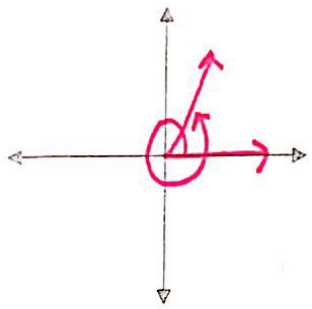
WS12 – REVIEW – Angles and Their Measures Name _____ Per____

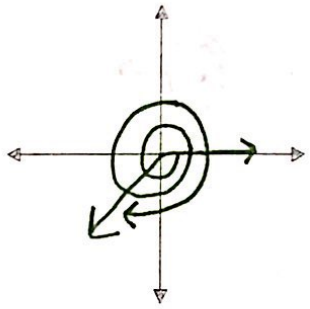
Sketch each angle in standard position.

1. 425°

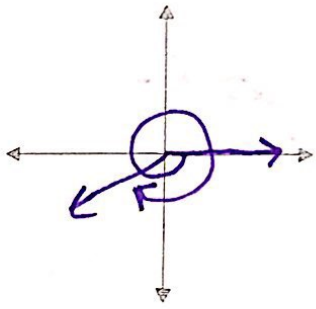


$425 - 360 = 65$

2. $-\frac{19\pi}{4}$



3. -520°



$-520 + 360 = -160$

Conversions: Write the equivalent quantity in the form indicated.

4. Write in DMS form

$\theta = 420.3175°$

$420° 19' 3''$

5. Write as a degree in decimal form

$\theta = 27°39'15''$

$27.65416\overline{6}°$

6. Convert to radians

$\theta = 125°$

$125 \cdot \frac{\pi}{180} = \frac{25\pi}{36}$

7. Convert to Degrees

$\theta = \frac{25\pi}{12}$

$\frac{25\pi}{12} \cdot \frac{180}{\pi} = 375°$

Problems.

8. Given a circle with radius 15 cm, find the length of the arc intercepted by a central angle of $\frac{7\pi}{4}$ radians.

$S = r\theta$

$S = 15\left(\frac{7\pi}{4}\right)$

$S = 82.47\text{ cm}$ OR $\frac{105\pi}{4}\text{ cm}$

9. Given a circle with diameter 10 inches, find the area of the sector created by a central angle of 140°.

$r = 5\text{in}$

$140 \cdot \frac{\pi}{180} = \frac{7\pi}{9}$

$A = \frac{1}{2} r^2 \theta$

$A = \frac{1}{2}(5)^2\left(\frac{7\pi}{9}\right)$

$A = 30.54\text{ in}^2$

10. A Ferris wheel rotates at a rate of 7 revolutions per minute. If the cars on the ride are 40 feet from the center, and calculate each of the following.

(a) The number of degrees rotated by a person during a 5 minute ride.

$\frac{7\text{ rev}}{1\text{ min}} \cdot \frac{360°}{1\text{ rev}} = 2520°(5\text{ min}) = 12600°$

(b) The total distance traveled by a person during a 5 minute ride.

$\frac{7\text{ rev}}{1\text{ min}} \cdot \frac{2\pi(40\text{ ft})}{1\text{ rev}} = 1759.29(5\text{ min}) = 8796.5\text{ ft}$

(c) The angular speed of the ride (in degrees per second)?

$\frac{7\text{ rev}}{1\text{ min}} \cdot \frac{360°}{1\text{ rev}} \cdot \frac{1\text{ min}}{60\text{ sec}} = 42°/\text{sec}$

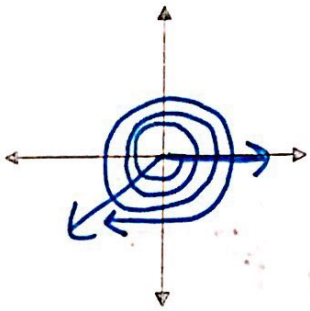
(d) The linear speed of the ride (in feet per second)?

$\frac{7\text{ rev}}{1\text{ min}} \cdot \frac{2\pi(40\text{ ft})}{1\text{ rev}} \cdot \frac{1\text{ min}}{60\text{ sec}} = 29.3\text{ ft/sec}$

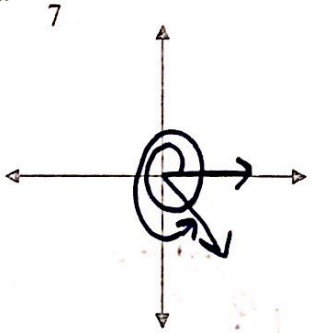
WS12 – REVIEW – Angles and Their Measures Name _____ Per____

Sketch each angle in standard position.

1. -1217^0



2. $\frac{26\pi}{7}$



Conversions: Write the equivalent quantity in the form indicated.

3. Write in DMS form

$\theta = 84.9823°$

$84°58'56.28"$

4. Write as a degree in decimal form

$\theta = 36°13'41"$

$36.228°$

5. Convert to radians

$\theta = 510°$

$510 \cdot \frac{\pi}{180} = \frac{17\pi}{6}$

6. Convert to Degrees

$\theta = \frac{127\pi}{15}$

$\frac{127\pi}{15} \cdot \frac{180}{\pi} = 1524°$

7. Given a circle with an area of 256π in^2, find the length of the arc intercepted by a central angle of 85°.

$\frac{\pi}{180} = \frac{17\pi}{36}$

$A = \pi r^2$

$256\pi = \pi r^2$

$\sqrt{256} = \sqrt{r^2}$

$16 = r$

$S = r\theta$

$S = 16\left(\frac{17\pi}{36}\right)$

$S = 23.74$ in

8. Given a circle with a circumference of 126 cm, find the area of the sector created by a central angle of $\frac{17\pi}{9}$.

$C = 2\pi r$

$126 = 2\pi r$

$20.1 = r$

$A = \frac{1}{2}(20.1)^2\left(\frac{17\pi}{9}\right)$

$A = 1193.18\ cm^2$

9. The tilt-a-world rotates at rate of 175 revolutions every 5 minutes. If you stand on the edge of the ride which is 68 feet from the center; calculate each of the following.

(a) The angular speed of the ride (in degrees per second)?

(b) The linear speed of the ride (in feet per second)?

(a) $\frac{175\ rev}{5\ min} \cdot \frac{360\ deg}{1\ rev} \cdot \frac{1\ min}{60\ sec} = 210°/sec$

(b) $\frac{175\ rev}{5\ min} \cdot \frac{2\pi(68\ ft)}{1\ rev} \cdot \frac{1\ min}{60\ sec} = 249.23\ ft/sec$