BLM Answers

BLM 6.GR.1: Get Ready
**Evaluating Expressions**

1. a) 13   **b)** 77   **c)** −12   **d)** 38

Linear Relations

2. a)

x	$y = x$
−2	−2
−1	−1
0	0
1	1
2	2

b)

x	$y = x$
−2	2
−1	1
0	0
1	−1
2	−2

c)

x	$y = x - 1$
−2	−3
−1	−2
0	−1
1	0
2	1

d)

x	$y = x + 1$
−2	−1
−1	0
0	1
1	2
2	3

e)

x	$y = \dfrac{2}{3}x + 2$
−2	$\dfrac{2}{3}$
−1	$\dfrac{4}{3}$
0	2
1	$\dfrac{8}{3}$
2	$\dfrac{10}{3}$
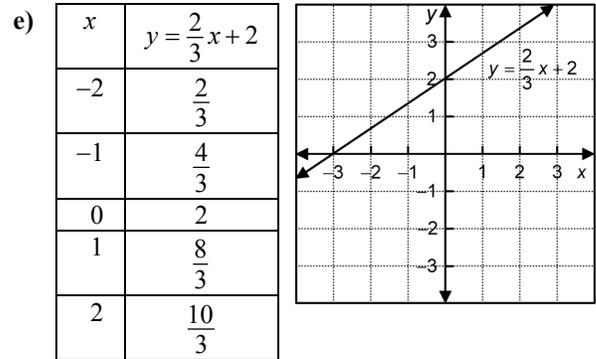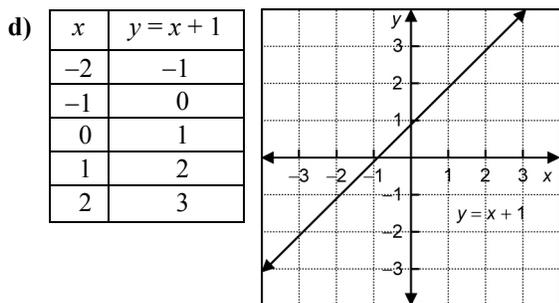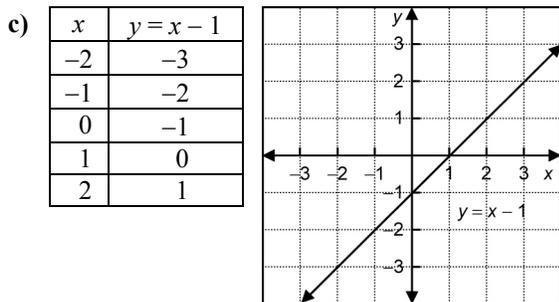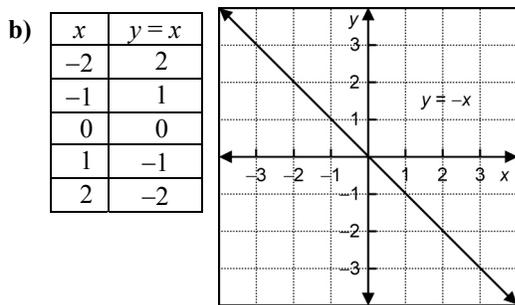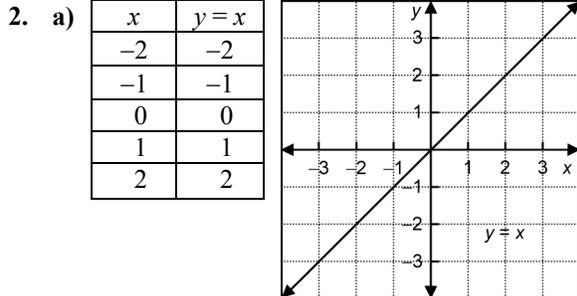
3. *Verify sketches from question 2 with actual graphs from graphing calculator.*

4. a) x-int = −2, y-int = 2
b) x-int = −2, y-int = −2
c) x-int = 0, y-int = 0
d) x-int = 0, y-int = 0
e) x-int = 8, y-int = −4

