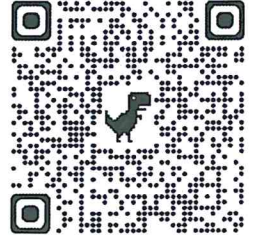-min rotation = $\frac{360}{n}$

-any multiple of that also
maps it onto itself

5: Pentagon
6: hexagon
8: decagon
9: nonagon
10: decagon

Name Schlansky
Mr. Schlansky

Date _____
Geometry

Regular Polygon Rotations

1. What is the minimum number of degrees a regular <u>decagon</u> must be rotated to be mapped onto itself?

$\frac{10}{}$

$\frac{360}{10} = \boxed{36}$

2. What is the minimum number of degrees a regular <u>hexagon</u> must be rotated to be carried onto itself?

6

$\frac{360}{6} = \boxed{60°}$

3. If a regular <u>pentagon</u> is rotated clockwise around its center, the minimum number of degrees it must be rotated to map onto itself is

5

1) 54°
2) 72°
3) 108°
4) 360°

$\frac{360}{5} = 72°$

4. Which regular polygon has a minimum rotation of 45° to carry the polygon onto itself?

1) octagon 8   3) hexagon 6
2) nonagon 9   4) pentagon 5

1) $\frac{360}{8} = 45$ 3) $\frac{360}{6} = 60°$

2) $\frac{360}{9} = 40$ 4) $\frac{360}{5} = 72°$
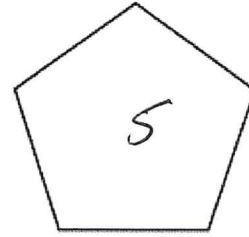
5. Which regular polygon has a minimum rotation of 40° to carry the polygon onto itself?

1) nonagon $\frac{360}{9} = 40°$ 3) hexagon $\frac{360}{6} = 60°$
2) decagon $\frac{360}{10} = 36°$ 4) pentagon $\frac{360}{5} = 72°$

40

6. The regular polygon below is rotated about its center. Which angle of rotation will carry the figure onto itself?
1) 60°
2) 108°
3) 216° 72(3)
4) 540°

$\frac{360}{5}=72$

5

7. Which rotation would map a regular hexagon onto itself? 6
1) 45°   3) 240° 60(4)
2) 150°   4) 315°

$\frac{360}{6}=60°$

8. Which rotation about its center will carry a regular decagon onto itself? 10
1) 54°
2) 162°
3) 198°
4) 252° 36(7)

$\frac{360}{10}=36$

9. Which rotation about its center will carry a regular octagon onto itself?
1) 80°
2) 315° 45(7)
3) 280°
4) 120°

$\frac{360}{8}=45°$

10. Which of the following rotations would not map a regular pentagon onto itself?
1) 144 72(2)   3) 216 72(3)
2) 120   4) 720 72(10)

$\frac{360}{5}=72$ 5

11. Which of the following rotations would not map an equilateral triangle onto itself? 3
1) 120°   3) 80°
2) 240° 120(2)   4) 480° 120(4)

$\frac{360}{3}=120$

12. Which figure will *not* carry onto itself after a 120-degree rotation about its center?
1) equilateral triangle $\frac{360}{3}=120$ ✓   3) regular octagon $\frac{360}{8}=45$
2) regular hexagon $\frac{360}{6}=60$ 60(2)=120 ✓   4) regular nonagon $\frac{360}{9}=40$ 40(3)=120 ✓

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