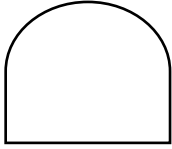


LESSON  
1.6**Practice A**

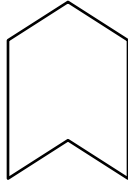
For use with pages 42–47

Tell whether the figure is a polygon. If it is not, *explain why*. If it is a polygon, tell whether it is *convex* or *concave*.

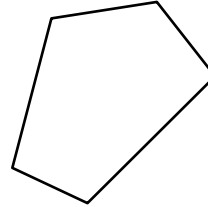
1.



2.

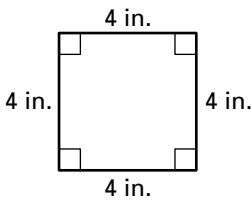


3.

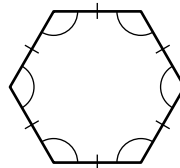


Classify the polygon by the number of sides. Tell which terms apply to the polygon: *equilateral*, *equiangular*, *regular*, or *not regular*. Explain your reasoning.

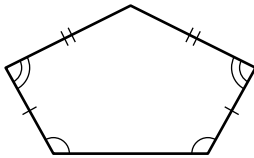
4.



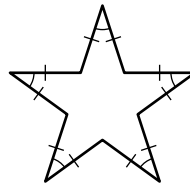
5.



6.



7.



8. The lengths (in meters) of two sides of a regular triangle are represented by the expressions  $3x - 5$  and  $x + 9$ . Find the length of a side of the triangle.
9. The expressions  $5x + 13$  and  $10x - 7$  represent the lengths (in inches) of two sides of an equilateral octagon. Find the length of a side of the octagon.
10. The expressions  $7x + 34$  and  $11x - 14$  represent the lengths (in feet) of two sides of a regular hexagon. Find the length of a side of the hexagon.

**Draw a figure that fits the description.**

11. A hexagon that is not regular
12. A convex pentagon
13. A quadrilateral that is equilateral but not equiangular
14. A quadrilateral that is equiangular but not equilateral

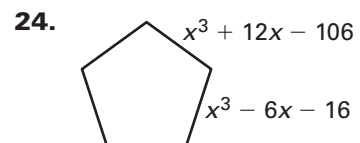
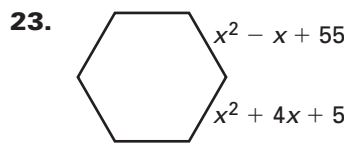
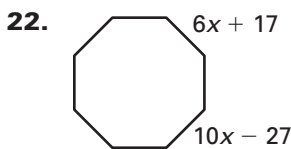
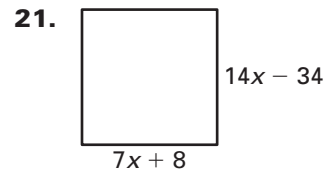
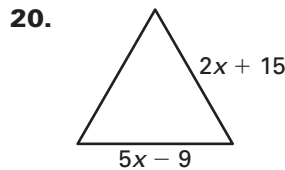
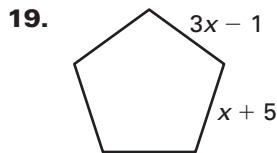
**LESSON**  
**1.6**

**Practice A** *continued*  
*For use with pages 42–47*

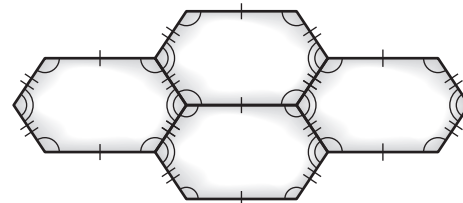
Tell whether the statement is *always, sometimes, or never true*.

- 15. A convex polygon is regular.
- 16. A regular pentagon is equilateral.
- 17. A regular heptagon is concave.
- 18. A square is convex.

Each figure is a regular polygon. Expressions are given for two side lengths. Find the value of  $x$ .

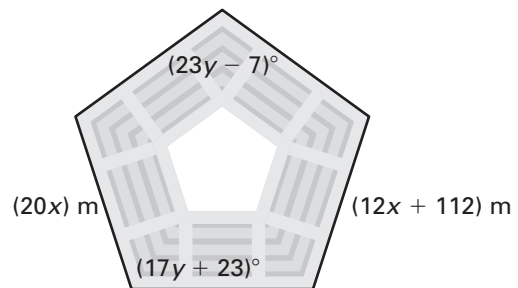


25. **Stained Glass Window** The diagram at the right shows the design used for a stained glass window. Use the diagram to answer the following.



- a. Classify the type of polygon used to create the design.
- b. Are the polygons convex or concave?
- c. Are the polygons regular or not regular? *Explain* your reasoning.

26. **The Pentagon** The figure at the right shows an outline of the Pentagon building near Washington D.C. The building is a regular pentagon. Use the diagram to answer the following.



- a. Find the length of one side of the Pentagon.
- b. Find the perimeter of the Pentagon.
- c. Find the value of the interior angles.