5. $y = \dfrac{3}{2}x - 4$

Lines of symmetry

6. a) 4   **b)** 1   **c)** 5

BLM 6.1.1: Explore Non-Linear Relations

1. a)

x	y
−2	4
−1	1
0	0
1	1
2	4

b)

x	y
−2	8
−1	5
0	4
1	5
2	8
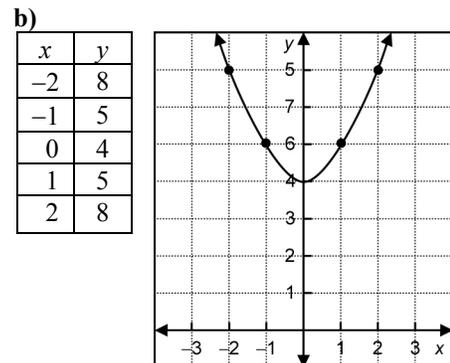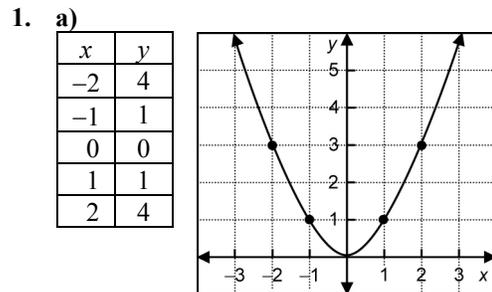
BLM Answers

c)

x	y
−2	3
−1	2
0	−1
1	2
2	3
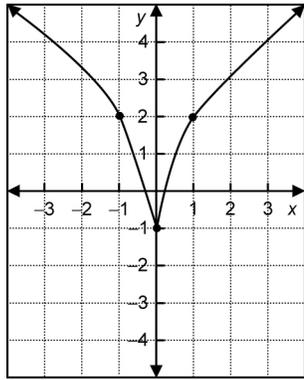
2. a)

Figure	Number of circles
1	2
2	5
3	10
4	17
5	26

b), c)
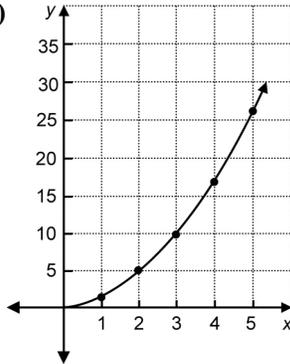
3. a)

Length (cm)	Area (cm^2)
1	1
2	4
3	9
4	16
5	25

b)
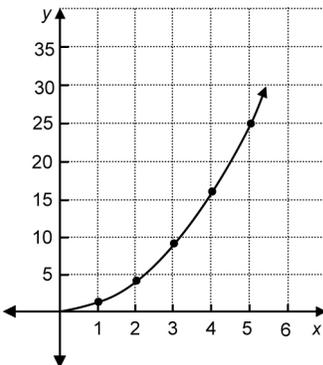
4. a)

Number of emails	Number of friends to get the email
1	2
2	4
3	8
4	16
5	32
6	64
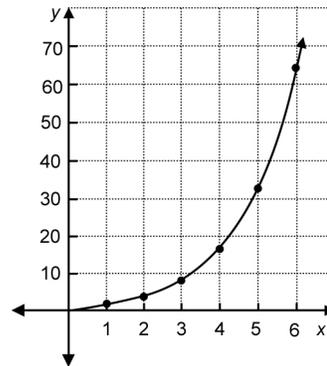
b) 7

BLM 6.2.1: Model Quadratic Relations

1. a) quadratic   **b)** quadratic   **c)** linear
     d) linear   **e)** quadratic   **f)** linear

2. a) linear   **b)** quadratic

3. a)
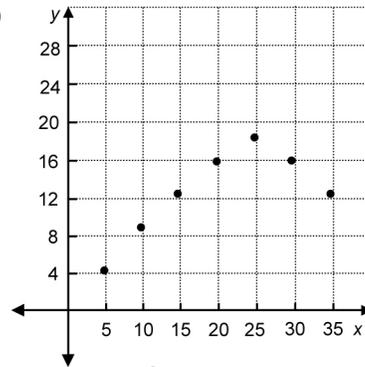
b) $y = -0.028x^2 + 1.427x - 1.063$

c) The horizontal distance the ball travels and the height of the ball have a quadratic relationship.

