Chapter 5 BLM Answers

BLM 5–1 Chapter 5 Math Link Introduction

1.

Step	Arithmetic	Algebra
Step 1	Mark is 14.	If n = tens digit, y = ones digit, then age is $10n + y$.
Step 2	$1 \times 5 = 5$	$5n$
Step 3	$5 + 3 = 8$	$5n + 3$
Step 4	$2 \times 8 = 16$	$2(5n + 3)$
Step 5	$16 + 4 = 20$	$2(5n + 3) + y$
Step 6	$20 - 6 = 14$	$2(5n + 3) + y - 6$

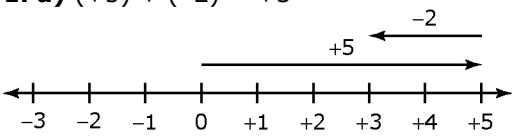
a) 14 **c)** Example: This trick works because the tens digit of the person's age is multiplied by 10. Then, the ones digit is added. The same number is added and subtracted; therefore, no change is made to the number.
2. a) 3 **b)** 7 **c)** 5; 7 **d)** 6; 7 **e)** They all add up to 7.
3. a) 3; 6; 14 **b)** Example: roll a 3 and 5.
bottom: 4; 2; sum: 14; The sum of the four numbers is always 14.
4. Step 3: 3; 6; 47; Step 4: Subtract 14 from the answer in step 3.
5. Example:

Step	Arithmetic	Algebra
Step 1 Pick a number.	The number is 12.	The number = n
Step 2 Double the number.	2×12	$2n$
Step 3 Add 9.	$2 \times 12 + 9$	$2n + 9$
Step 4 Subtract 3.	$(2 \times 12 + 9) - 3 = 30$	$2n + 9 - 3 = 2n + 6$
Step 5 Divide by 2.	$\frac{(2 \times 12 + 9) - 3}{2} = 15$	$\frac{(2x + 6)}{2}$
Step 6 Subtract the original number.	$\frac{(2 \times 12 + 9) - 3}{2} - 12 = 3$	$\frac{(2n + 6)}{2} - n = 3$

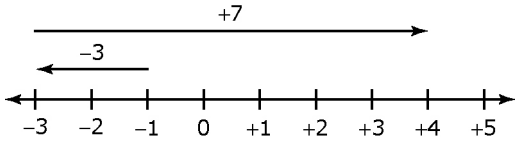
b) Step 1 and 6, 2 and 5 are opposite operations. Together, these steps result in 0. No matter what number is chosen, steps 3 and 4 produce an answer of 6, which is divided by two in step 5, resulting in 3.

BLM 5–2 Chapter 5 Get Ready

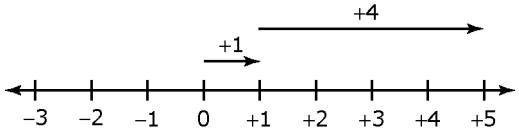
1. a) $(+5) + (-2) = +3$



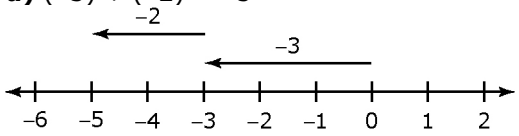
b) $(-3) + (+7) = +4$



c) $(+1) + (+4) = +5$



d) $(-3) + (-2) = -5$



2. a) $(-2) + (+5) = +3$
b) $(-1) + (-2) = -3$
3. a) +5 or 5 **b)** −4 **c)** −13 **d)** +2 or 2
4. a) $(+3) - (-1) = (+3) + (+1) = +4$ or 4
b) $(-3) - (+2) = (-3) + (-2) = -5$
c) $5 - (+2) = 5 + (-2) = +3$ or 3
d) $2 - (-8) = 2 + (+8) = +10$ or 10
5.

