Practice: Direct Variation

1. Find the constant of variation for each direct variation.
  a) The cost for a long-distance telephone call varies directly with time. A 12-min phone call cost $0.96.
  b) The total mass of magazines varies directly with the number of magazines. The mass of 8 magazines is 3.6 kg.
  c) The distance travelled varies directly with time. In 3 h, Alex drove 195 km.

2. The cost, C, in dollars, of wood required to frame a sandbox varies directly with the perimeter, P, in metres, of the sandbox.
  a) A sandbox has perimeter 9 m. The wood cost $20.70. Find the constant of variation for this relationship. What does this represent?
  b) Write an equation relating C and P.
 **c)** Use the equation to find the cost of wood for a sandbox with perimeter 15 m.

3. The cost, C, in dollars, to park in a downtown parking lot varies directly with the time, t, in hours. The table shows the cost for different times.

t (h)	C ($)
0	0
0.5	1.50
1	3.00
1.5	4.50
2	6.00
2.5	7.50

  a) Graph the data in the table.
  b) Write the constant of variation for this relationship. What does it represent?
  c) Write an equation relating C and t.

4. The distance, d, in kilometres, Kim travels varies directly with the time, t, in hours, she drives. Kim is travelling at 80 km/h.
  a) Assign letters for variables. Make a table of values to show the distance Kim travelled after 0 h, 1 h, 2 h, and 3 h.
  b) Graph the relationship.
  c) What is the constant of variation for this relationship?
  d) Write an equation in the form $y = kx$.

**5. a)** Describe a situation this graph could represent.
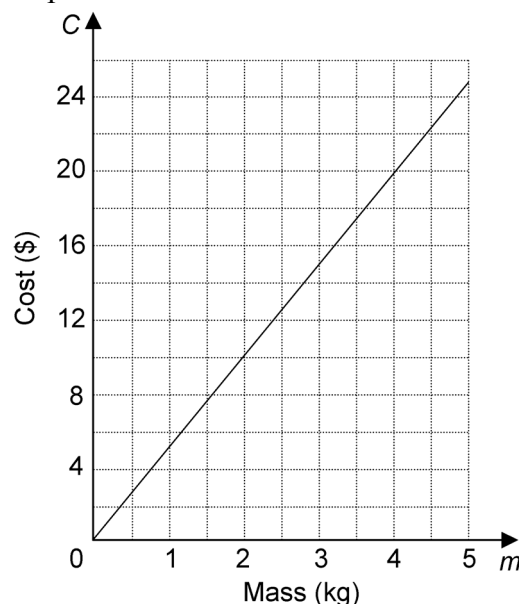
  b) Write an equation for this relationship.

Other Word Problems

1. You are visiting Montreal, and a taxi company charges a flat fee of $2.50 for using the taxi and an additional $0.80 per kilometer.
a. Write an equation that you could use to find the cost of a taxi ride in Montreal. Define your variables.
b. What is the cost of a 90km cab ride?

2. Sarah works at a clothing store. She makes a flat salary, plus an hourly rate. She makes $500 when she works a 40h week. When she works 55h, she makes $668.75.
a. Write an equation relating total earnings to number of hours.
b. Using your equation, determine how much she will make if she works a 30h week.

Practice: Partial Variation

1. Identify each relation as a direct variation or a partial variation.

a)

b)

c)
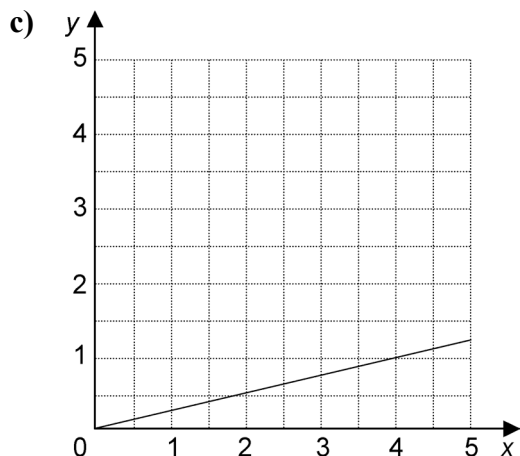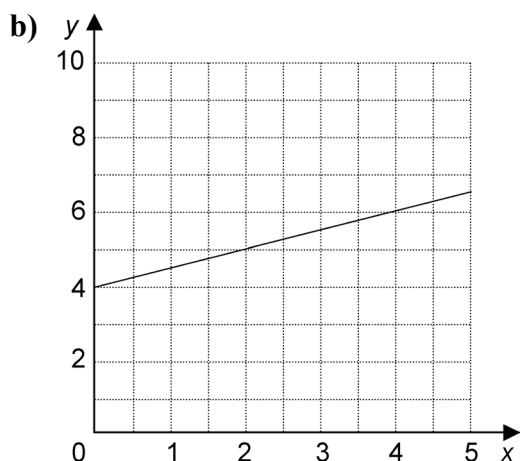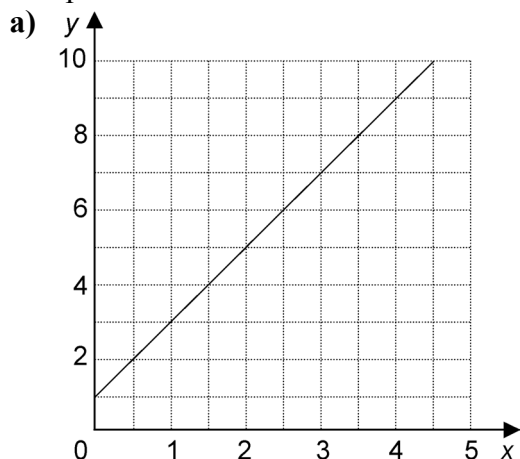
2. Identify each relation as a direct variation or a partial variation.
  a) $y = 3x + 2$ **b)** $y = 2x$
  c) $C = 0.65n$ **d)** $h = 5t + 2$

