Geometry
Unit: Quadrilaterals and Polygons

Flashcard: Interior Angles in a Polygon

Directions: Answer the following questions.

1. Find the sum of the measures of the interior angles or a convex 16-gon.

2. Find the sum of the measures of the interior angles of a convex hexagon.

3. Find the sum of the measures of the interior angles of the polygon with five sides.

4. If the sum of the measures of the interior angles of a convex polygon is 3240^o, how many sides does the polygon have?

5. Find the measure of each interior angle of a regular heptagon.

6. If five angles of a hexagon measure 110^o, 127^o, 131^o, 125^o and 118^o , find the measure of the sixth angle.

7. Find the value of x in a four sided figure with two right angles, one angle measuring x and the fourth angle measuring 3x.

8. Find the measure of angle E. Angle A measures 4x plus 5, angle B measures 7x, angle C measures 6x plus 10, angle D measures 5x minus 5 and angle E measures 4x plus 10.

Answers:

1. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(16 – 2)$
$180(14)$
2520^o

2. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(6 – 2)$
$180(4)$
720^o

3. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(5 – 2)$
$180(3)$
540^o

4. $180(n – 2) = 3240$
$180n – 360 = 3240$
$180n = 3600$
$n = 20$

20 sides

5. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(7 – 2)$
$180(5)$
900^{o}

Measure of each interior angle:
900 divided by 7 is approximately equal to 128.57 degrees.

6. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(6 – 2)$
$180(4)$
720^{o}

$720 = 110 + 127+ 131 + 125+ 118 + x$

$720 = 611 + x$
$109^{o} = x$

7. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(4 – 2)$
$180(2)$
360^{o}

$360 = 3x + x + 90 + 90$
$360 = 4x + 180$
$180 = 4x$
$45 = x$

8. Sum of the angles in an n-sided polygon:
$180(n – 2)$

$180(5 – 2)$
$180(3)$
540^{o}

$540 = 4x + 5 + 7x+ 6x + 10 + 5x – 5 + 4x + 10$

$540 = 26x + 20$
$520 = 26x$
$20 = x$

Angle E = 4x + 10
Angle E = 4(20) + 10 = 90^{o}