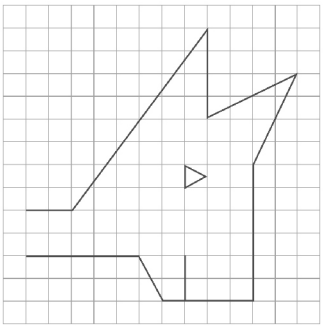
	Numerical Coefficient	Variable	Constant
a)	2	x	−7
b)	−3	b	+5 or 5
c)	1	t	−4
d)	−6	r	+3 or 3

6. a) $s - 5$, where s is Sarah's age
b) $2l - 3$, where l is the length
c) $p + 14$, where p is the perimeter of the triangle. **d)** $\frac{1}{2}n$ or $\frac{n}{2}$, where n is the number of tickets they expected to sell.
7. a) $p + p + p + p$ or $4p$ is the perimeter of a square with sides of length p **b)** length of rectangle is 8 more than its width, or length is increased by 8 over its width, or length is 8 larger than the width.

BLM 5–3 Chapter 5 Warm-Up

Section 5.1

1.



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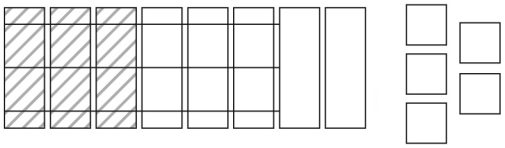
2. 2.8 m
3. AB = DF, DE = AC, BC = FE, ∠A = ∠D, ∠B = ∠ F, ∠C = ∠E
4. Yes, they are similar because $\frac{2.5}{12.5}=\frac{1.2}{6.0}=\frac{2.2}{11.0}$.
5. Example: I ensured that the ratio for all like sides on the two figures was the same.
6. 60 **7.** 41 **8.** –0.6 **9.** 6.2 **10.** –3

Section 5.2
1. reduced; 40 **2.** 10.7 cm **3.** a trinomial
4. Example: xn or x^2 **5.** $-x^2 + 3x - 5$ **6.** –2
7. 6 **8.** –7 **9.** 7 + (–5) = 2 **10.** a letter such as x

Section 5.3
1. one
2. $-3x + 4$, binomial
3. Coefficient is 5; variable is m
4. Striped shapes are positive and white shapes are negative.



5. $-x^2 + 4x - 10$ **6.** 4 + (–15)
7. (–13) + (–2) **8.** +16, or 16
9. $+4x$, or $4x$ **10.** $-3x + 5$

BLM 5–4 Chapter 5 Problems of the Week

1. The sum is 43. Since each number increases by 7, b = 11, and c = 18, so their sum is 29.
2. a) One is twice the other.
b) If x = 1, the difference is 3.
3. 4 dimes, 2 nickels, and 20 pennies
4. $2t^2$, where t is the triangular number
5. The distance travelled will be $\frac{1}{6}$ the distance on Earth in the same time. Distance = $\frac{5}{6}t^2$. The Earth's version's constant is 6 times the moon's.

BLM 5–5 Section 5.1 Extra Practice

1. a) i) 1 ii) monomial **b)** i) 3 ii) trinomial
c) i) 2 ii) binomial **d)** i) 2 ii) binomial
e) i) 1 ii) monomial **f)** i) 3 ii) trinomial
2. Monomials: $3y$, x^2
Binomials: c + d, $-7e^2 - 4f$
Trinomials: $m^2 - n - 8$, $4z^2 - y^2 - 6$
Polynomials: $a^2 - 3n - 6a - 5n^2$, $a + 2b - 2c - 3d$
3. a) i) 1 ii) monomial **b)** i) 3 ii) trinomial
c) i) 2 ii) binomial **d)** i) 3 ii) trinomial
e) i)1 ii) monomial **f)** i) 2 ii) binomial
4. a) 1 **b)** 2 **c)** 1 **d)** 2 **e)** 2 **f)** 2
5. a) i) 1 ii) 3 **b)** i) 2 ii) 3 **c)** i) 1 ii) 2
d) i) 2 ii) 1 **e)** i) 0 ii) 1 **f)** i) 2 ii) 4
6. a) $-x + 3$ **b)** $x^2 + x - 2$
c) $-2x^2 - 3x + 4$ **d)** $2x^2 - 5$
7. a) 3 **b)** 3 **c)** –4 **d)** 2 **e)** 2 **f)** –8

