Grade 10
Mathematics Chapter Notes
Some Applications of Trigonometry
Topics

1. Basic Terminologies
2. Assumptions made while solving
3. Trigonometric Ratios of Some Common Angles
4. Method of Solving Questions
1. Basic Terminologies

**Line of Sight**

The line drawn from the eyes of an observer to a point on the object viewed.

If the object to be viewed is straight ahead, then the line of sight is the same as the horizontal level.

**Angle of Elevation**

The angle formed by the line of sight with the horizontal when the point being viewed is above the horizontal level.

**Angle of Depression**

The angle formed by the line of sight with the horizontal when the point being viewed is below the horizontal level.
2. Assumptions Made While Solving

The angle of elevation of the top of the Qutub Minar, 73 m away from its base is 45°.

Steps to Draw the figure:

Step 1
Represent the 3D object by a vertical line.

Step 2
Represent the observer as a point object.

Step 3
Label the angle, height, and distance.
### 3. Trigonometric Ratios of Some Common Angles

<table>
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<tr>
<th>Angles</th>
<th>Logic</th>
<th>0°</th>
<th>30°</th>
<th>45°</th>
<th>60°</th>
<th>90°</th>
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<tr>
<td>sinθ</td>
<td>sinθ</td>
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<td>1/√2</td>
<td>√3/2</td>
<td>1</td>
</tr>
<tr>
<td>cosθ</td>
<td>Reverse sinθ</td>
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<td>√3/2</td>
<td>1/√2</td>
<td>1/2</td>
<td>0</td>
</tr>
<tr>
<td>tanθ</td>
<td>sinθ/cosθ</td>
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<td>1/√3</td>
<td>1</td>
<td>√3</td>
<td>Not defined</td>
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<tr>
<td>cosecθ</td>
<td>1/sinθ</td>
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<td>2</td>
<td>√2</td>
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<td>1/√3</td>
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</tr>
</tbody>
</table>
4. Method of Solving Questions

An observer 1.5 m tall is 28.5 m away from a chimney. The angle of elevation of the top of the chimney from her eyes is 45°. What is the height of the chimney?

**Steps to Draw the figure:**

**Step 1**
Draw the figure correctly.

**Step 2**
Identify the unknown length.
$AB = ?$

**Step 3**
Use the relevant trigonometric ratios to find these lengths.

$$\tan 45^\circ = \frac{AE}{DE}$$

$$1 = \frac{AE}{28.5}$$

$$AE = 28.5 \text{ m}$$

**Step 4**
Solve to find the unknown length
So, the height of the chimney

$$AB = (28.5 + 1.5) \text{ m} = 30 \text{ m}.$$
Mind Map

Basic Terminologies

- Angle of Depression
- Angle of Elevation
- Line of Sight

Some Applications of Trigonometry

- Method of Solving Questions
- Heights and Distances
  - Assumptions Made While Solving Questions
- Trigonometric Ratios of Some Common Angles