

# Chapter 1

## 1.1.1:

1-3. Shapes (a), (c), (d), and (e) are rectangles.

1-4. a: 40      b: -6      c: 7      d: 59

1-5. a:  $y = x + 3$    b:  $y = -x^2$    c:  $y = x^2 + 3$    d:  $y = 3x - 1$

1-6. a:  $22a + 28$    b:  $-23x - 17$    c:  $x^2 + 5x$    d:  $x^2 + 8x$

1-7. Possibilities: goes to bank, gets money from parent, gets paid; buys lunch, goes shopping, pays a bill, ...

## 1.1.2:

1-14. Answers vary. Possible responses include “How many sides does it have?”, “Does it have a right angle?”, “Are any sides parallel?”

1-15. Answers vary. Possible responses include “They have 3 sides of equal length” and “They have 3 angles of equal measure.”

1-16. a: 3      b: 2      c: 4

1-17. a:  $x = -7$    b:  $c = 4.5$    c:  $x = 16$    d:  $k = -7$

1-18. a: 12      b: 35      c: 24      d: 7

## 1.1.3:

1-25. c is correct;  $x = 7$

1-26. No. If the points are collinear then they will not form a triangle.

1-27.  $y = x - 3$

1-28. a: 55.5 square units      b: 42 square units

### 1.1.4:

1-32. **a:**  $x = \frac{9}{24} = \frac{3}{8} = 0.375$       **b:** no solution  
**c:**  $x \approx 6.44$       **d:**  $x = 0.5$

1-33. Yes, his plants will be dead. If his plants are indoors, they will be dead because he will be gone for 2 weeks and so he did not water them at least once a week. If he left them outdoors, they will still be dead because it has not rained for 2 weeks, so he needed to water them once a week as well.

1-34. **a:**  $y = \frac{2}{3}x - 4$       **b:**  $y = -\frac{5}{2}x + \frac{7}{2}$

1-35. 104 sq. mm

1-36. **a:**  $-\frac{3}{5}$       **b:**  $\frac{6}{3} = \frac{2}{1} = 2$       **c:**  $-\frac{3}{6} = -\frac{1}{2}$       **d:**  $\frac{0}{7} = 0$

### 1.1.5:

1-42. **a:**  $100^\circ$       **b:**  $170^\circ$       **c:**  $50^\circ$

1-43. The graph should be a line with  $y$ -intercept  $(0, 2)$  and  $x$ -intercept  $(-2, 0)$ .

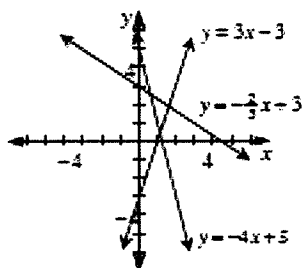
1-44. Perimeter: 74 centimeters, Area:  $231 \text{ cm}^2$

1-45. **a:**  $y = 5$       **b:**  $r = 12$       **c:**  $a = 6$       **d:**  $m = 5$

1-46. While there are an infinite number of rectangles, possible dimensions with integral measurements are: 1 by 24 (perimeter = 50 units), 2 by 12 (perimeter = 28 units), 3 by 8 (perimeter = 22 units), and 4 by 6 (perimeter = 20 units).

### 1.2.1:

1-54.



1-55. a:  $120^\circ$       b:  $40^\circ$       c:  $230^\circ$

1-56.  $5x - 2 + 2x + 6 = 67$ ,  $x = 9$ , so  $5(9) - 2 = 43$  miles

1-57. a: 3.75      b: 3      c: 0      d: 3      e:  $\approx 372.25$       f:  $-3.4$

1-58. The flag would need to be a rectangle. The height of the cylinder would match the height of the rectangle along the pole, and the cylinder's radius would match the width of the rectangle.

### 1.2.2:

1-63. yes, yes, no

1-64. a: reflection      b: translation (or two reflections over parallel lines)  
c: rotation or rotation and translation  
d: rotation or rotation and translation depending on the point of rotation  
e: reflection      f: reflection and then translation or rotation or both

1-65.  $19 + 7x - 4 + 10x + 3 = 52$  so  $x = 2$ . Side lengths are 19, 10, and 23.

1-66. a: Area  $\approx 16$  square units      b: Area  $\approx 15$  square units

1-67. a:  $-4$       b: 25      c:  $-2$

### 1.2.3:

1-73. **a:** a square **b:** 81 square units  
**c:**  $A'(3,-5)$ ,  $B'(-6,-5)$ ,  $C'(-6,4)$ ,  $D'(3,4)$

1-74. **a:**  $x = -4.75$  **b:**  $x = -94$  **c:**  $x \approx 1.14$  **d:**  $a = 22$

1-75. **y-intercept:** (0, 6), **x-intercept:** (4, 0)

1-76. **a:**  $y = \frac{4}{3}x - 2$

**b:** The resulting line coincides with the original line;  $y = \frac{4}{3}x - 2$

1-77. -14

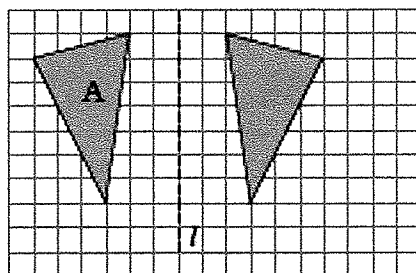
### 1.2.4:

1-82. \$450

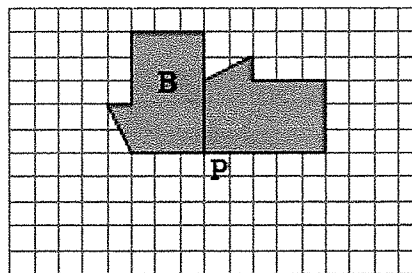
1-83. **a:** (9,3) **b:** (3,-3) **c:** (-2,-7) **d:** (-52,1483)

