Aim: How can we use a unit circle and special triangles to find exact trigonometric values?

Do Now: Find the lengths of the missing sides in each right triangle. Answers must be in radical form.
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If we wanted to draw an angle of positive 30° starting at the x-axis, which direction would we go:

Clockwise or Counter-Clockwise

(hint - remember transformations)
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- **Drawing an angle on a coordinate grid:**

  - **Initial Side:** The positive x-axis
  - **Terminal Side:** The ray where the measurement of an angle stops (counter-clockwise).
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Unit Circle: A circle, centered at the origin, with a radius of 1.

How do we draw an angle of $30^\circ$?

How do we draw an angle of $60^\circ$?
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Think - Pair - Share

Using a unit circle, determine the following:

- \( \sin(60^\circ) \) We'll do this one together
- \( \cos(45^\circ) \)
- \( \tan(30^\circ) \)
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Turn and Talk

What are the coordinates of point A, B, and C?
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\[
\sin(\theta) = \text{The y-coordinate of where the terminal side intersects the unit circle.}
\]

\[
\cos(\theta) = \text{The x-coordinate of where the terminal side intersects the unit circle.}
\]

\[
\tan(\theta) = \frac{\sin(\theta)}{\cos(\theta)}
\]
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Try this on your own: Fill in the following chart with exact values (radical form):

<table>
<thead>
<tr>
<th>x</th>
<th>0</th>
<th>30</th>
<th>45</th>
<th>60</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>sin(x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cos(x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tan(x)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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The left hand trick: