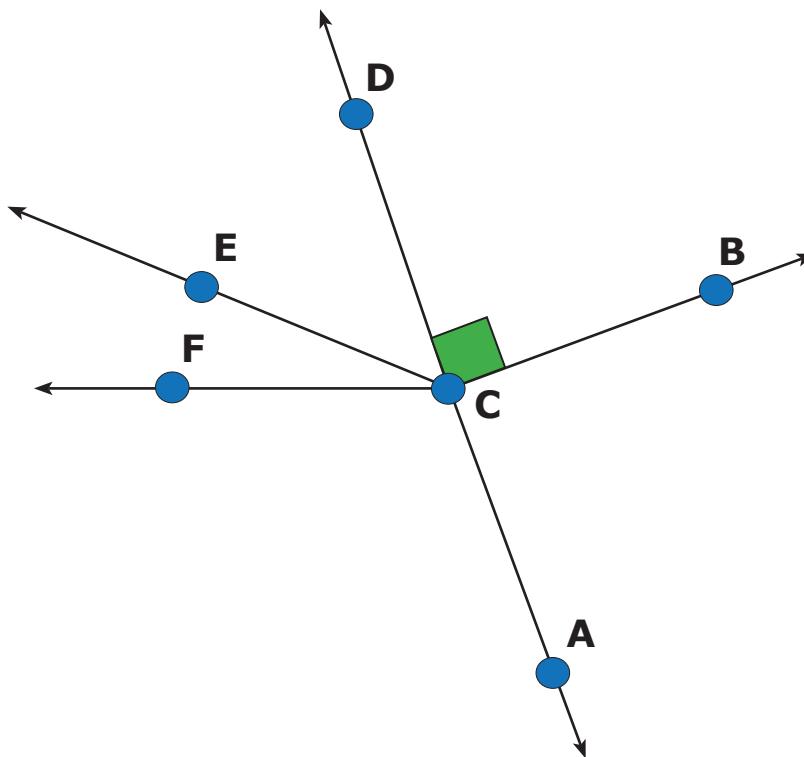


Angles Activity



Look at the drawing below, then complete the chart. Use a check mark \checkmark to identify each angle. **The angles are all coplanar.**

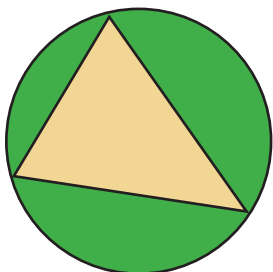
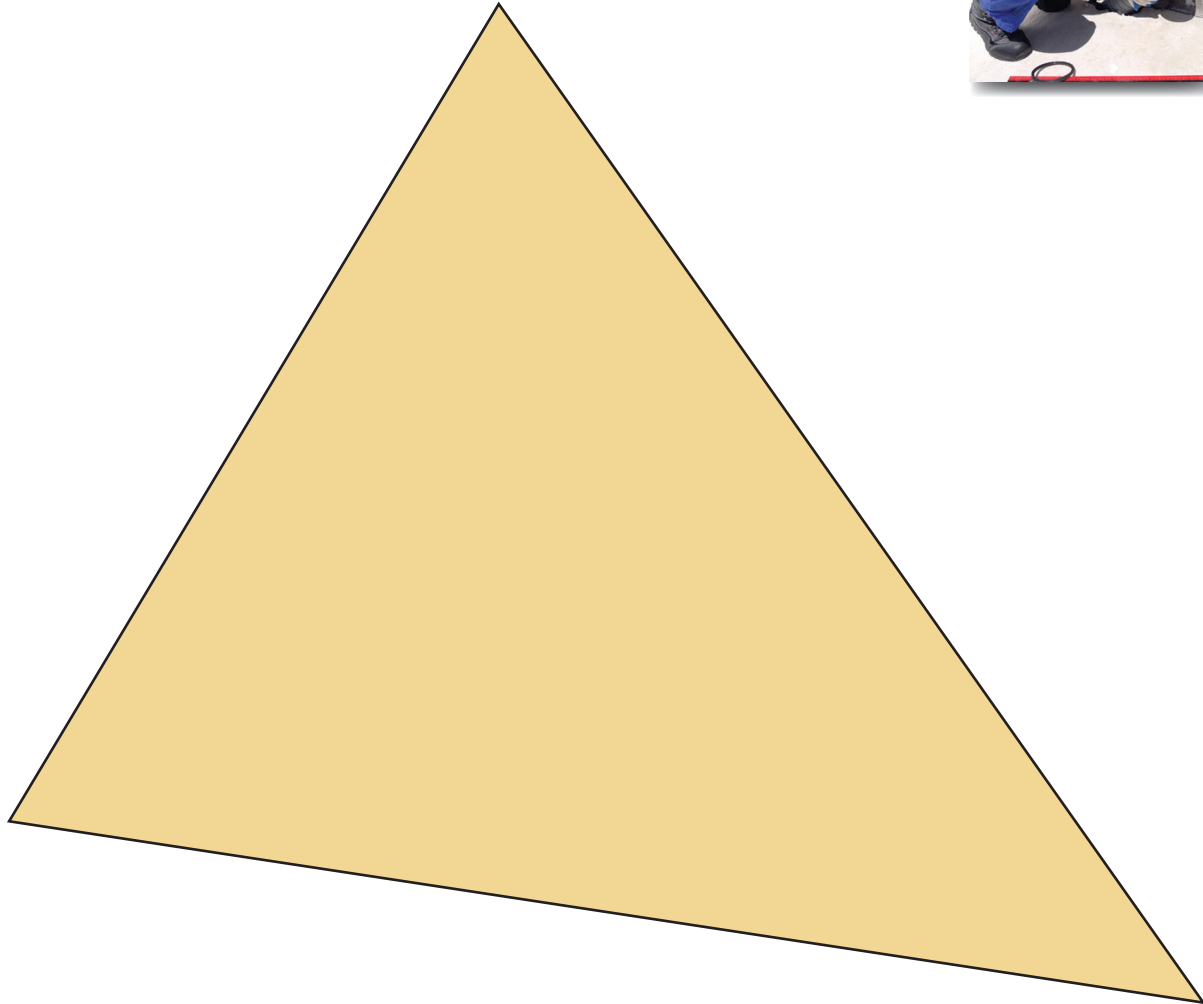


