

شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية



شرح الدرس الأول Measure Angle and Angles من الوحدة التاسعة

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تاريخ نشر الملف على موقع المناهج: 31-10-2023 19:34:33 | اسم المدرس: محمد زياد

التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم



روابط مواد الصف الحادي عشر المتقدم على تلغرام

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المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الأول

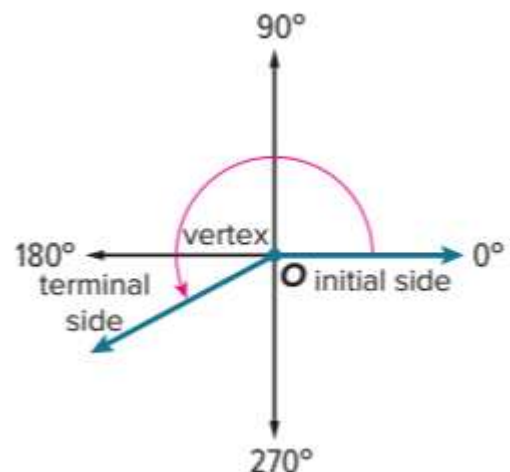
ورقة عمل الدرس الثاني [Using statistical experiments من](#)
الوحدة الثامنة متبوعة بالحل

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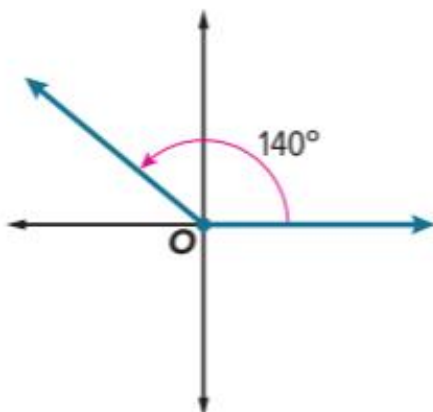
Learn Angles in Standard Position

An angle on the coordinate plane is in **standard position** if the vertex is at the origin and one ray is on the positive x-axis. The **initial side** of the angle is the ray that is fixed on the x-axis. The **terminal side** is the ray that rotates about the center.



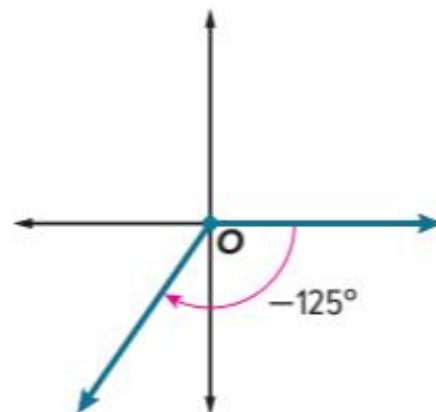
Positive Angle Measures

If the measure of an angle is positive, the terminal side is rotated counterclockwise.



Negative Angle Measures

If the measure of an angle is negative, the terminal side is rotated clockwise.



Coterminal angles:

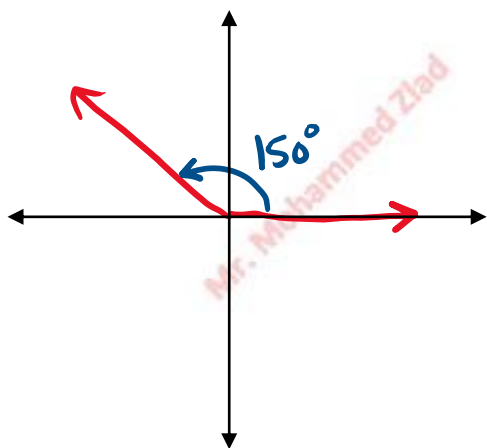
Angles in standard position that have the same terminal side are coterminal angles. Coterminal angles can have different measures.

$$\theta^\circ - 360^\circ n \quad \text{and} \quad \theta^\circ + 360^\circ n \quad (\text{Coterminal to angle } \theta^\circ)$$

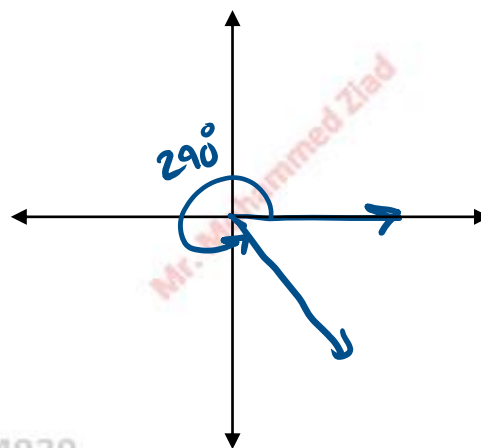
Add or subtract any multiple of 360° to find another coterminal angle. An infinite number of coterminal angles can be found for any angle.

Ex1: Draw an angle with the given measure in standard position.

