

Regular polygon - answers

Worked answers / Keep separate from the student sheet.

1. A regular 4-gon has side length 20 mm. Find its interior angle and circumradius.

Angle = $180 - 360/4 = 90$ degrees. $R = 20/[2\sin(\pi/4)] = 14.14214$ mm.

2. A regular 5-gon has side length 20 mm. Find its interior angle and circumradius.

Angle = $180 - 360/5 = 108$ degrees. $R = 20/[2\sin(\pi/5)] = 17.01302$ mm.

3. A regular 6-gon has side length 20 mm. Find its interior angle and circumradius.

Angle = $180 - 360/6 = 120$ degrees. $R = 20/[2\sin(\pi/6)] = 20$ mm.

4. A regular 7-gon has side length 20 mm. Find its interior angle and circumradius.

Angle = $180 - 360/7 = 128.57143$ degrees. $R = 20/[2\sin(\pi/7)] = 23.04765$ mm.

5. A regular 8-gon has side length 20 mm. Find its interior angle and circumradius.

Angle = $180 - 360/8 = 135$ degrees. $R = 20/[2\sin(\pi/8)] = 26.13126$ mm.

6. A regular 9-gon has side length 20 mm. Find its interior angle and circumradius.

Angle = $180 - 360/9 = 140$ degrees. $R = 20/[2\sin(\pi/9)] = 29.23804$ mm.