

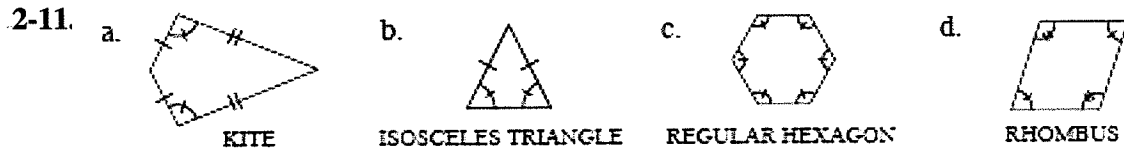
Chapter 2

2.1.1:

2-8. a: 33 square cm b: $33x$ square units c: $33x^2 - 50x + 8$ square units

2-9. a: $\frac{1}{2}$ b: $\frac{1}{6}$

2-10. a: isosceles triangle b: equilateral triangle c: rhombus



2-12. Answers vary. The left circle could be “equilateral”, and the right could be “quadrilateral”. Assuming this, you could add an equilateral hexagon to the left, a rhombus to the intersection, and a rectangle to the right circle.

2.1.2:

2-18. a: Vertical angles, congruent, $3x + 5^\circ = 5x - 57^\circ$, $x = 31^\circ$
 b: Straight angle pair, supplementary, $2x + 4x + 150^\circ = 180^\circ$, $x = 5^\circ$

2-19. a: $m\angle B = m\angle C$ because the line of symmetry must pass through A (according to the marked sides of equal length) and these angles are on opposite sides of the line of symmetry.

b: Since they are equal, $m\angle B = \frac{1}{2}(124^\circ) = 62^\circ$.

2-20. a: square b: $(-4, 5)$, $(1, 5)$, $(-4, 0)$, $(1, 0)$

2-21. $y = x - 1$; No, because $1 \neq 3 - 1$

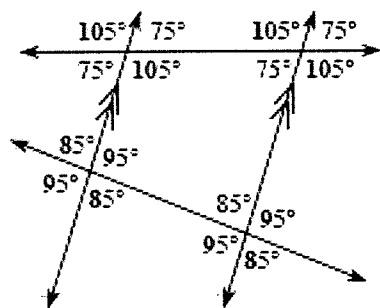
2-22. a: Vertical; they are equal. b: They form a “Z.”

2.1.3:

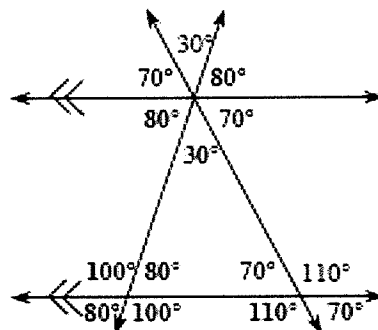
- 2-29. **a:** $(-2, 3)$ **b:** $(-2, 3)$, yes
- 2-30. **a:** 20 square units
b: 2,600 square units; subtract the x and y -coordinates to find the length of the two sides.
- 2-31. **a:** We do not know the angles are equal, because we do not know if $\overline{BD} \parallel \overline{EG}$.
b: The diagram does not have parallel line marks.
- 2-32. **a:** $x = 17.5$ (corresponding angles)
b: $x = 5$ (multiple relationships can be used)
- 2-33. **a:** an isosceles triangle **b:** a rectangle

2.1.4:

2-38. **a:**



b:



- 2-39. The slopes are $\frac{2}{3}$ and $-\frac{3}{2}$. Since the slopes are opposite reciprocals, the lines must be perpendicular.
- 2-40. $(3, -1)$, $(7, -1)$
- 2-41. They used different units.
- 2-42. The lines are parallel, so they do not intersect. Therefore, there is no solution.

2.1.5:

2-51. $x = 7^\circ$

2-52. a: $x = 10$ units b: $x = 6$ c: $x = 20^\circ$ d: $x = 10^\circ$

2-53. a: $x = 4$ and $y = 18$ b: $x = -13$ and $y = 6$

2-54. a: Should be triangle with horiz. base of length 4 and vertical base of length 3
b: $-\frac{4}{3}$ c: Any equation of the form $y = -\frac{3}{4}x + b$

2-55. 2

2.2.1:

2-61. They are all isosceles triangles.

2-62. Reasoning will vary. $a = 118^\circ$, $b = 118^\circ$, $c = 32^\circ$, $d = 32^\circ$

2-63. a: 15° b: $x = 12^\circ$, $m\angle D = 4(12^\circ) + 2^\circ = 50^\circ$ c: It is equilateral.

2-64. $A'(-6, -3)$, $B'(-2, -1)$, and $C'(-5, -7)$

2-65. a: $y = -\frac{2}{3}x + 3$ b: Yes, because the slopes are opposite reciprocals.
c: $y = \frac{1}{2}x + 5$ d: Any equation of the form $y = -2x + b$ for all real b values.