	Right	Acute	Obtuse	Straight	Adjacent to $\angle ECD$
$\angle FCE$					
$\angle ECD$					
$\angle DCA$					
$\angle FCB$					
$\angle BCD$					
$\angle ACB$					

How to Construct a Perpendicular to a Line (Cont.)

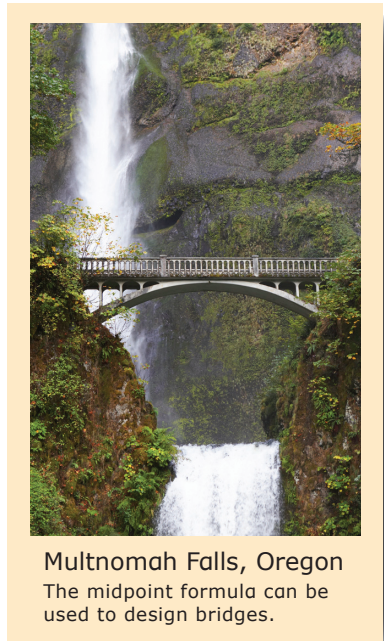
Construct a perpendicular **line** to each side of this triangle. Find the intersection of the three perpendicular **lines**.

This point of intersection (or point of concurrency) is called the **circumcenter**.



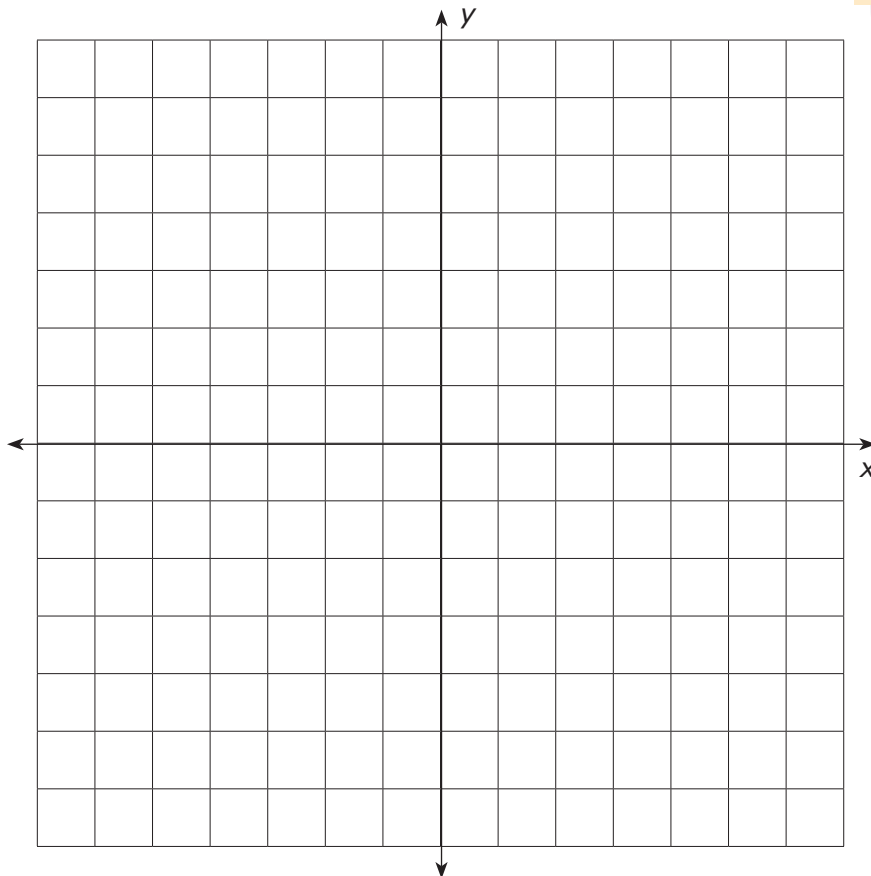
Using the circumcenter as your center, construct a circle that circumscribes the triangle as shown here.

The Midpoint Formula (Cont.)



4 A line segment has an endpoint at $(-4,4)$ and a midpoint at $(-1,4)$. Find the other endpoint. Use a grid to help you.

5 Segment \overline{AT} has endpoint **A** at $(-6,-5)$ and midpoint **M** at $(-1,-4)$. Find the coordinates of **T**. Graph your results below.



6 Without graphing, can you explain how you would find the coordinates of endpoint **L** in segment \overline{PL} ? The endpoint **P** is at $(-13,15)$ and the midpoint of \overline{PL} is at $(3,-4)$. Find the coordinates of point **L**.

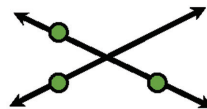
Answers

Chapter 1: Notation Practice, p. 3

1. \cong
2. $=$
3. \cong
4. \cong
5. $=$
6. \parallel
7. \perp
8. \perp
9. Yes, if angles are congruent, then degree measures are equal.
10. Yes, in a plane if a line is perpendicular to one of two parallel lines it is perpendicular to the second line.
