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

9) To host a children's party at an indoor playground, a family pays a non-refundable deposit plus an additional amount for each child attending. If 10 children attend, the total cost is \$380. If 15 children attend, the total cost is \$440.



- Determine the additional cost per child.
- Determine the initial fee.
- Write an equation to relate the total cost (C) to the number of children attending (n).
- What values can be used for n in your equation?

10) Ten minutes after an airliner begins its descent, its altitude is 23 000 feet. Five minutes later, its altitude is 15 500 feet.

- Determine an equation to model the aircraft's altitude (A) after it has been descending for t minutes.
- Use your equation to determine the plane's altitude after it has been descending for 18 minutes.
- Use your equation to determine how long it takes the aircraft to descend to an altitude of 5000 feet.



11) 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

12) 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.

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

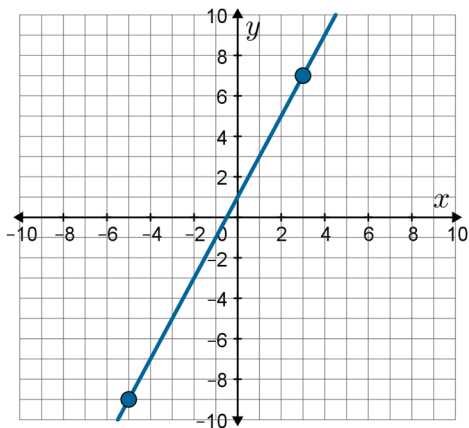
14) Determine the point of intersection of the line $x = 8$ and the line that passes through the points $(20, -1)$ and $(-80, -26)$.

15) Determine the point of intersection of the line $y = -30$ and the line that passes through the points $(14, 90)$ and $(-63, 200)$.



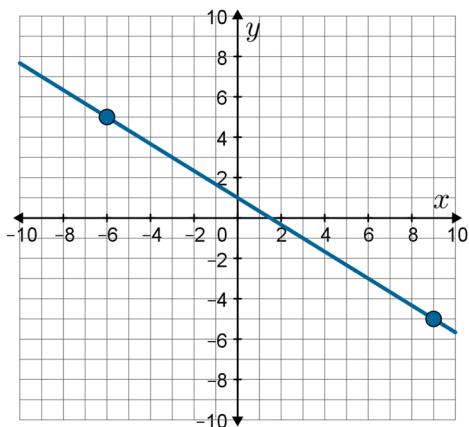
ANSWERS

1) a)



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

2) a)



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

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

4) a) $\frac{1}{2}$ b) $y = \frac{1}{2}x + b$ c) $-43 = \frac{1}{2}(-16) + b$ or $-25 = \frac{1}{2}(20) + b$ d) -35

e) $y = \frac{1}{2}x - 35$

5) 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) $y = -17$

6) a) The line passes through more than one point with an x -coordinate of 6.

b) undefined

c) $x = 6$

7) $y = -x + 24$

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

9) a) \$12/child b) \$260 c) $C = 12n + 260$ d) n can be any whole number up to the maximum number of children allowed.

10) a) $A = -1500t + 38000$ b) 11 000 ft c) 22 minutes

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

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

13) $y = 10x + 9$

14) (8, -4) 15) (98, -30)