2.2.2:

2-70. a: $8x^2 - 26x - 7$ b: $10x^2 + 31x - 14$
c: $4x^2 - 47x + 33$ d: $-6x^2 + 17x - 5$

2-71. area = 28 square units

2-72. a: $x = 8^\circ$, right angle is 90°
b: $x = 20^\circ$, straight angle is 180°
c: $x = 20^\circ$, sum of angles in a triangle is 180°
d: $x = 60^\circ$, sum of angles in a triangle is 180°

2-73. Daniel is correct because the definition of a rectangle is a quadrilateral with four right angles. Since a square has four sides and four right angles, it must be a rectangle.

2-74. a: $\frac{4}{52} = \frac{1}{13}$ b: $\frac{13}{52} = \frac{1}{4}$ c: $\frac{1}{52}$ d: $\frac{39}{52} = \frac{3}{4}$

2.2.3:

2-81. a: $y = -\frac{6}{5}x + 4$ b: $y = \frac{1}{2}x - 2$

2-82. The unshaded triangle is half the area of the rectangle ($.5(8)(17) = 68$ sq. in.), so the shaded area is the other half.

2-83. a: Because when you are not standing up straight, you have changed your height, and you will not get a true measure of your height.

b: Diagram (1) is correct.

2-84. a: If it rains, then Mr. Spelling is unhappy.

b: If you add two even numbers together, then the result is even.

c: If it is Tuesday, then Marla has a piano lesson.

2.2.4:

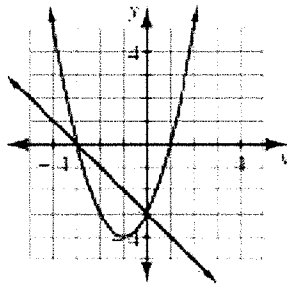
2-90. a: $7^2 = 49$ sq. cm b: $0.5(10)(4) = 20$ sq. in.

c: $0.5(16 + 8)(6) = 72$ sq. ft.

2-91. a: $15x^2 + 21x$ b: $x^2 + 5x + 6$

c: $3x^2 - x - 10$ d: $10x^2 - 3x - 4$

2-92. See graph; $(-3, 0)$ and $(0, -3)$



2-93. a: Isosceles Trapezoid because two sides are parallel and the other two sides are the same length.

b: $A'(7, -2)$, $B'(8, -4)$, $C'(2, -4)$, $D'(3, -2)$

c: 10 square units

2-94. a: $\frac{12}{52} = \frac{3}{13}$ b: $\frac{20}{52} = \frac{5}{13}$ c: $\frac{2}{52} = \frac{1}{26}$ d: 0

2.3.1:

2-100. a: $\sqrt{68} \approx 8.2$, since $\sqrt{64} = 8$, then $\sqrt{68}$ must be a little higher.
 b: (1) 2.2, (2) 9.2, (3) 7.1, (4) 4.7

2-101. 17 units

2-102. a: $6x + 6$ b: $6x + 6 = 78$, so $x = 12$ and the rectangle is 15 cm by 24 cm.
 c: $(2 \cdot 12)(12 + 3) = 360$

2-103. a: If a polygon is a parallelogram, then its area equals its base times its height.
 b: "If a polygon is a triangle, then its area equals one half its base times its height." Arrow diagram: *Polygon is a triangle* \rightarrow *area of the polygon equals one-half base times height.*

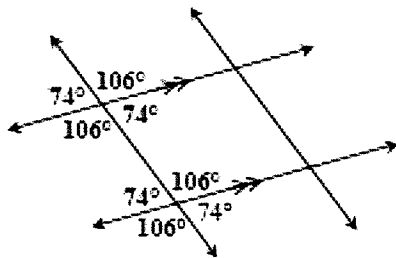
2-104. No, it would take 10 months for Sarita to catch up to Berti.

2.3.2:

2-109. 10 units

2-110. a: $y = \frac{6}{5}x - 3$ b: $y = -\frac{1}{4}x + 4.5$ c: $y = \frac{1}{3}x$ d: $y = 2$

2-111.



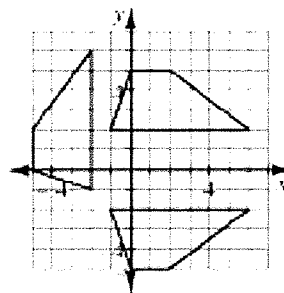
2-112. a: 1 b: $\frac{3}{8}$ c: $\frac{5}{8}$

2-113. a: It is a trapezoid because it has two parallel sides.

b: $A'(-2, -1)$, $B'(-5, 0)$, $C'(-5, 2)$, $D'(-2, 6)$

c: $A'''(1, 2)$, $B'''(-2, 5)$

d: $\frac{1}{2}(3)(2 + 7) = 13.5$ units



2.3.3:

2-118. a: (1) (5,3); (2) (2,-6)

b: $p: y = 2x + 8$; $q: y = -\frac{1}{2}x + 3$

c: The solution should be (-2,4).

2-119. a: right triangle; slopes are opposite reciprocals

b: 20 square units

c: ≈ 23.4 units

2-120. height = 12 units, area = $\frac{1}{2}(12)(12 + 23) = 210$ square units

2-121. a: $x = 28.5^\circ$, Triangle Angle Sum Theorem

b: $x = 23^\circ$, relationships used varies

c: $x = 68^\circ$, corresponding angles are equal because the lines are parallel and base angles of an isosceles triangle are equal.

2-122. 5° and 21°