

تشغيل وصيانة أنظمة تزويد المياه والصرف الصحي في الريف

مضمومة تدريبية للمدراء
والمخططين



منظمة الصحة العالمية
المكتب الإقليمي لشرق المتوسط
المركز الإقليمي لأنشطة صحة البيئة
عمان - الأردن، 2003



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**Operation and maintenance of rural water supply and sanitation systems: A
training package for managers and planners (WHO/SDE/WSH/00.2)**

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World Health Organization
Department for Protection of
Human Health
Operation and Maintenance Network
20 Avenue Appia
1211 Geneva 27, Switzerland
Fax 41-22-791 41 59
e-mail huebj@who.ch

IRC
International Water and Sanitation
Centre
P.O. BOX 2869
2601 CW Delft
The Netherlands
Fax 31-150219 09 55
e-mail general@irc.nl

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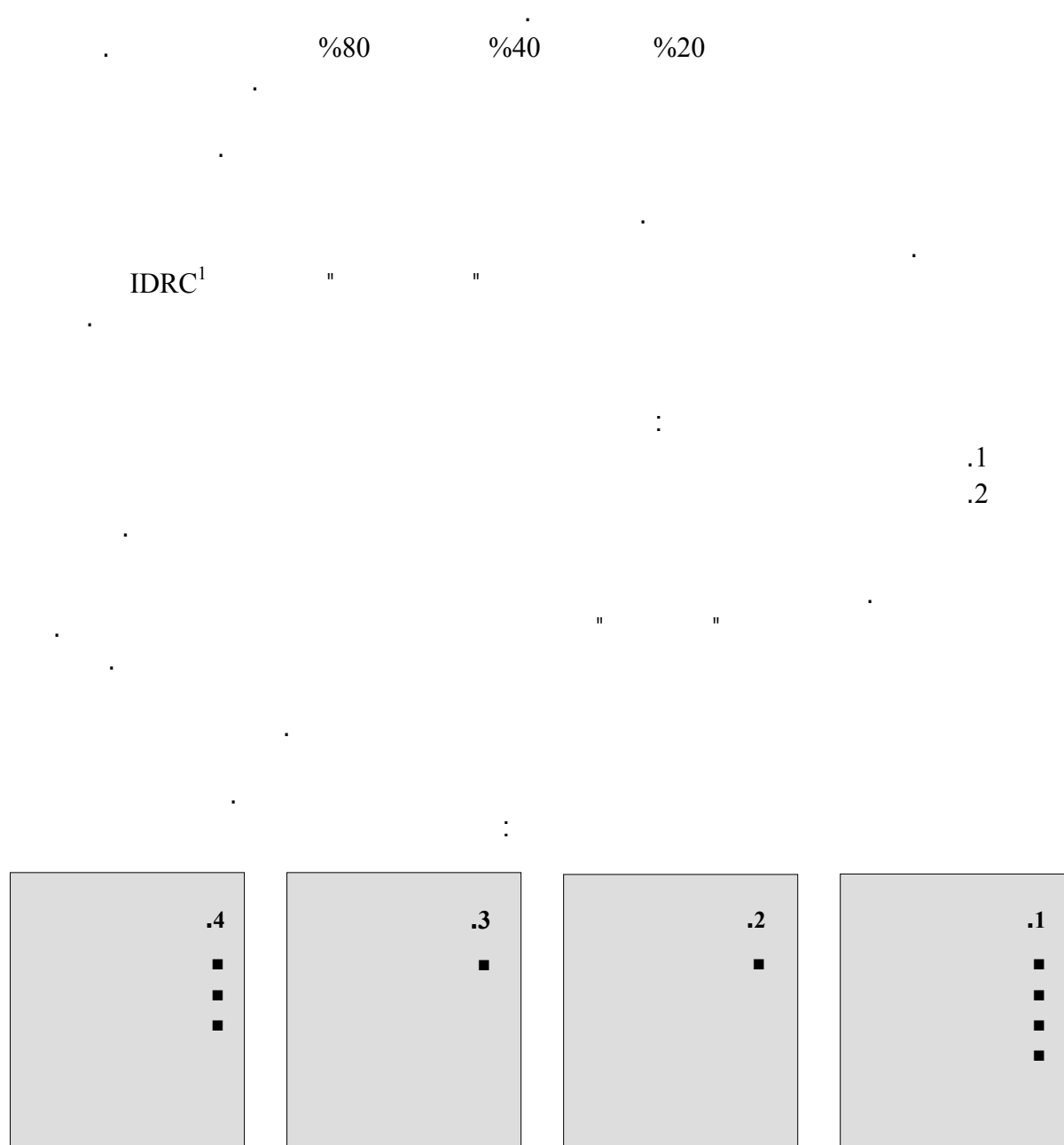
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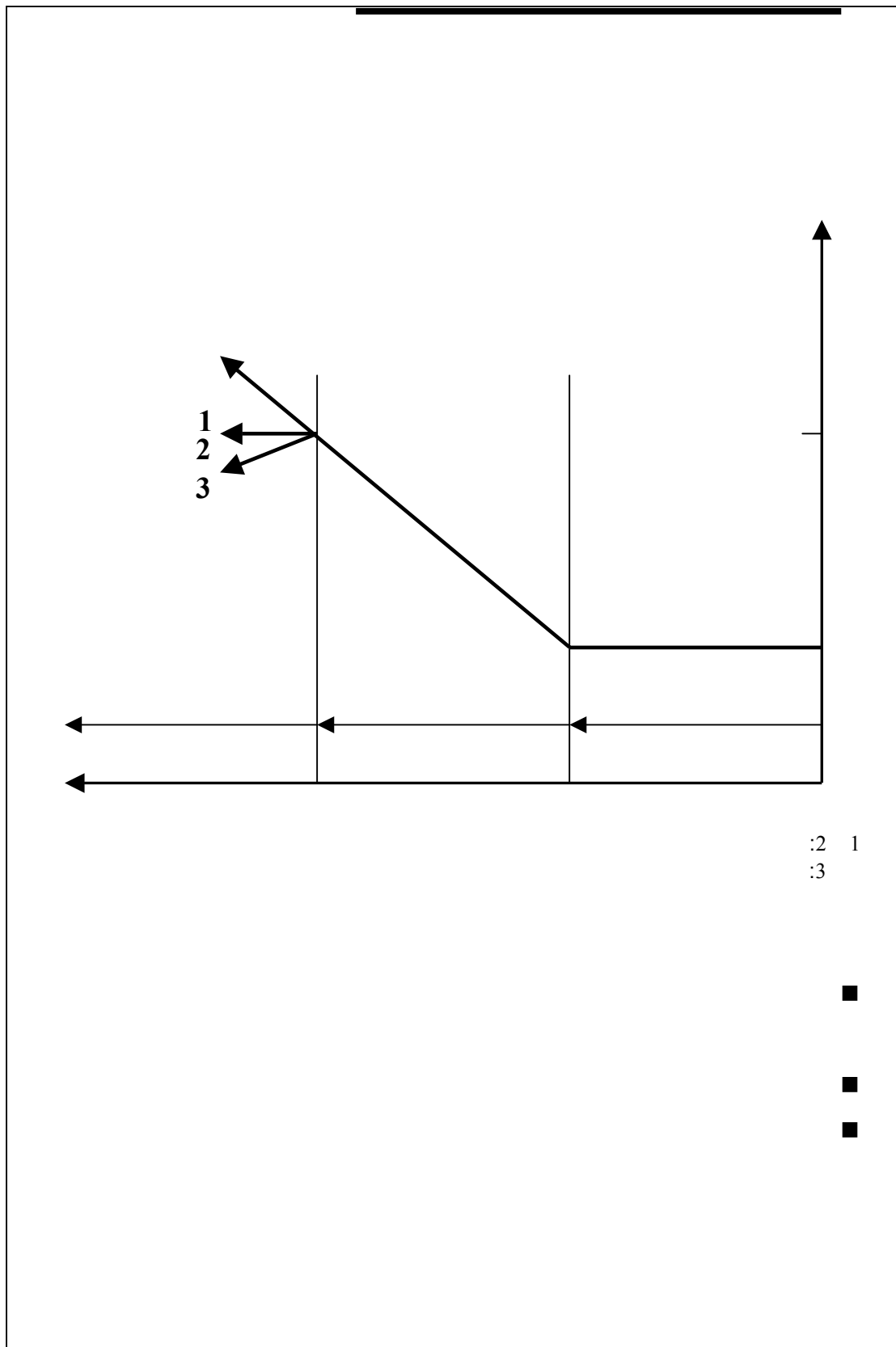


