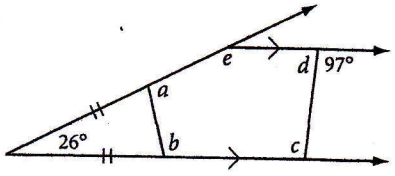
Lesson 5.1 • Polygon Sum Conjecture

Name _____ Period _____ Date _____

In Exercises 1–4, find each lettered angle measure.

1.



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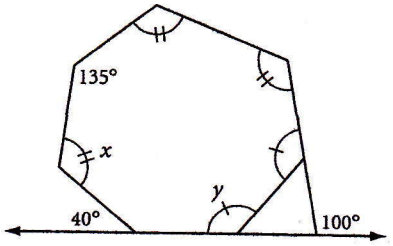

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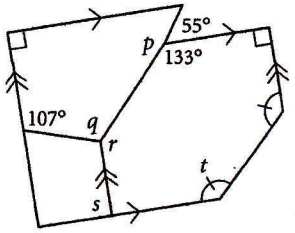

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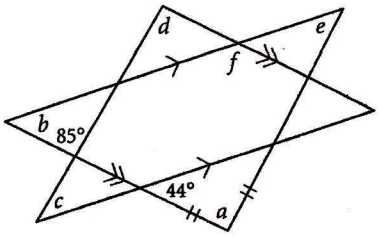


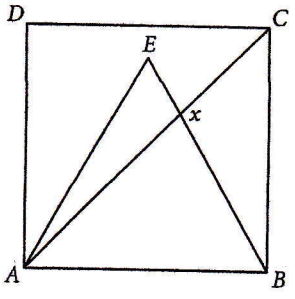
5. Use a protractor to draw pentagon *ABCDE* with $m\angle A = 85°$, $m\angle B = 125°$, $m\angle C = 110°$, and $m\angle D = 70°$. What is $m\angle E$? Measure it, and check your work by calculating.

6. One exterior angle of a regular polygon measures 10°. What is the measure of each interior angle? How many sides does the polygon have?

7. The sum of the measures of the interior angles of a regular polygon is 2340°. How many sides does the polygon have?

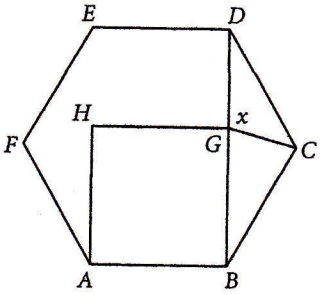
8. *ABCD* is a square. *ABE* is an equilateral triangle.

$x =$ _____



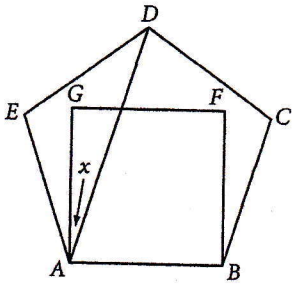
9. *ABCDEF* is a regular hexagon. *ABGH* is a square.

$x =$ _____

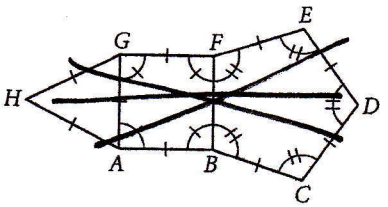


10. *ABCDE* is a regular pentagon. *ABFG* is a square.

$x =$ _____



11. ~~Find $m\angle HFD$.~~

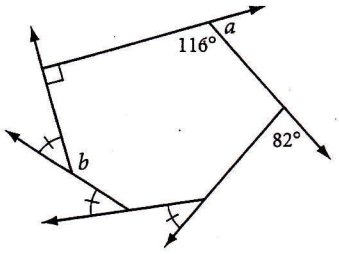


Lesson 5.2 • Exterior Angles of a Polygon

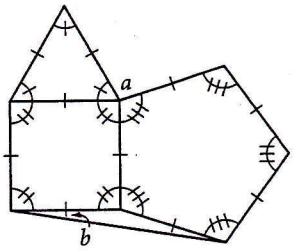
Name _____ Period _____ Date _____

In Exercises 1–3, find each lettered angle measure.

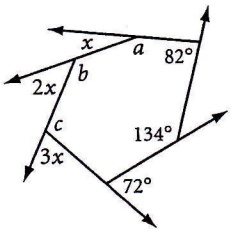
1. $a =$ _____, $b =$ _____



2. $a =$ _____, $b =$ _____



3. $a =$ _____, $b =$ _____, $c =$ _____



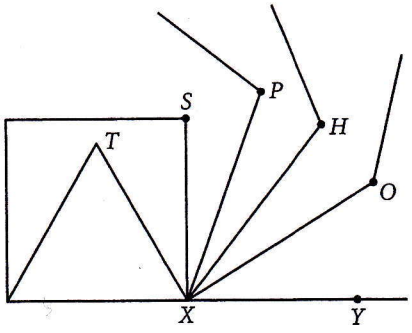
4. How many sides does a regular polygon have if each exterior angle measures 30°?

5. How many sides does a polygon have if the sum of the measures of the interior angles is 3960°?

6. If the sum of the measures of the interior angles of a polygon equals the sum of the measures of its exterior angles, how many sides does it have?

7. If the sum of the measures of the interior angles of a polygon is twice the sum of its exterior angles, how many sides does it have?

8. $\overline{XT}$ is the side of an equilateral triangle. $\overline{XS}$ is the side of a square. $\overline{XP}$ is the side of a regular pentagon. $\overline{XH}$ is the side of a regular hexagon. $\overline{XO}$ is the side of a regular octagon.



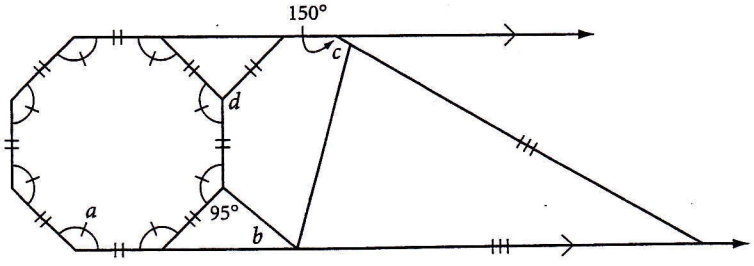
$m\angle TXS =$ _____ $m\angle SXP =$ _____

$m\angle PXH =$ _____ $m\angle HXO =$ _____

$m\angle OXY =$ _____

9. If the number of sides of a regular polygon doubles, what happens to the measure of each exterior angle?

10. Find each lettered angle measure.



~~**11.** Construct an equiangular quadrilateral that is not regular.~~

~~**12.** Use a protractor and a ruler to draw a regular polygon.~~