11. Because there is more than one angle with point A as the vertex.

Chapter 1: Build It!, p. 6

1. a. yes
2. a. yes
b. Because when you have two intersecting lines you have three non-collinear points. See drawing:



3. No, it's not possible for two planes to be skew since planes go on forever in all directions. Either planes are parallel or they intersect.
4. A line.
5. The wheel on a paddle boat is one of many examples.
6. Three planes in space can intersect in 0 points, 1 common line, 2 parallel lines, 1 common point, or they can coincide.

Chapter 2: Angles Activity, p. 9

Answers to the table:

	Right	Acute	Obtuse	Straight	Adjacent to $\angle ECD$
$\angle FCE$		✓			✓
$\angle ECD$		✓			
$\angle DCA$				✓	
$\angle FCB$			✓		
$\angle BCD$	✓				✓
$\angle ACB$	✓				

- i. T
- j. T

Algebra and Geometry, pp. 28-29

1. Equation: $5x + 4 = 3x + 6$, $x = 1$; $AC = 9$, $BC = 9$, $AB = 4$
2. $x = 9$, $m\angle E = 45^\circ$, $m\angle F = 45^\circ$
3. Equation: $x + x + 3x = 180$; $x = 36^\circ$; $m\angle W = 108^\circ$; $m\angle Z = 36^\circ$; $m\angle U = 36^\circ$
4. $m\angle x = 76^\circ$; $m\angle y = 48^\circ$
5. Equation: $5x - 40 = 3x + 10$, $x = 25$, $m\angle ADR = 85^\circ$; $m\angle RDT = 95^\circ$
6. Equation: $9x = 90$, $x = 10$, $m\angle AQE = 50^\circ$, $m\angle EQL = 40^\circ$
7. Equation: $4x = 60$ or $4x + 120 = 180$, $x = 15$
8. Equation: $3x + x + 116 = 180$; $x = 16$