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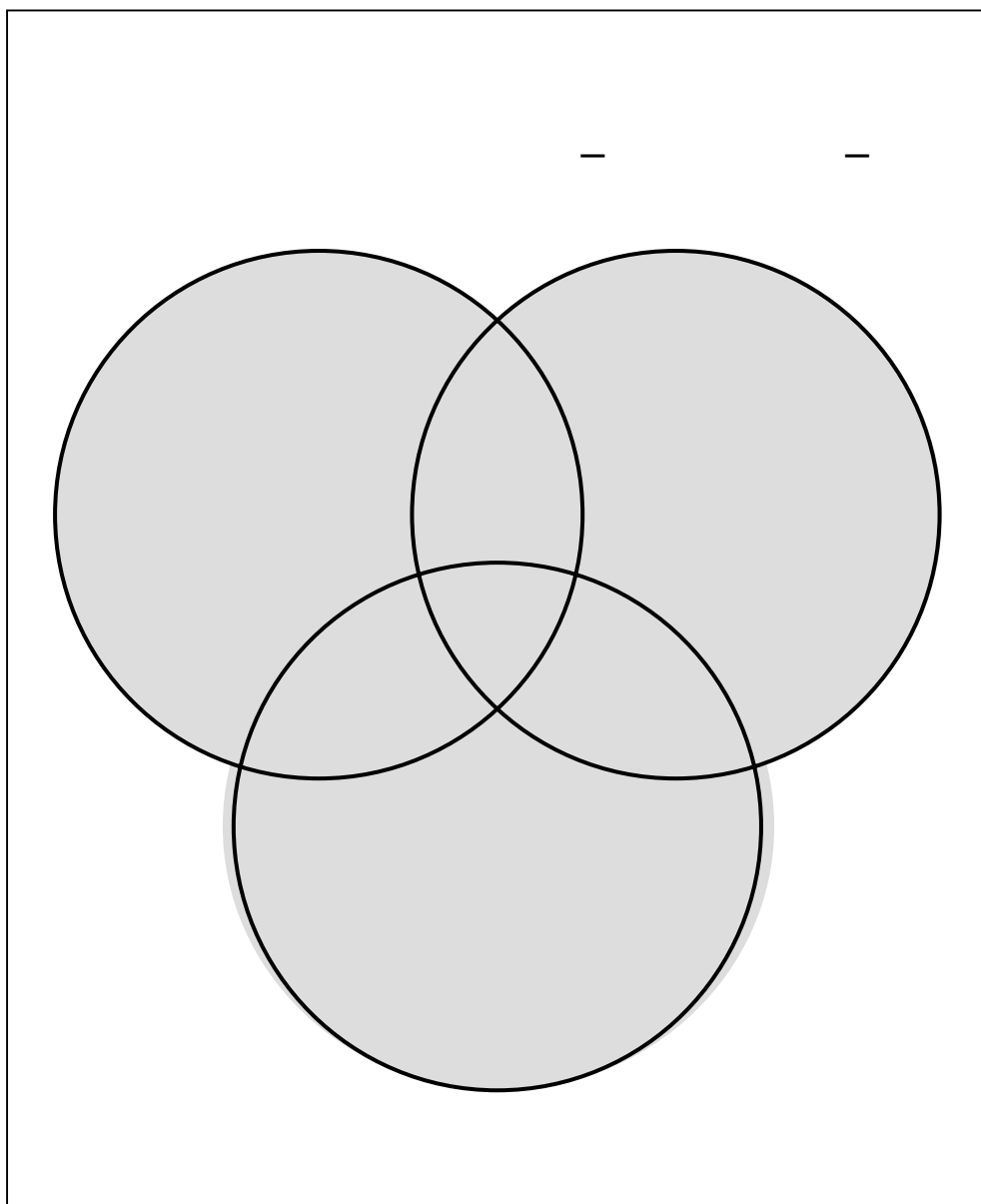