BLM Answers

4. a)
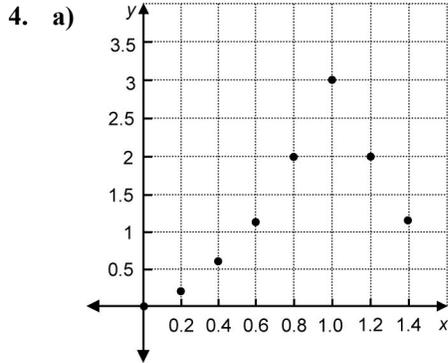
b) $y = -2.411x^2 + 4.887x - 0.458$

**c)** Time and the vertical height have a quadratic relationship.

5. a)

x	$y = x^2 - 12$
-2	-8
-1	-11
0	-12
1	-11
2	-8
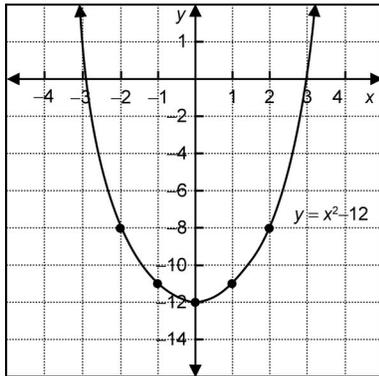
b)

x	$y = x^2 + x - 1$
-2	1
-1	-1
0	-1
1	1
2	5
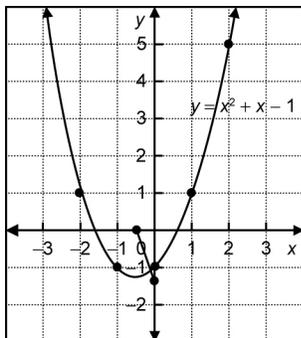
c)

x	$y = -3x^2$
-2	-12
-1	-3
0	0
1	-3
2	-12
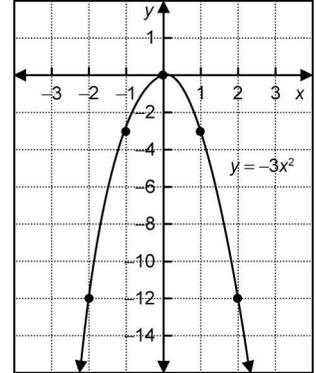
d)

x	$y = 2x^2 + x - 3$
-2	3
-1	-2
0	-3
1	0
2	7
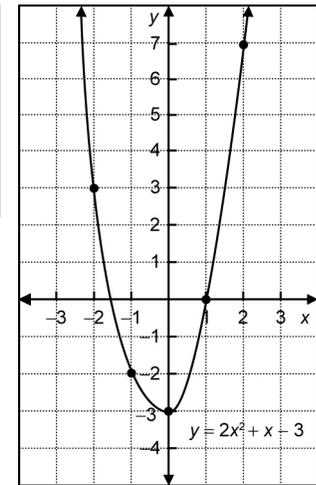
BLM 6.3.1: Key Features of Quadratic Relations

1. a) $(-3, -4)$ **b)** $x = -3$ **c)** 4
   d) min: -4 **e)** -5 and -1

2. a) $(1, 9)$ **b)** $x = 1$ **c)** 8
   d) max: 9 **e)** -2 and 4

3. a)

x	y
-3	16
-2	21
-1	24
0	25
1	24
2	21
3	16

b)
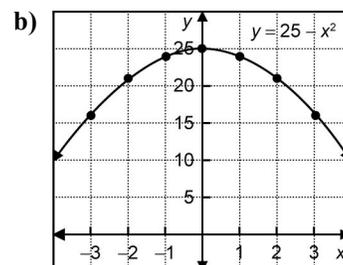
BLM Answers

c) *x*-ints: −5, 5
y-int: 25
vertex: (0, 25)
axis of sym: $x = 0$

4. a)

x	*y*
−3	27
−2	32
−1	35
0	36
1	35
2	32
3	27

b)
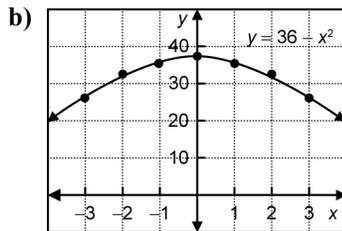
c) *x*-ints: −6, 6
y-int: 36
vertex: (0, 36)
axis of sym: $x = 0$

