

**Warm Up 32**

1. equiangular
2. false
3.  $(-0.5, 6)$
4.  $(1.5, 2.5)$

**Lesson Practice 32**

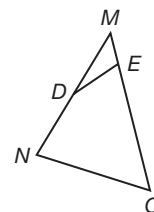
- a. 1.67; 12.6
- b.  $(-5, 5)$
- c. The orthocenter is located on the vertex of the right angle.
- d. 2.4 in., 4.6 in., 3.0 in.

## Practice 32

1.  $\left(\frac{180^\circ}{360^\circ}\right)\pi r^2 = \frac{1}{2}\pi r^2$
2. trapezoid only
3.  $x = 3$
4. As the list progresses, the number of sides of the polygon described in each term increases by one. Therefore, the next item in the list would be an octagon.
5. midpoint
6.
  - a. hexagon
  - b. irregular
  - c. concave; The diagonal between the leftmost points lies outside the polygon.

7.
  - a. hypothesis:  $\triangle MNO$  is an acute triangle,  $D$  lies on  $\overline{MN}$ , and  $E$  lies on  $\overline{MO}$ ; conclusion:  $\triangle MDE$  is an acute triangle.

- b. Sample:



8.

Statements	Reasons
1. $\overline{SR} \cong \overline{UT}$	1. Given
2. $\overline{SO} \cong \overline{UO}$	2. Radii of the same circle are congruent.
3. $\overline{RO} \cong \overline{TO}$	3. Radii of the same circle are congruent.
4. $\triangle SRO \cong \triangle UTO$	4. SSS Theorem
5. $\angle SRO \cong \angle UTO$	5. CPCTC
6. $m\angle SRO = m\angle UTO$	6. Definition of congruent angles

9. 48

10. 36

11. SAS

12.

Statements	Reasons
1. $m\angle KJM = m\angle LJM,$ $m\angle JMK = 90^\circ, m\angle JML = 90^\circ$	1. Given
2. $m\angle JMK = m\angle JML$	2. Right angles are congruent.
3. $JM = JM$	3. Reflexive Property of Equality
4. $\triangle KJM = \triangle LJM$	4. ASA Theorem
5. $\overline{KM} \cong \overline{LM}$	5. CPCTC
6. $KM = LM$	6. Definition of congruent segments

13.  $10.5 \text{ in}^2$

14. It is given that  $\overline{AB} \cong \overline{BC}$  and  $\overline{BC} \cong \overline{DE}$ , so  $AB = BC$  and  $BC = DE$  by the definition of congruent segments. By the Transitive Property of Equality,  $AB = DE$ . Thus, by the definition of congruent segments,  $\overline{AB} \cong \overline{DE}$ .

15.

Statements	Reasons
1. $m\angle P = m\angle Q = m\angle R$	1. Given
2. $m\angle P + m\angle Q + m\angle R = 180^\circ$	2. Triangle Angle Sum Theorem
3. $m\angle P + m\angle P + m\angle P = 180^\circ$	3. Substitution Property of Equality
4. $3m\angle P = 180^\circ$	4. Simplify.
5. $\frac{3m\angle P}{3} = \frac{180^\circ}{3}$	5. Division Property of Equality
6. $m\angle P = 60^\circ$	6. Simplify.
7. $m\angle P = m\angle Q = m\angle R = 60^\circ$	7. Transitive Property of Equality

16. Beatrice's answer is incorrect, because she factored  $6^2$  instead of 6.
17. Given that  $\angle 1$  and  $\angle 2$  are complementary and  $\angle 3$  and  $\angle 4$  are complementary, by the definition of complementary angles,  $m\angle 1 + m\angle 2 = 90^\circ$  and  $m\angle 3 + m\angle 4 = 90^\circ$ . Angle 2 is congruent to  $\angle 3$  and, by the definition of congruency,  $m\angle 2 = m\angle 3$ . By substitution,  $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$ . Simplification makes  $m\angle 1 = m\angle 4$ . By the definition of congruency,  $\angle 1$  is congruent to  $\angle 4$ .

18.  $4x - 4 = 3x + 7$  Vertical Angles Theorem  
 $4x - 4 + 4 = 3x + 7 + 4$  Addition Property of Equality  
 $4x = 3x + 11$  Simplify.  
 $4x - 3x = 3x + 11 - 3x$  Subtraction Property of Equality  
 $x = 11$  Simplify.  
 $4(11) - 4$  Substitute.  
 $44 - 4$  Simplify.  
 $40^\circ$  Simplify.
19. a. hypothesis: the product of three numbers is positive;  
conclusion: all three numbers are positive.
- b. sample:  $-3, -1, 1$
20. If  $M$  is the midpoint of  $\overline{WX}$ , then  $WM = MX$ .
21. The second interior angle measures  $49^\circ$ ;  $49^\circ + 49^\circ = 98^\circ$ .
22. a. The circumference of the first gear is 0.77 the circumference of the second.
- b. 13 centimeters

23.

Statements	Reasons
1. Two parallelograms with base $b$ and heights $h_1$ and $h_2$ lie on parallel lines	1. Given
2. $h_1 = h_2$	2. Equal distance between parallel lines
3. $A_1 = bh_1$	3. Area of parallelogram 1
4. $A_2 = bh_2$	4. Area of parallelogram 2
5. $A_2 = bh_1$	5. Substitution Property of Equality
6. $A_1 = A_2$	6. Transitive Property of Equality

24. D

25.

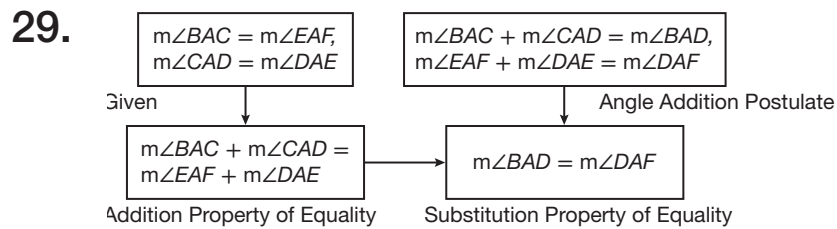
Statements	Reasons
1. $m\angle ACB = 90^\circ$ , $m\angle ABD = 90^\circ$ , $\overline{AB} \cong \overline{BD}$ , $\overline{AC} \cong \overline{BC}$	1. Given
2. $m\angle BAC + m\angle ABC = 90^\circ$	2. Acute angles in a right triangle are complementary.
3. $m\angle ABC + m\angle DBC = 90^\circ$	3. Definition of complementary angles
4. $m\angle BAC + m\angle ABC = m\angle ABC + m\angle DBC$	4. Substitution Property of Equality
5. $m\angle BAC + m\angle ABC - m\angle ABC = m\angle ABC + m\angle DBC - m\angle ABC$	5. Subtraction Property of Equality
6. $m\angle BAC = m\angle DBC$	6. Simplify.
7. $\triangle ABC \cong \triangle BDC$	7. SAS Theorem

26.

Statement	Contrapositive
If $p$ , then $q$	If $\sim q$ , then $\sim p$
If $\sim p$ , then $q$	If $\sim q$ , then $p$
If $p$ , then $\sim q$	If $q$ , then $\sim p$
If $\sim p$ , then $\sim q$	If $q$ , then $p$

27.  $m\angle WVY = m\angle WXY$  or  $m\angle WYV = m\angle WYX$

28.  $30^\circ$



30.  $p$  and  $\sim q$ ; See student work.