Cumulative Review – Chapters 1-3, p. 30

1. The lines are perpendicular because they intersect at right angles.
(Even though one right angle is shown, all angles are right angles because two adjacent angles on the same line are supplementary.)
2. a. 50° ; b. 45° ; c. 85° ; d. 130° ; e. 50° ; f. 95°
3. a. complement: 60° , supplement: 150°
b. angle: 65° , supplement: 115°
c. complement: $90 - n$, supplement: $180 - n$
4. a. 120° ; b. $(y + z)^\circ$
5. a. The measures of the base angles of an isosceles triangle must be equal.
b. In any triangle two sides must add to more than the third side.
c. The largest angle must be opposite the largest side.
6. a. $x = 12$; b. $x = 10$; c. $x = 25$

Chapter 4: The Pythagorean Theorem, p. 31

1. The biggest angle is 90° .
2. $9 + 16 = 25$; Yes!

Pythagorean Triples Practice, p. 33

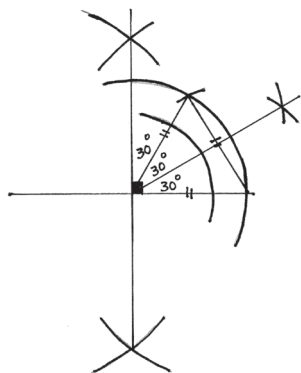
1. $5^2 + 12^2 = 13^2$; $25 + 144 = 169$
2. $9^2 + 12^2 = 15^2$; $81 + 144 = 225$
3. b; $1^2 + 2^2 \neq 3^2$
4. b is not because $5^2 + 12^2 \neq 225$
5. a. $n^2 - m^2 = 9 - 4 = 5$; $2mn = (2)(3)(2) = 12$; $n^2 + m^2 = 9 + 4 = 13$
Yes, it's a 5, 12, 13 Pythagorean Triple because $25 + 144 = 169$.
b. $n^2 - m^2 = 64 - 25 = 39$; $2mn = (2)(8)(5) = 80$; $n^2 + m^2 = 64 + 25 = 89$. Yes, it's a 39, 80, 89 Pythagorean Triple because $1,521 + 6,400 = 7,921$.

	n	m	$n^2 - m^2$	$2mn$	$n^2 + m^2$	Is it a Pythagorean Triple?
	2	1	3	4	5	Yes
a	3	2	5	12	13	Yes
b	8	5	39	80	89	Yes

9. b. The orthocenter is outside the triangle in the obtuse triangle shown.
10. a. A right triangle.
b. A right triangle.
c. A triangle inscribed in a semicircle is always a right triangle.
11. You can construct a square inscribed in a circle and then bisect all four sides. Where the bisectors intersect the circle are new vertices that you can join with the existing vertices to construct an octagon.
12. a. 108° . The formula is $((n - 2)180^\circ) \div 5$ where $n = 5$
b. Bisect each side and where the bisectors intersect the circle are new vertices that can be joined with the existing vertices to construct a decagon.

Impossible Constructions?, pp. 122-132

1. The center angle will not be congruent to the two outside angles.
2. Draw a perpendicular bisector to create a right angle, then using your compass from the vertex of the 90° angle, draw an arc. Without closing or opening your compass, go to one side where the arc intersects the side of your 90° angle and make a marking on that arc to mark the same length. You have now created an equilateral triangle inside your right angle. Inside your right angle is a 60° angle, bisect it. You have now trisected the 90° angle since the remaining angle outside of the equilateral triangle and inside the right angle is 30° .



Chapter 9: The Geometry of Three Dimensional Shapes, p. 124
3D Shapes - Prisms, pp. 125-126

1. 6 cm
2. It looks like 512 to the 13th power! Correct way: 512 cubic ft or 513 ft³
3. 1,008 cu cm $\frac{[4(6 + 12)]}{2} (2)(14)$
4. 250 cu m; (50)(5)
5. 5,700 cu ft; Rectangular prism: 3,000 + Triangular prism: 2,700.
[Triangular prism is $2,700 = \frac{(18)(12)}{2} (25)$]
6. 19 cu in. Outside cube: 27 – inside cube: 8
7. Both have a volume of 200 cu in.