23-C

#2-11,23,29,35,36

23-D

#12,13,19-21,25,26,39-42

GUIDED PRACTICE

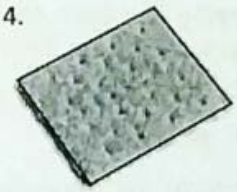
1. **Vocabulary** Explain why an equilateral polygon is not necessarily a *regular* polygon.

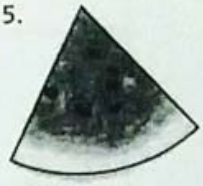
SEE EXAMPLE 1 p. 382

Tell whether each outlined shape is a polygon. If it is a polygon, name it by the number of its sides.

2. 

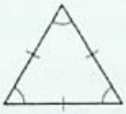
3. 

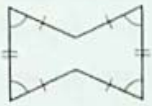
4. 

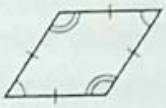
5. 

SEE EXAMPLE 2 p. 383

Tell whether each polygon is regular or irregular. Tell whether it is concave or convex.

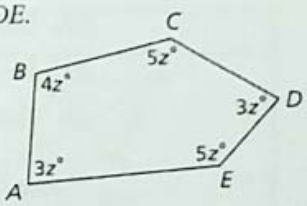
6. 

7. 

8. 

SEE EXAMPLE 3 p. 384

9. Find the measure of each interior angle of pentagon *ABCDE*.

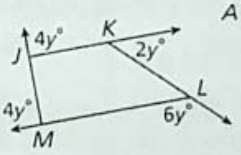


10. Find the measure of each interior angle of a regular dodecagon.

11. Find the sum of the interior angle measures of a convex 20-gon.

SEE EXAMPLE 4 p. 384

12. Find the value of y in polygon $JKLM$.



13. Find the measure of each exterior angle of a regular pentagon.

SEE EXAMPLE 5 p. 385

Safety Use the photograph of the traffic sign for Exercises 14 and 15.

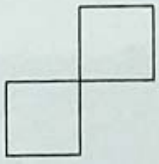
14. Name the polygon by the number of its sides.

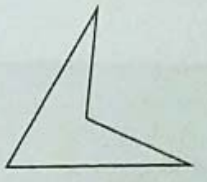
15. In the polygon, $\angle P$, $\angle R$, and $\angle T$ are right angles, and $\angle Q \cong \angle S$. What are $m\angle Q$ and $m\angle S$?

PRACTICE AND PROBLEM SOLVING

Tell whether each figure is a polygon. If it is a polygon, name it by the number of its sides.

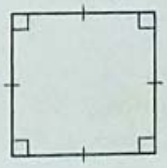
16. 

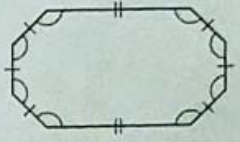
17. 

18. 

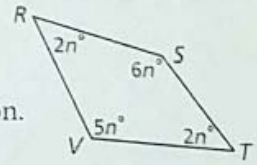
Tell whether each polygon is regular or irregular. Tell whether it is concave or convex.

19. 

20. 

21. 

22. Find the measure of each interior angle of quadrilateral $RSTV$.

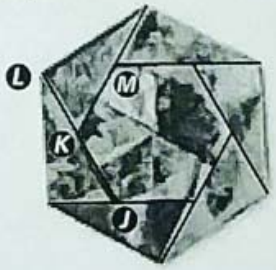


23. Find the measure of each interior angle of a regular 18-gon.

24. Find the sum of the interior angle measures of a convex heptagon.

25. Find the measure of each exterior angle of a regular nonagon.

26. A pentagon has exterior angle measures of $5a°$, $4a°$, $10a°$, $3a°$, and $8a°$. Find the value of a.



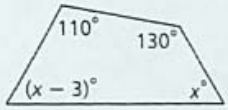
Crafts The folds on the lid of the gift box form a regular hexagon. Find each measure.

27. $m\angle JKM$

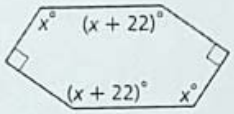
28. $m\angle MKL$

Algebra Find the value of x in each figure.

29.



30.



31.

Find the number of sides a regular polygon must have to meet each condition.

32. Each interior angle measure equals each exterior angle measure.

33. Each interior angle measure is four times the measure of each exterior angle.

34. Each exterior angle measure is one eighth the measure of each interior angle.

Name the convex polygon whose interior angle measures have each given sum.

35. 540° 36. 900° 37. 1800° 38. 2520°

Multi-Step An exterior angle measure of a regular polygon is given. Find the number of its sides and the measure of each interior angle.

39. 120° 40. 72° 41. 36° 42. 24°

43. ///ERROR ANALYSIS/// Which conclusion is incorrect? Explain the error.

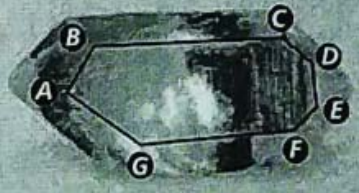
A. The figure is a polygon.

B. The figure is not a polygon.

44. **Estimation** Graph the polygon formed by the points $A(-2, -6)$, $B(-4, -1)$, $C(-1, 2)$, $D(4, 0)$, and $E(3, -5)$. Estimate the measure of each interior angle. Make a conjecture about whether the polygon is equiangular. Now measure each interior angle with a protractor. Was your conjecture correct?

MULTI-STEP TEST PREP

45. This problem will prepare you for the Multi-Step Test Prep on page 406.
In this quartz crystal, $m\angle A = 95°$, $m\angle B = 125°$, $m\angle E = m\angle D = 130°$, and $\angle C \cong \angle F \cong \angle G$.



a. Name polygon $ABCDEFG$ by the number of sides.

b. What is the sum of the interior angle measures of $ABCDEFG$?

c. Find $m\angle F$.