BLM 6.4.1: Rates of Change in Quadratic Relations

1. a)

x	$y = 3x - 1$
−2	−7
−1	−4
0	−1
1	2
2	5

Not quadratic

b)

x	$y = x^2 + 2x + 1$
−2	1
−1	0
0	1
1	4
2	9

Quadratic

c)

x	$y = 49 - x^2$
−2	45
−1	48
0	49
1	48
2	45

Quadratic

d)

x	$y = 0.5x^2$
−2	2
−1	0.5
0	0
1	0.5
2	2

Quadratic

2. a) Linear   **b)** Neither

3. a)

x	*y*
0	16
1	7
2	0
3	−5
4	−8
5	−9
6	−8
7	−5
8	0
9	7
10	16

b) $y = x^2 - 10x + 16$

4. a)

x	*y*
−7	16
−6	9
−5	4
−4	1
−3	0
−2	1
−1	4
0	9
1	16

b) $y = x^2 + 6x + 9$

5. a), b), c), d)
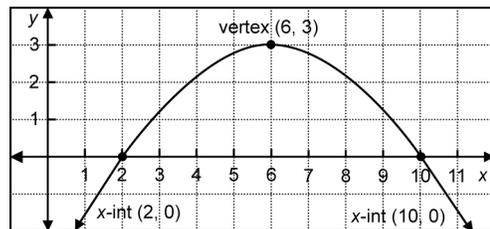
BLM Answers

6. a)

x	$y = x^2 - 7x + 12$
−2	30
−1	20
0	12
1	6
2	2
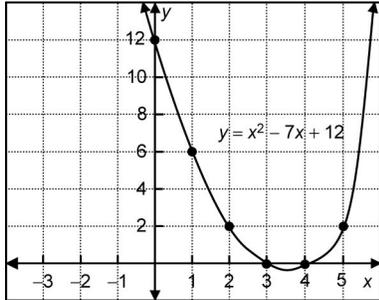
b)

x	$y = x^2 - 16$
−2	−12
−1	−15
0	−16
1	−15
2	−12
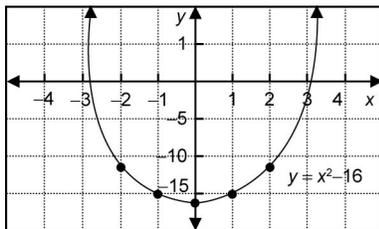
c)

x	$y = x^2 - 5x - 6$
−2	8
−1	0
0	−6
1	−10
2	−12
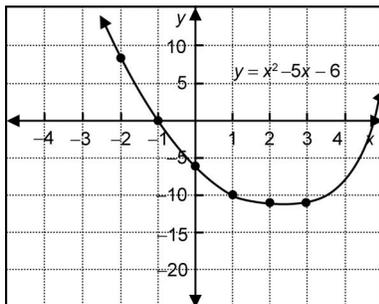
d)

x	$y = x^2 - 2$
−2	2
−1	−1
0	−2
1	−1
2	2
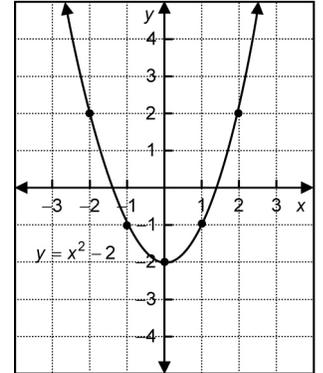
e)

x	$y = -3x^2$
−2	−12
−1	−3
0	0
1	−3
2	−12
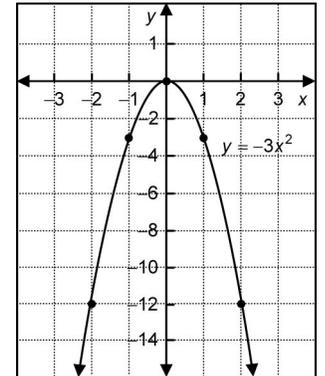
7. a)

w	$h = -0.4w^2 + 10.6$
−4	4.2
−3	7.0
−2	9.0
−1	10.2
0	10.6
1	10.2
2	9.0
3	7.0
4	4.2

b)

h	1st diff.	2nd diff.
4.2	2.8	−0.8
7.0	2.0	−0.8
9.0	1.2	−0.8
10.2	0.4	−0.8
10.6	−0.4	−0.8
10.2	−1.2	−0.8
9.0	−2.0	−0.8
7.0	−2.8	
4.2		

BLM Answers

c) The shape of the dome is a parabola opening downwards.

d)

$y = -0.4x^2 + 10.6$

BLM 6.CR.1: Chapter Review

1.

