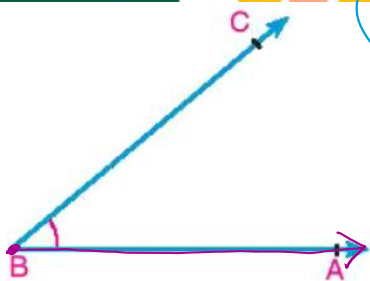


Directed Angle

Tuesday, September 9, 2025 3:00 PM



Handwritten notes on a yellow background:

- 17° , $27'$, $27''$ circled in blue.
- Labels "min." and "sec." with arrows pointing to the minutes and seconds parts.
- Word "degree" written in purple.
- Other circled numbers: 17° , 27° , 27 .

Degree measure system

You have known that the degree measure depends on dividing the circle into 360 equal arcs in length, then:

- 1- The central angle subtends one of these arcs, its measure equals one degree (1°)
- 2- Each degree is subdivided into 60 equal divisions, each division is called a minute and is denoted by ($1'$)
- 3- Each minute is subdivided into 60 equal divisions, each division is called "a second" and is denoted by ($1''$)

i.e.: $1^\circ = 60'$ and $1' = 60''$

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Handwritten calculations and diagrams:

- Boxed word "ENG".
- Diagram of a circle with points 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.
- Calculation: $\sin^{-1} 0.3 = 17.457^\circ$ (crossed out).
- Division: $17 \overline{) 37}$ with 27 as the quotient.
- Diagram showing $27 \cdot 3 = 81$ and 17 below it.
- Diagram showing $65'$ and $59''$ with arrows pointing to $0 \rightarrow 59$ and 60 .
- Diagram showing 18 and 0 with an arrow pointing to 28 .
- Diagram showing 28 and 59 with an arrow pointing to 63 .
- Diagram showing 28 and 60 with an arrow pointing to 3 .
- Final boxed result: $29 \ 00 \ 3$.

Handwritten time conversions:

- $00:00:00$
- $1: 24: 59$
- $2: 25: 00$

direction

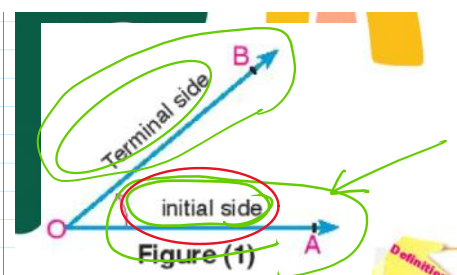
$$+ \quad -$$

$$2 - 3 = -1$$

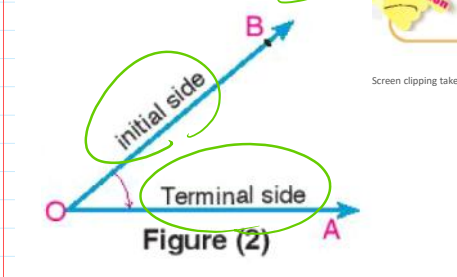
initial side
terminal side

$$-260 + 30 = -230$$

dir ← value

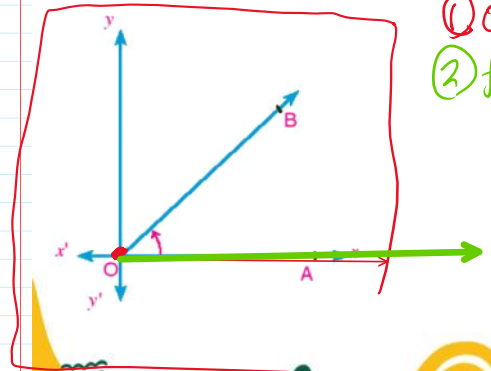


Definition the directed angle is an ordered pair of two rays called the sides of the angle with a common starting point called the vertex.