1-84. **a:** 10 square units **b:** 20 square units **d:** 208,680 square units

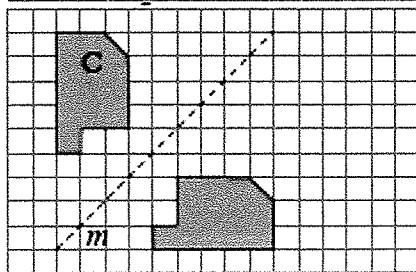
1-85. **a:**



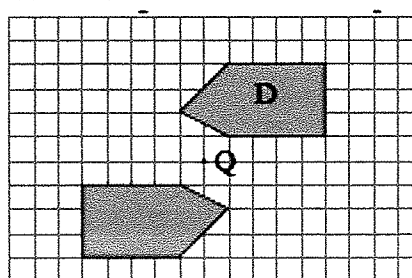
**b:**



**c:**



**d:**



1-86. **a:** The orientation of the hexagon does not change.

**b:** The orientation of the hexagon does not change.

**c:** There are 6 lines of symmetry, through opposite vertices and through the midpoints of opposite sides.

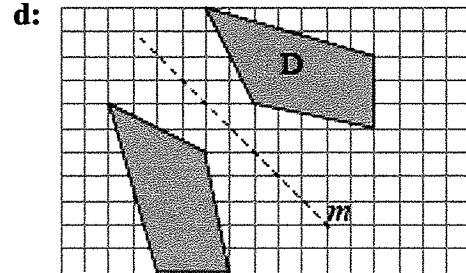
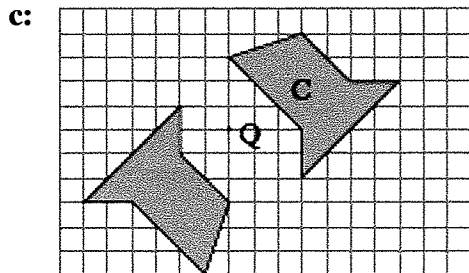
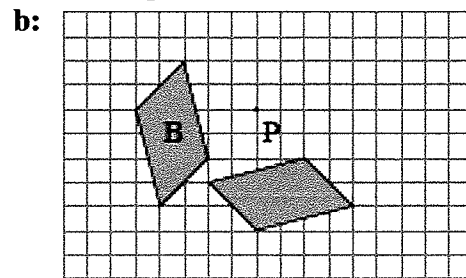
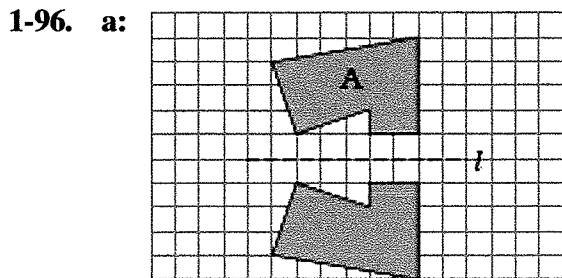
### 1.2.5:

1-92. (a) and (b) are perpendicular, while (b) and (c) are parallel.

1-93. a: One possibility:  $4(5x + 2) = 48$       b:  $x = 2$       c:  $12 \cdot 12 = 144$  units

1-94. a: heart      b: square      c: hexagon      d: Answers vary.

1-95. The triangles described in (a), (b), and (d) are isosceles.



### 1.3.1:

1-99. Carol: only inside circle #2; Bob: outside both circles; Pedro: only inside circle #1. In order to belong to the intersection of both circles, a person would need to have long hair and study a lot for class.

1-100. a:  $x = -\frac{9}{33} = -\frac{3}{11}$       b:  $x = 5$  and  $x = -\frac{3}{2}$       c:  $x = 1$       d:  $x = \frac{12}{13}$

1-101. a: It looks the same as the original.  
 b: Solution should be any value of  $45k$  where  $k$  is an integer.  
 c: circle

1-102. a:  $(-6, -3)$       b: The vertices are  $(6, 2)$ ,  $(2, 3)$ , and  $(5, 6)$       c:  $(8, -4)$

1-103.  $y = 3x + 2$

### 1.3.2:

1-110. rectangle and square

1-111. Answers vary.

1-112. **a:** isosceles triangle      **b:** pentagon      **c:** parallelogram  
**d:** obtuse scalene triangle    **e:** isosceles right triangle    **f:** trapezoid

1-113. REFL ONLY: A, B, C, D, E, M, T, U, V, W, Y  
ROT. ONLY: N, S, Z  
INTERSECTION: H, I, O, X  
OUTSIDE BOTH REGIONS: F, G, J, K, L, P, Q, R

1-114. D

### 1.3.3:

1-121. an isosceles right triangle

1-122.  $\frac{1}{535} \approx 0.0019$  No, this probability is very small.

1-123. **a:**  $\frac{1}{4}$       **b:**  $\frac{3}{4}$       **c:**  $\frac{2}{4} = \frac{1}{2}$

1-124. **a:** Yes, it is correct because the two angles make up a  $90^\circ$  angle.  
**b:**  $x = 33^\circ$ , so one angle is  $33 - 10 = 23^\circ$  while the other is  $2(33) + 1 = 67^\circ$   
**c:**  $23^\circ + 67^\circ = 90^\circ$

1-125. The graph is a parabola with roots  $(-3, 0)$  and  $(1, 0)$ , and y-intercept at  $(0, -3)$ .