2. a)

Figure	Number of rectangles
1	3
2	6
3	11
4	18
5	27
6	38
7	51

b) c)

3. a)

b) $y = -1.09x^2 + 2.11x - 0.15$
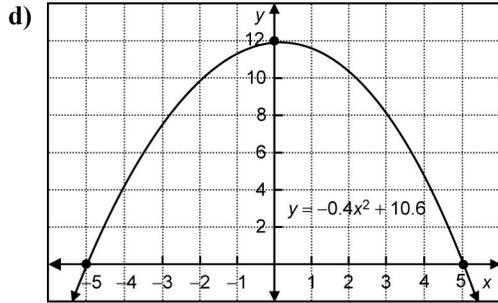
4. a) vertex: $(-2, 9)$
b) axis of sym: $x = -2$
c) y-int: 5
d) x-ints: -5, 1

5. a)

x	$y = 25 - 2x^2$
-3	7
-2	17
-1	23
0	25
1	23
2	17
3	7

b)

$y = 25 - 2x^2$
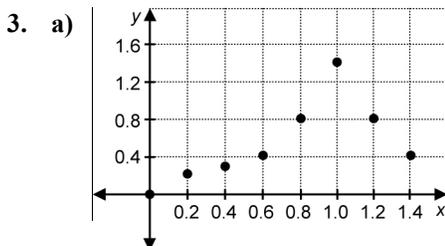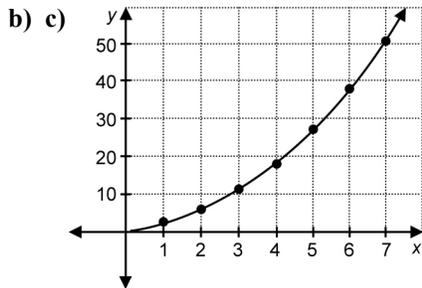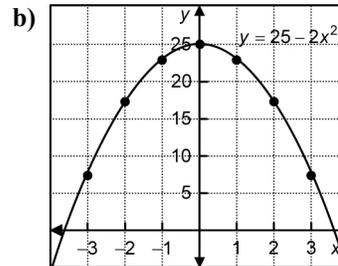
c) y-int: 25
x-ints: -3.54, 3.54
vertex: (0, 25)
axis of sym: $x = 0$

6. a)

w	$h = -0.2w^2 + 4.2$
-3	2.4
-2	3.4
-1	4.0
0	4.2
1	4.0
2	3.4
3	2.4

b)

h	1st diff.	2nd diff.
2.4	1.0	-0.4
3.4	0.6	-0.4
4.0	0.2	-0.4
4.2	-0.2	-0.4
4.0	-0.6	-0.4
3.4	-1.0	
2.4		

c) The shape of the lid is a parabola opening downwards.

d)
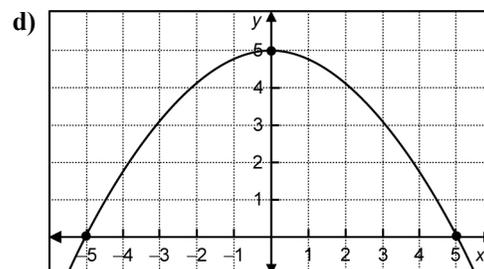
BLM Answers

BLM 6.PT.1: Practice Test

Multiple Choice

1. A   2. C   3. A   4. B
5. D   6. B   7. C

Short Answer

8. Quadratic

9.
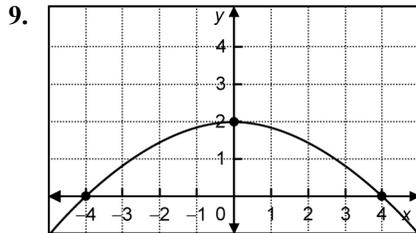
10. **a)**

x	$y = x - 2$
-2	-4
-1	-3
0	-2
1	-1
2	0

Linear

b)