## Lesson 1.5, continued

would make the sum of the two angle measures equal  $180^\circ$ . **28.**  $m\angle A = 20^\circ, m\angle B = 70^\circ$

**29.**  $m\angle A = 83^\circ, m\angle B = 7^\circ$  **30.**  $m\angle A = 61^\circ, m\angle B = 29^\circ$  **31.**  $m\angle A = 43.5^\circ, m\angle B = 46.5^\circ$

**32.**  $m\angle A = 103^\circ, m\angle B = 77^\circ$  **33.**  $m\angle A = 24^\circ, m\angle B = 156^\circ$  **34.**  $m\angle A = 67.5^\circ, m\angle B = 112.5^\circ$

**35.**  $m\angle A = 141^\circ, m\angle B = 39^\circ$

**36.** supplementary **37.** supplementary

**38.** complementary

**39.** *Sample answer:*  $\angle 3$  and  $\angle 4, \angle 7$  and  $\angle 10$

**40.** *Sample answer:*  $\angle 2$  and  $\angle 4, \angle 3$  and  $\angle 5$

**41.** *Sample answer:*  $\angle 2$  and  $\angle 3, \angle 4$  and  $\angle 5$

**42.** *Sample answer:*  $\angle 7$  and  $\angle 8, \angle 9$  and  $\angle 10$

**43.** 10; 20; 20

### Review for Mastery

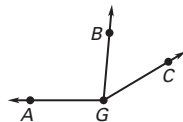
**1.**  $\angle DBC$  and  $\angle MNO, \angle ABD$  and  $\angle MNO, \angle ABD$  and  $\angle DBC$  **2.**  $35^\circ$  **3.**  $100^\circ$  **4.** linear pairs:  $\angle 3$  and  $\angle 4, \angle 4$  and  $\angle 5$ ; vertical angles:  $\angle 3$  and  $\angle 5$  **5.**  $90^\circ, 90^\circ, 90^\circ$  **6.**  $30^\circ, 120^\circ, 60^\circ$

**7.**  $45^\circ, 135^\circ, 45^\circ$

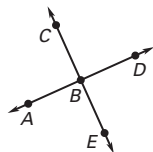
### Challenge Practice

**1.** When  $x = 4.5, m\angle A = 75.5^\circ$  and  $m\angle B = 14.5^\circ$ . When  $x = -5, m\angle A = 85^\circ$  and  $m\angle B = 5^\circ$ . **2.**  $x = 5, m\angle A = 85^\circ, m\angle B = 95^\circ$

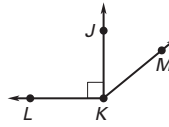
**3.**  $122^\circ, 58^\circ$  **4.**  $74^\circ, 16^\circ$  **5.** False. *Sample answer:* In the figure,  $\angle AGB$  and  $\angle BGC$  are adjacent but do not form a linear pair. Two adjacent angles are a linear pair only if their noncommon sides are opposite rays.



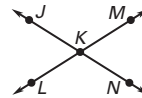
**6.** True. *Sample answer:* In the figure,  $\angle ABC$  and  $\angle CBD$  are a linear pair with  $\overrightarrow{BA}$  and  $\overrightarrow{BD}$  as opposite rays. Also  $\angle CBD$  and  $\angle DBE$  are a linear pair with  $\overrightarrow{BC}$  and  $\overrightarrow{BE}$  as opposite rays. The sides of  $\angle ABC$  and  $\angle DBE$  are two pairs of opposite rays, so the angles are vertical angles.



**7.** False. *Sample answer:* In the figure,  $\angle JKL$  and  $\angle JKM$  are not a linear pair because their noncommon sides are not opposite rays.



**8.** False. *Sample answer:* In the figure,  $\angle JKL$  and  $\angle MKN$  are vertical angles. Because  $\overrightarrow{KL}$  and  $\overrightarrow{KN}$  are not opposite rays,  $\angle NKL$  is not a straight angle.



**9.**  $x = \frac{160}{3}, y = \frac{85}{3}$  **10.**  $x = 15, y = 90$

**11.**  $x = 24, y = 12$  **12.**  $x = 10, y = 15$

## Lesson 1.6

### Practice Level A

**1.** No; one side is not a segment.

**2.** Yes; concave **3.** Yes; convex.

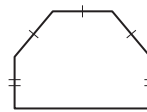
**4.** Quadrilateral; regular, equilateral, equiangular; the figure has congruent sides and congruent angles. **5.** Hexagon; regular, equilateral, equiangular; the figure has congruent sides and congruent angles. **6.** Pentagon; not regular; all sides are not equal and all angles are not equal.

**7.** Decagon; equilateral, not regular; the figure is not convex so it is not regular.

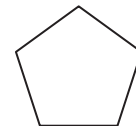
**8.** 16 m

**9.** 33 in. **10.** 118 ft

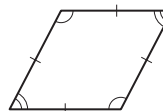
**11.** *Sample answer:*



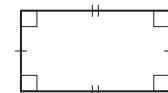
**12.** *Sample answer:*



**13.** *Sample answer:*



**14.** *Sample answer:*



**15.** sometimes **16.** always **17.** never

**18.** always **19.** 3 **20.** 8 **21.** 6

**22.** 11 **23.** 10 **24.** 5

**25.** a. Hexagon b. Convex c. Not regular; the polygons are not equilateral or equiangular.

**26.** a. 280 m b. 1400 m c.  $108^\circ$