Thinking at Different Levels
Thinking at Different Levels

Level 4, Deduction

Level 1, Visual

Level 3, Relational

Level 2, Descriptive

Level 5, Rigor
Thinking at Different Levels

Level 1, Visual

Level 2, Descriptive

Level 3, Relational

Level 4, Deduction

Level 5, Rigor

"Look at Figure 1. Since OA = OB, (radii), therefore OAB is an isosceles triangle."

The student at level 1 is thinking, "No, it doesn't look like an isosceles triangle" because to him an isosceles triangle looks like Figure 2.
Example: Sort the following figures into groups explaining why you sorted them that way.
Thinking at Different Levels

Level 5, Rigor
Level 4, Deduction
Level 3, Relational
Level 2, Descriptive
Level 1, Visual

Figure 4
Name all pairs of "angles in the same segment" you can find in Figure 6.
O is the centre of the circle

Figure 5

Figure 6
Model may:
• explain why many students encounter difficulties in geometry
• clarify many shortcomings that you have noticed in your students’ learning
• offer ways to improve it
Learning during Different Phases
Learning During Different Phases

- Phase 1: Information
- Phase 2: Guided Orientation
- Phase 3: Explicitation
- Phase 4: Free Orientation
- Phase 5: Integration
Draw the following four triangles, put the numbers 1, 2, 3, and 4 in the centre of the triangle and cut them out.

<table>
<thead>
<tr>
<th></th>
<th>AB = 4 cm, BC = 5 cm, AC = 6 cm</th>
<th></th>
<th>AB = 6 cm, \angle BAC = 40^\circ, BC = 7 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>\angle ABC = 20^\circ, BC = 8 cm, \angle BCA = 40^\circ cm</td>
<td></td>
<td>\angle ABC = 60^\circ, \angle BAC = 50^\circ, \angle ACB = 70^\circ</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>