x	$y = x^2 + 3x + 1$
-2	-1
-1	-1
0	1
1	5
2	11

Quadratic

c)

x	$y = -x^2 + 100$
-2	96
-1	99
0	100
1	99
2	96

Quadratic

d)

x	$y = -2x^2$
-2	-8
-1	-2
0	0
1	-2
2	-8

Quadratic

11. **a)**

b) $y = -0.167x^2 + 2x - 0.476$
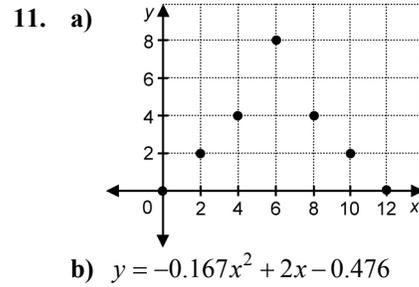
12. **a)**

x	$y = 16 - x^2$
-3	7
-2	12
-1	15
0	16
1	15
2	12
3	7

b)
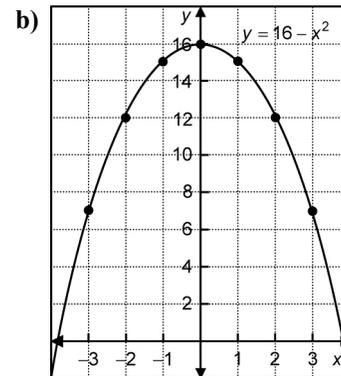
c) y-int: 16
x-ints: -4, 4
vertex: (0, 16)
axis of sym: x = 0

BLM 6.CT.1: Chapter Test

Multiple Choice

1. D   2. D   3. A   4. B
5. A and D,   6. C   7. C

Short Response

8. Quadratic

9.
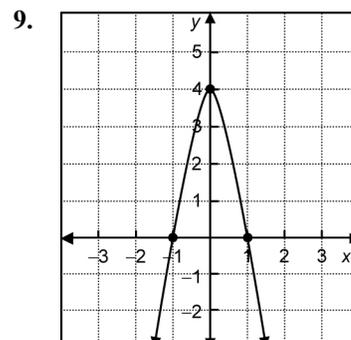
BLM Answers

10. a)

x	$y = 4x - 1$
−2	−9
−1	−5
0	−1
1	3
2	7

Linear

b)

x	$y = x^2 + 4x + 3$
−2	−1
−1	0
0	3
1	8
2	15

Quadratic

c)

x	$y = -x^2 + 64$
−2	60
−1	63
0	64
1	63
2	60

Quadratic

d)

x	$y = 5x^2$
−2	20
−1	5
0	0
1	5
2	20

Quadratic

11. a)
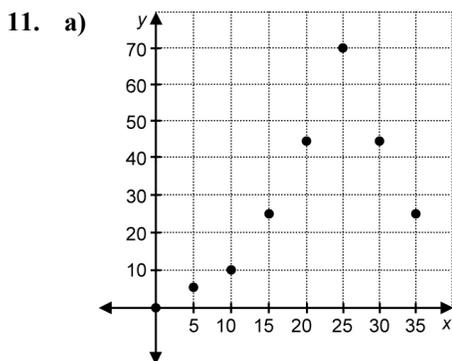
b) $y = -0.087x^2 + 4.411x - 11.042$

12. a)

x	$y = 36 - x^2$
−3	27
−2	32
−1	35
0	36
1	35
2	32
3	27

b)
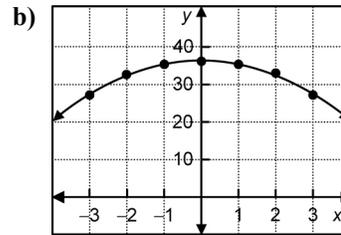
c) y-int: 36
x-ints: −6, 6
vertex: (0, 36)
axis of sym: $x = 0$

13. a)

w	$h = -0.5w^2 + 10$
−3	5.5
−2	8.0
−1	9.5
0	10
1	9.5
2	8.0
3	5.5

b)

h	1st diff.	2nd diff.
5.5	2.5	−1
8.0	1.5	−1
9.5	0.5	−1
10.0	−0.5	−1
9.5	−1.5	−1
8.0	−2.5	
5.5		

c) The shape of the roof is a parabola opening downwards.