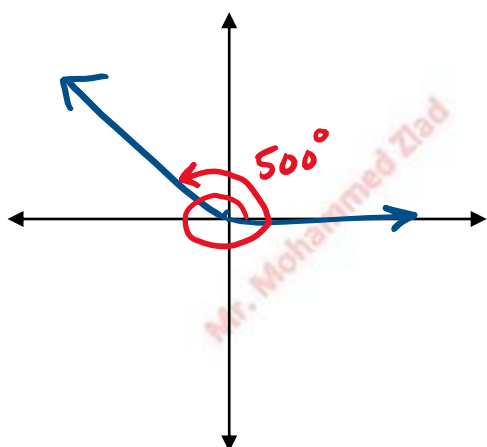
a) 150°



b) 290°

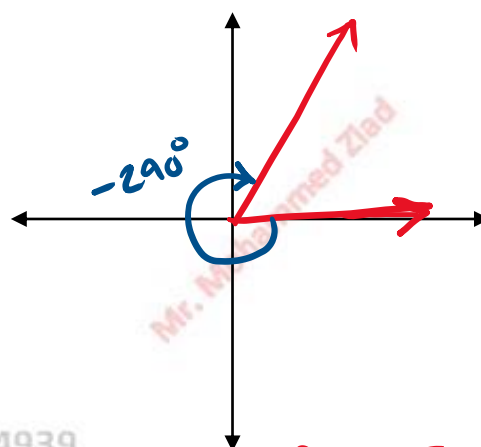


c) 500°



$$500 - 360 = 140$$

d) -290°



$$-290 + 360 = 70$$

Ex2: Find an angle with a positive measure and an angle with a negative measure that are coterminal with each angle.

a) 205°

$$205 + 360 = 565^\circ$$

$$205 - 360 = -155^\circ$$

b) -120°

$$-120 + 360 = 240^\circ$$

$$-120 - 360 = -480^\circ$$

Key Concept • Convert Between Degrees and Radians

Degrees to Radians	Radians to Degrees
To convert a degree measure to radians, multiply the number of degrees by $\frac{\pi \text{ radians}}{180^\circ}$.	To convert a radian measure to degrees, multiply the number of radians by $\frac{180^\circ}{\pi \text{ radians}}$.

Ex3: Rewrite each degree measure in radians.

a) 205°

$$205^\circ \times \frac{\pi}{180^\circ}$$
$$= \frac{41\pi}{36}$$

b) -120°

$$-120^\circ \times \frac{\pi}{180^\circ}$$
$$= -\frac{2\pi}{3}$$

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Ex4: Rewrite each Radian measure in degrees.

a) $\frac{2\pi}{3}$

$$\frac{2\pi}{3} \times \frac{180}{\pi}$$
$$= 120^\circ$$

b) -3π

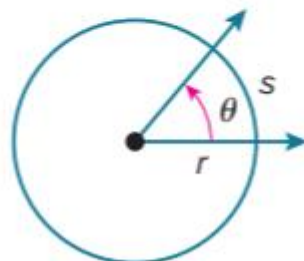
$$-3\pi \times \frac{180}{\pi}$$
$$= -540^\circ$$

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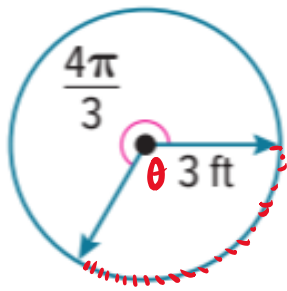
Key Concept • Arc Length

Words: For a circle with radius r and central angle θ (in radians), the arc length s equals the product of r and θ .

Symbols: $s = r\theta$



Ex5: Find the length of the minor arc. Round to the nearest tenth.



$$\theta = 2\pi - \frac{4\pi}{3} = \frac{2\pi}{3}$$

$$S = r \times \theta$$

$$= 3 \times \frac{2\pi}{3}$$

$$= 2\pi \approx 6.28 \text{ ft}$$

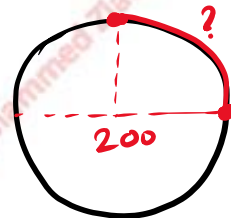
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52. TRANSPORTATION A traffic roundabout has a diameter of 200 meters. How far does an automobile travel in the roundabout if it goes one-fourth of the way around?

$$r = \frac{d}{2} = \frac{200}{2} = 100 \text{ m}$$

$$\theta = \frac{1}{4} \times \underset{\substack{\downarrow \\ \text{full revolution}}}{2\pi} = \frac{\pi}{2}$$



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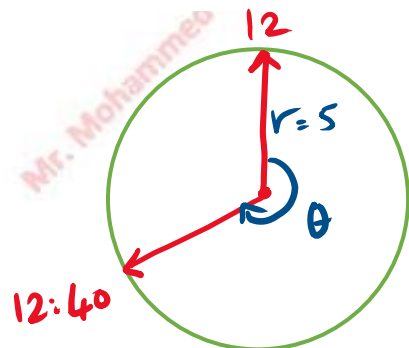
$$S = r \cdot \theta = 100 \times \frac{\pi}{2} = 50\pi \approx 157.1 \text{ m}$$

53. ANALOG CLOCKS The length of the minute hand of an analog clock is 5 inches. If the minute hand rotates from 12 noon to 12:40 P.M., then how far does its point move?

$$r = 5$$

$$\theta = \frac{40}{60} \times 2\pi$$

$$= \frac{4\pi}{3}$$



$$S = r \cdot \theta$$

$$= 5 \times \frac{4\pi}{3} \approx 20.94 \text{ inch}$$