BLM 5–6 Section 5.1 Math Link

1. a)

Item	Cost per Item	Number of Items	Total
blender	$23	2	$46
coffeemaker	$27	2	$54
		Total	$100

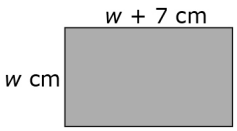
b)

Item	Cost per Item	Number of Items	Total
soccer ball	$13	4	$52
drum	$40	1	$40
books	$8	1	$8
		Total	$100

2. a) (4 × 17) + (4 × 8) = 100; (1 × 27) + (1 × 23) + (2 × 17) + (2 × 8) = 100
b) $4s + 4b = 100$; $c + r + 2w + 2b = 100$
3. Example: two soccer balls, 2 stopwatches, and 1 drum
4. $2r + 2c = 100$; $4s + 1d + 1b = 100$
5. 13 + 23 + 17 + 8 + 27 = 88
6. No, because the total of all six items is $128.

BLM 5–7 Section 5.2 Extra Practice

1. a) i) –1 ii) 1 **b)** i) 4 ii) 1 **c)** i) no coefficient ii) 0 **d)** i) –8 ii) 2 **e)** i) 1 ii) 1
f) i) –1 ii) 1
2. B, F, E, A, D, C
3. a) $4x$, $-x$ **b)** 6, –2.5, –0.1
c) a, $7a$, $1.5a$ **d)** f^2, $-6f^2$
e) $6st$, $\frac{3}{4}st$, $-st$ **f)** $-0.6p^2$, $-p^2$, $10p^2$
g) $0.5jk$, $-jk$, $6jk$ **h)** $\frac{2}{5}$, 0.12, 9
4. a) $2m^2 + 3m - 6$ **b)** $-8k^2 + k + 8$
c) $2c$ **d)** $12n + 6$ **e)** $b^2 - 14b$ **f)** $7w$
g) $-8a - 8$ **h)** $-8s^2 + 10s - 2$
5. a)



b) P = w + (w + 7) + w + (w + 7)
c) $4w + 14$
6. a) $p = 8n - 440$ **b)** $8n = 440$, n = 55. It breaks even after selling 55 yearbooks.

BLM 5–8 Section 5.2 Math Link

1. a) No; It means that the terms with variables that appear earliest in the alphabet appear first in the algebraic expression; $2a + 2f$ **b)** $c + 4d + e$
2. a) $4b + 4c$, $a + 2b + 2c + f$
b) Examples: $b + 2c + d + 2f$, $2b + 2d + e$, $a + 3b + 2d$, $2b + 3d + f$
3. $5b$; $d + f$

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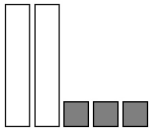
4.

Combination Equal to e	Algebraic Expression Equal to e	Substitute Into $e + c + 4d$	Simplified
5 books	$5b$	$5b + c + 4d$	$5b + c + 4d$
1 soccer ball and 1 coffeemaker	$d + f$	$(d + f) + c + 4d$	$c + 5d + f$

5. Example: Find an expression that adds up to 101, and replace some variables with their equivalents as done in #4. Then, combine like terms to obtain new expressions.