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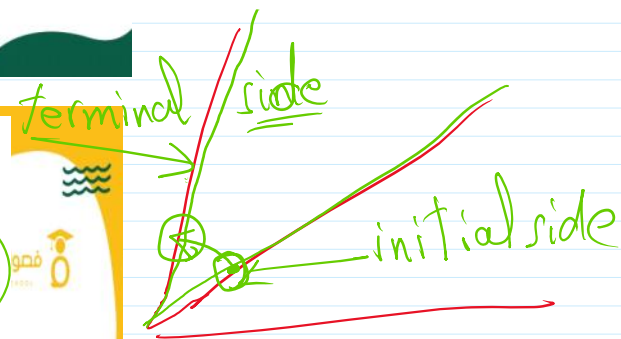
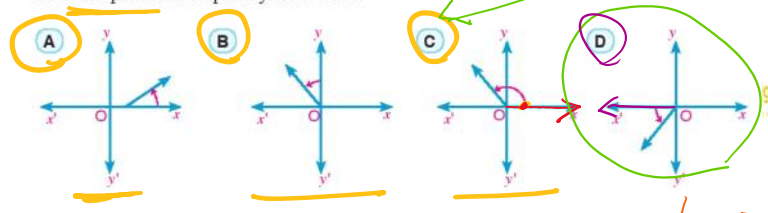
Standard Position of the directed angle



① origin point
② from positive direction of x-axis.

2025 12:04 AM

1 Which of the following directed angles is in the standard position? Explain your answer



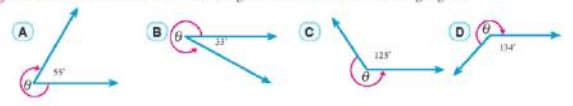
Positive and negative measures of directed angles

anticlockwise

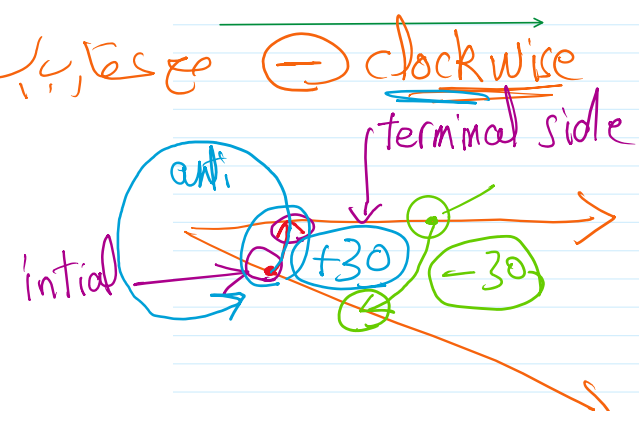
In figure (1) the directed angle, resulting from an anticlockwise rotation has a positive measure.
In figure (2) the directed angle, resulting from a clockwise rotation has a negative measure.



1 Find the measure of the directed angle θ in each of the following figure:



clockwise



<p>Second quadrant</p> <p>$90^\circ < \theta < 180^\circ$</p>	<p>First quadrant</p> <p>$0^\circ < \theta < 90^\circ$</p>
<p>Third quadrant</p> <p>$180^\circ < \theta < 270^\circ$</p>	<p>Fourth quadrant</p> <p>$270^\circ < \theta < 360^\circ$</p>

2 Determine the quadrant in which each of the following angles lies:
 A 48° B 217° C 135° D 295° E 270°

Handwritten notes and diagrams for question 2:

- Diagram of a full circle with angles $0, 90, 180, 270, 360$ marked. A box contains $180 < \theta < 0$ with a circled '1, 2' next to it.
- A box contains $360 < \theta < 270$ with a circled '4' next to it.
- A box contains $360 < \theta < 0$ with a circled '1, 2, 3, 4' next to it.
- Text: "is quadrant angle" with 'X' marks.
- Text: "condition of 5" with a circled '5'.
- Text: "4th quad" with a circled '4'.
- Text: "A = 300" with an arrow pointing to the right.

3 Determine the negative measure of the angle whose measure 275° .

4 Determine the positive measure of the angle of measure -235°

5 Determine the positive measure of each of the following angles :

- A -52° B -126° C -90° D -320°