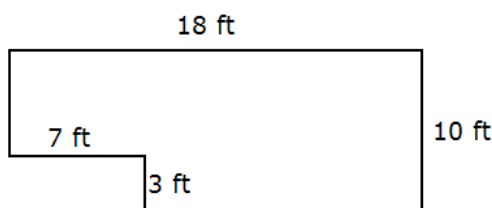


## Review Problems

- Perform the division with remainder:  $2011 \div 17$
- List all factors of 84.
- Consider the following numbers: 2011, 11 060 904, 321, 3106. Select all the numbers from the list that are divisible
  - by 2
  - by 3
  - by 6
- Which of the following numbers is a prime? 2007, 143, 151, 91
- Consider a rectangle with sides 15 m and 12 m long.
  - Compute the perimeter of the rectangle. Include units in your computation and answer.
  - Compute the area of the rectangle. Include units in your computation and answer.
- Find the area and perimeter for the figure shown on the picture below.



- Simplify each of the following.
 

a) $-3^2$	c) $12 \div 3 \cdot 2$	e) $12 - 2(7 - 4 \cdot 3)$	g) $-\sqrt{49}$
b) $- -6 $	d) $15 - 3 + 2$	f) $ -8 + 5 $	h) $\sqrt{-49}$
- Simplify each of the following.
 

a) $ -3^3 - 2  - 5 - 2(-4) $	d) $-2^2 - 5(-2)$
b) $\sqrt{-4^2 - (-1)^4 + 2 \cdot 3^2 \div 2 \cdot 6 - 1}$	e) $-3^2 - 2(4 - 5^2 + 3(10 - 7 + 2))$
c) $-3^2 -  -12 + 2 \cdot 5  - 2 + 1$	f) $\sqrt{6^2 - 5\sqrt{16}}$
- Add the algebraic expressions as indicated.
 

a) $(2a + 3b) + (-2a + 7b)$	b) $(3x - y + 2) + (-x + 6y - 2)$	c) $(3m - 4n) + (5m)$
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- Subtract the algebraic expressions as indicated.
 

a) $(2a + 3b) - (-2a + 7b)$	b) $(3x - y + 2) - (-x + 6y - 2)$	c) $(3m - 4n) - (5m)$
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- Simplify the algebraic expressions as indicated.
 

a) $-3(2a + 3b) + 5(-2a + 7b)$	d) $5x - 3(2x - y)$
b) $2(3x - y + 2) - 6(-x + 6y - 2)$	e) $-3m(3m - 4n) + 4n(5m)$
c) $2x(3x - y) - 5y(-x + 4y)$	f) $-y + 2(3x - y) - (2x - y) + 2(-2x + y)$

12. Multiply the algebraic expressions as indicated.

- a)  $(2a + 3b)(-2a + 7b)$       d)  $(3x^5 - 2)(3x^5 + 2)$       g)  $(3m - 2)(6m + 9m^2 + 4)$   
b)  $(3x - y)(-x + 6y)$       e)  $(5x - 2)^2$   
c)  $(3m - 4n)(5m^3)$       f)  $(3a^3 - 1)^2$

13. Simplify each of the following.

- a)  $(2x - 1)^2 - 3x(x - 5)$       c)  $(2x - 1)(x - 3) - 2(x - 4)^2$   
b)  $(-x + 2)^2 - (2x - 1)(x + 8)$       d)  $x(2x - 5) - 3(2x + 1) - (x - 4)^2$

14. Simplify each of the following.

- a)  $\sqrt{2}(3\sqrt{2} - 5)$       d)  $(3\sqrt{2} - 5)^2$       g)  $\sqrt{28} - 2\sqrt{63} + \sqrt{700}$   
b)  $(\sqrt{5} - 1)\sqrt{5}$       e)  $(3\sqrt{2} - 5)(3\sqrt{2} + 5)$   
c)  $(\sqrt{3} + 1)(2\sqrt{3} - 5)$       f)  $3\sqrt{20} - \sqrt{45} + 2\sqrt{80}$

15. Simplify the expression  $x^2 - 4x + 1$  if

- a)  $x = \sqrt{2}$       b)  $x = -\sqrt{3} + 2$       c)  $x = 2\sqrt{5} - 1$       d)  $x = -2\sqrt{3} + 1$

16. Evaluate the algebraic expression  $\frac{-x + 2x^2 - 1}{x - 1}$  if

- a)  $x = 5$       b)  $x = -5$       c)  $x = 1$       d)  $x = -1$

17. Consider the equation  $2x^3 - 10(x^2 - 2) + 4x = -x^2 + 5$ . For each of the following numbers given, determine whether it is a solution of the equation or not.

- a)  $x = -2$       b)  $x = -1$       c)  $x = 3$

18. Solve each of the following equations. Make sure to check your solutions.

- a)  $5a - 3 = -3a + 21$       d)  $5(x - 1) - 2(x + 4) = 4 - 3(3 - x)$   
b)  $3(y - 1) - 5(3y + 2) = -13(y + 1)$       e)  $2x(x - 3) - 2(x - 1)^2 = -2(x + 1)$   
c)  $4(x - 3) - 2(x - 1) = x - 2(4 - x)$       f)  $(2x + 1)(2x - 5) = (x - 2)(4x - 1)$

## Answers

1. 118 R 5
2. 1, 2, 3, 4, 6, 7, 12, 14, 21, 28, 42, 84
3. a) 11 060 904, 3106      b) 11 060 904, 321      c) 11 060 904
4. 151
5. a)  $P = 54 \text{ m}$       b)  $A = 180 \text{ m}^2$
6.  $P = 56 \text{ ft}$        $A = 159 \text{ ft}^2$
7. a)  $-9$       b)  $-6$       c)  $8$       d)  $14$       e)  $22$       f)  $3$       g)  $-7$       h) undefined
8. a)  $33$       b)  $6$       c)  $-12$       d)  $6$       e)  $3$
9. a)  $10b$       b)  $2x + 5y$       c)  $8m - 4n$
10. a)  $4a - 4b$       b)  $4x - 7y + 4$       c)  $-2m - 4n$
11. a)  $-16a + 26b$       b)  $12x - 38y + 16$       c)  $6x^2 + 3xy - 20y^2$       d)  $-x + 3y$       e)  $-9m^2 + 32mn$       f)  $0$
12. a)  $-4a^2 + 8ab + 21b^2$       b)  $-3x^2 + 19xy - 6y^2$       c)  $15m^4 - 20m^3n$       d)  $9x^{10} - 4$   
e)  $25x^2 - 20x + 4$       f)  $9a^6 - 6a^3 + 1$       g)  $27m^3 - 8$
13. a)  $x^2 + 11x + 1$       b)  $-x^2 - 19x + 12$       c)  $9x - 29$       d)  $x^2 - 3x - 19$
14. a)  $6 - 5\sqrt{2}$       b)  $5 - \sqrt{5}$       c)  $1 - 3\sqrt{3}$       d)  $43 - 30\sqrt{2}$       e)  $-7$       f)  $11\sqrt{5}$       g)  $6\sqrt{7}$
15. a)  $7 - 4\sqrt{2}$       b)  $4$       c)  $30 - 12\sqrt{5}$       d)  $4\sqrt{3} + 14$
16. a)  $11$       b)  $-9$       c) undefined      d)  $-1$
17. a) no,  $-44 \neq -2$       b) yes,  $4 = 4$       c) yes,  $-4 = -4$
18. a)  $3$       b)  $0$       b)  $-2$       c) no solution      d) all numbers are solution      e)  $7$