BLM 5–9 Section 5.3 Extra Practice

1. a) $3x^2 + x^2 - 2x + x$, $4x^2 - x$
b) $4n^2 - n^2 - 2n + 5n - 4$, $3n^2 + 3n - 4$
c) $3r^2 + 7r - 8 - 11$, $3r^2 + 7r - 19$
d) $2b^2 - 2b^2 - 8b + 11b$, $3b$
e) $7t^2 - 2t^2 - 6t + 6t + 9 - 5$, $5t^2 + 4$
f) $-14k + 8k - 10 - 23$, $-6k - 33$
2. a)



$-2x + 3$

b)

x^2+3x
3. a) $-6a$ **b)** $3c^2 + 9$
c) $-d^2 + 8d - 2$ **d)** $-6w^2 - 4w + 0.8$
4. a) $(5a - 4) + (-3a + 2)$, $5a - 3a - 4 + 2$, $2a - 2$
b) $(7 - 6r) + (-3 - r)$, $-6r - r + 7 - 3$, $-7r + 4$
c) $(6y^2 - 2y) + (y^2 + 3y)$, $6y^2 + y^2 - 2y + 3y$, $7y^2 + y$
d) $(8 - 5t) + (9 + 4t)$,$-5t + 4t + 8 + 9$, $-t + 17$
e) $(h - 1) + (-3h^2 - 7)$, $-3h^2 + h - 1 - 7$, $-3h^2 + h - 8$
f) $(4k^2 - 6k + 1) + (2k^2 - 5)$, $4k^2 + 2k^2 - 6k + 1 - 5$, $6k^2 - 6k - 4$
5. a) $(x - 2) + (2x - 6) + (3x - 9)$
b) $(6 - 2) + [2(6) - 6] + [3(6) - 9] = 19$
c) $x + 2x + 3x - 2 - 6 - 9 = 6x - 17$
d) $6(6) - 17 = 19$

BLM 5–10 Section 5.3 Math Link

1.

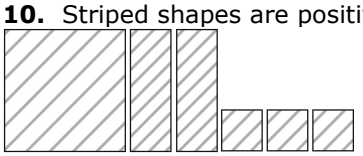
Step	Arithmetic	Algebra
Step 1 Pick a number.	12	n
Step 2 Add 5.	$12 + 5 = 17$	$n + 5$
Step 3 Double the sum.	$2 \times (12 + 5) = 34$	$2(n + 5)$
Step 4 Subtract 10.	$2 \times (12 + 5) - 10 = 24$	$2(n + 5) - 10$
Step 5 Determine the original number.	Answer to Step 4, 24, divided by 2 = 12	$\frac{2(n+5)-10}{2}$

2.

Step	Arithmetic	Algebra
1. Pick a number.	6	n
2. Multiply by 2.	2×6	$2n$
3. Add 9.	$(2 \times 6) + 9$	$2n + 9$
4. Subtract 3.	$(2 \times 6) + 6$	$(2n + 9) - 3$
5. Divide by 2.	$\frac{(2\times 6)+6}{2}$	$\frac{(2n+9)-3}{2}$
6. The answer is 3. Subtract the original number.)	$\frac{(2\times 6)+6}{2} - 6$	$\frac{(2n+9)-3}{2} - n$

BLM 5–11 Chapter 5 Test

1. A **2.** C **3.** B **4.** B
5. 0 **6.** 1 **7.** x **8.** $-3x^2 + x - 2$
9. a) B **b)** D **c)** A **d)** C
10. Striped shapes are positive.



$x^2 + 2x + 3$
11. a) $12.5n$, where n represents the number of people
b) $50 + 5n$ **c)** $17.5n + 50$ **d)** \$155

BLM 5–12 Chapter 5 Math Link: Wrap It Up!

1. a) 236; 396; 96; 3 **b)** The middle digit is the sum of the other two. The middle digit is 9. The other two digits have a sum of 9.
2. Example:

Step	Arithmetic	Algebra
Step 1 Pick a number.	11	n
Step 2 Double it.	22	$2n$
Step 3 Add 9.	31	$2n + 9$
Step 4 Add the number you started with.	42	$3n + 9$
Step 5 Divide by 3.	14	$n + 3$
Step 6 Add 4.	18	$n + 7$
Step 7 Subtract the number you started with.	7	7

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