

Polygon & Angle Pairs

Geometry · Grade 7

◆ Medium · 10 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

1. A quadrilateral has angles 85° , 110° , and 95° .
Find the fourth angle.

Answer: _____

2. A pentagon has four angles: 90° , 110° , 120° , and 100° . Find the fifth angle.

Answer: _____

3. A triangle has two angles in ratio 3:2. The third angle is 60° . Find all angles.

Answer: _____

4. Find the sum of interior angles of a polygon with 12 sides.

Answer: _____

5. Each interior angle of a regular decagon (10 sides) is ____°.

Answer: _____

6. A quadrilateral has three equal angles and one angle of 60° . Find each equal angle.

Answer: _____

7. A pentagon has angles 100° , 110° , 90° , 130° , and x° . Find x .

Answer: _____

8. A regular polygon has an interior angle sum of 900° . How many sides does it have?

Answer: _____

9. A triangle has angles x , $2x$, and $3x$. Find x .

Answer: _____

10. Two angles of a triangle are 45° and 75° . Find the third.

Answer: _____

Answer Key

Polygon & Angle Pairs — Medium

1. **70°**

Sum of angles in a quadrilateral = 360°. $360^\circ - 85^\circ - 110^\circ - 95^\circ = 70^\circ$.

2. **120°**

Sum for pentagon = 540°. $540^\circ - 90^\circ - 110^\circ - 120^\circ - 100^\circ = 120^\circ$.

3. **72°, 48°, 60°**

Remaining angles = $180^\circ - 60^\circ = 120^\circ$. $3k + 2k = 5k = 120^\circ$. $k = 24^\circ$. Angles: 72°, 48°, 60°.

4. **1,800°**

$(n-2) \times 180^\circ = 10 \times 180^\circ = 1,800^\circ$.

5. **144°**

Sum = $(10-2) \times 180^\circ = 1,440^\circ$. $1,440 \div 10 = 144^\circ$.

6. **100°**

Sum = 360°. Three equal = $360^\circ - 60^\circ = 300^\circ$. $300/3 = 100^\circ$.

7. **110°**

Sum = 540°. $540 - (100 + 110 + 90 + 130) = 540 - 430 = 110^\circ$.

8. **7 sides**

$(n-2) \times 180 = 900$. $n-2=5$. $n=7$.

9. **30°**

$x + 2x + 3x = 6x = 180^\circ$. $x = 30^\circ$.

10. **60°**

$180^\circ - 45^\circ - 75^\circ = 60^\circ$.