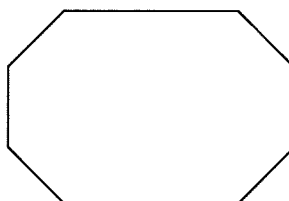


# Polygon Quiz

Name KEY

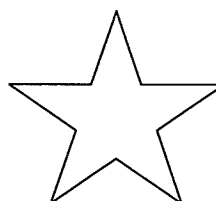
1. Name and classify the following polygon.

Convex Octagon



2. Name and classify the following polygon.

Concave Decagon



3. Draw an equilateral triangle with a radius of 3 cm. Find its side length and apothem.

$$\cos 60^\circ = \frac{a}{3}$$

$$3(\cos 60^\circ) = a$$

$$a = 1.5 \text{ cm}$$

$$\sin 60^\circ = \frac{x}{3}$$

$$3(\sin 60^\circ) = x$$

$$x = 2.60$$

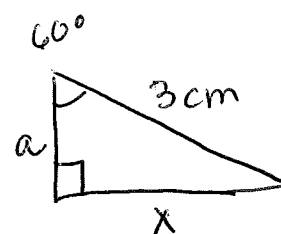
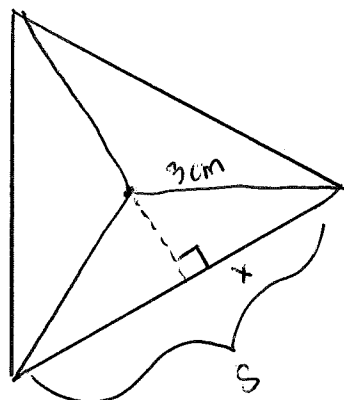
$$2x = \text{side}$$

$$5.2 \text{ side}$$

Central  $\angle = 120^\circ$

Side = 5.2 cm

Apothem = 1.5 cm

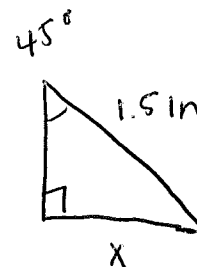
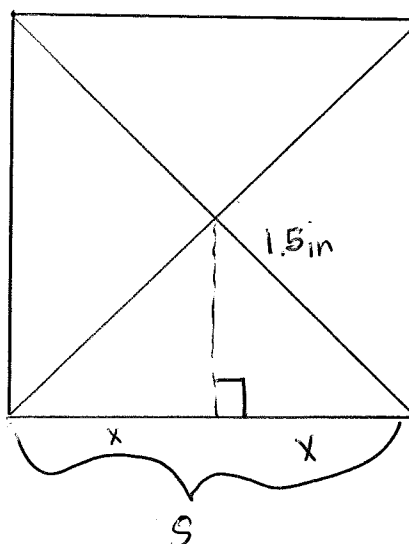


4. Draw a square with a radius of 1.5 inches. Find its side length.

$$\text{Side} = 2(x)$$

$$\text{side} = 2(1.06 \text{ in})$$

2.12 inches



$$\sin 45^\circ = \frac{x}{1.5 \text{ in}}$$

$$1.5(\sin 45^\circ) = x$$

$$1.06 \text{ in} = x$$

6

5. Given a regular hexagon with a radius of 10 cm, find its central angle, apothem, and side length.

$$\text{Central } \angle = \frac{360^\circ}{6} = 60^\circ$$

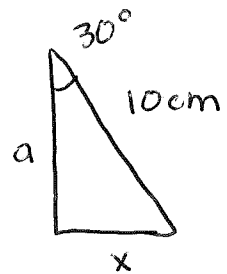
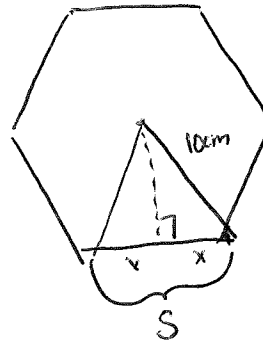
$$\text{Apothem} = 8.66 \text{ cm}$$

$$\text{Side} = 10 \text{ cm}$$

$$\cos 30^\circ = \frac{a}{10 \text{ cm}}$$

$$10 \text{ cm} (\cos 30^\circ) = a$$

$$8.66^{\text{cm}} = a$$



$$\sin 30^\circ = \frac{x}{10 \text{ cm}}$$

$$10 \text{ cm} (\sin 30^\circ) = x$$

$$5 = x$$

$$\text{Side} = 2x$$

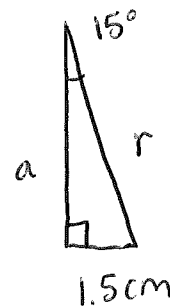
$$\text{Side} = 10 \text{ cm}$$

6. Given a regular dodecagon with a side of 3 cm, find its central angle, apothem, and radius.

$$\text{Central } \angle = 30^\circ$$

$$\text{Apothem} = 5.60 \text{ cm}$$

$$\text{Radius} = 5.8 \text{ cm}$$



$$\tan 15^\circ = \frac{1.5 \text{ cm}}{a}$$

$$a = 5.6 \text{ cm}$$

$$\sin 15^\circ = \frac{1.5 \text{ cm}}{r}$$

$$r = 5.8 \text{ cm}$$