3. The relationship in the table is a partial variation.

x	y
0	3
1	4
2	5
3	6
4	7

  a) Use the table to identify the initial value of y and the constant of variation.
  b) Write an equation in the form $y = mx + b$.
  c) Graph the relation. Describe the graph.

4. Latoya is a sales representative. She earns a weekly salary of $240 plus 15% commission on her sales.
  a) Copy and complete the table of values.

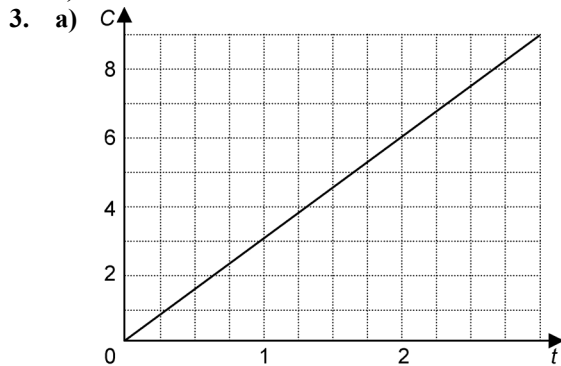| Sales ($)	Earnings ($)
0	
100	
200	
300	
400	
500	

  b) Identify the initial value and the constant of variation.
  c) Write an equation relating Latoya's earnings, E, and her sales, S.
  d) Graph the relation.

Solutions for "Direct Variation"   Day 3
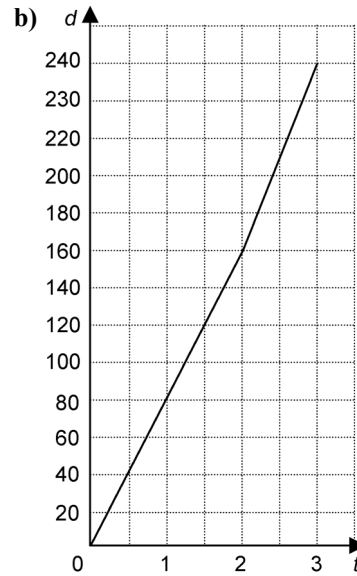
b)

BLM 5.1.1 Practice: Direct Variation

1. **a)** 0.08   **b)** 0.45   **c)** 65
2. **a)** 2.30; the cost per metre, in dollars, of wood
   b) $C = 2.3P$
   c) $34.50
3. **a)**

c) 80   **d)** $d = 80t$
5. **a)** Tomatoes cost $2.50 per kg.
   b) $C = 2.5m$

Solutions to
"Other Word Problems"

   b) 3.00; the cost per hour to park in this parking lot
   c) $C = 3.00t$
4. **a)**

t (h)	d (km)
0	0
1	80
2	160
3	240

1a. Let x be number of hours. Let y be cost.
y = 0.8x + 2.5
b. y = $74.50

2a. Let x be time (hours). Let y be total earnings ($). y = 11.25x + 50
b. y = $387.50

BLM 5.2.1 Practice: Partial Variation

1. **a)** partial variation
   b) partial variation
   c) direct variation
2. **a)** partial variation
   b) direct variation
   c) direct variation
   d) partial variation
3. **a)** 3; 1   **b)** $y = x + 3$
   c)
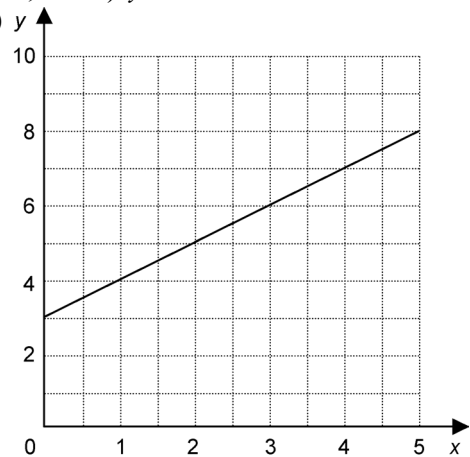
The graph intersects the y-axis at $(0, 3)$. As the x-values increase by 1, the y-values also increase by 1.

4. a)

Sales ($)	Earnings ($)
0	240
100	255
200	270
300	285
400	300
500	315

b) 240; 0.15

c) $E = 0.15S + 240$

d)