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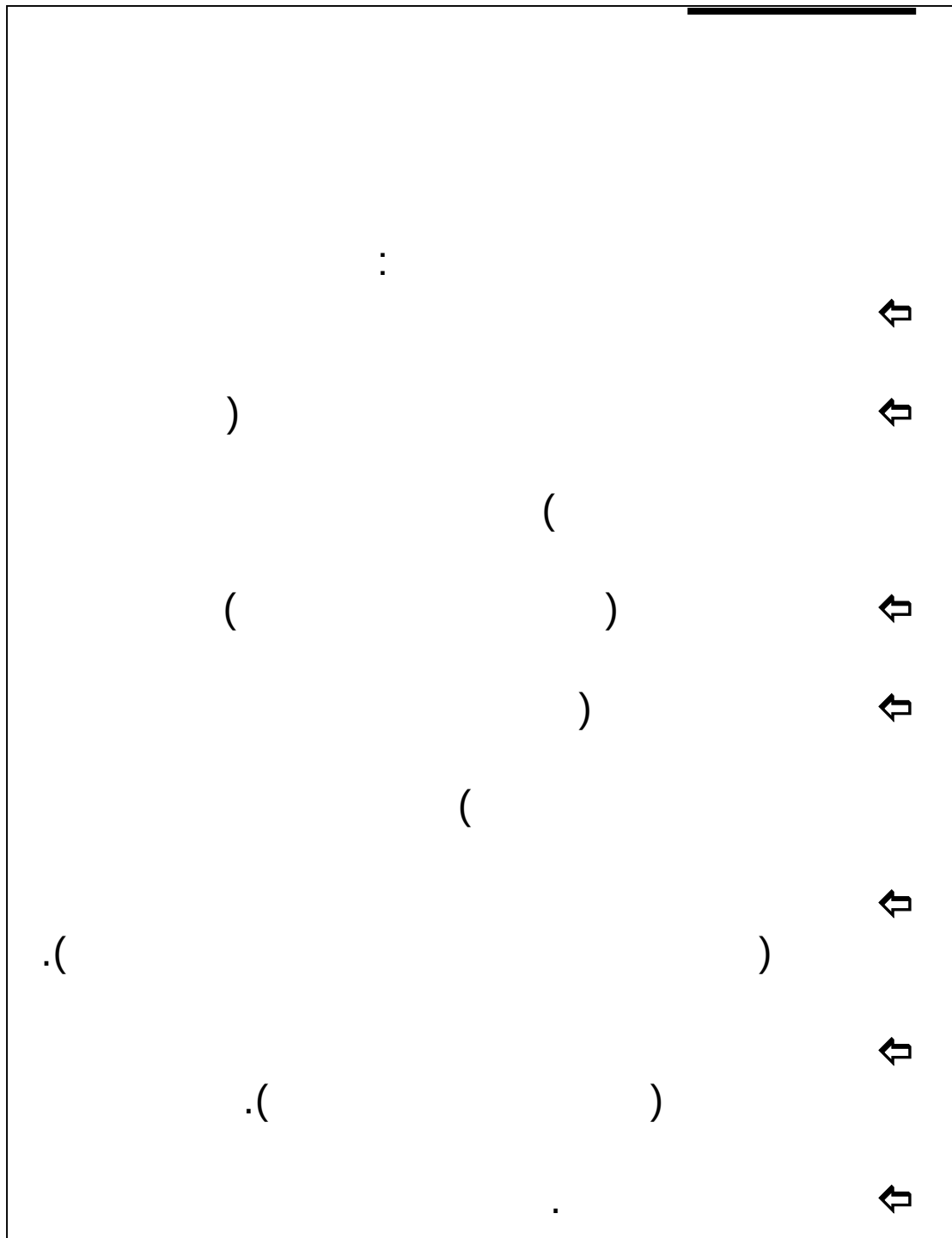
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Srinivasan L. *Exercise in tools for community participation – A manual for training trainers in participatory techniques* (PROWESS/UNDP Technical Series). PROWESS/UNDP – World Bank Water and Sanitation Program, New York, 1993.

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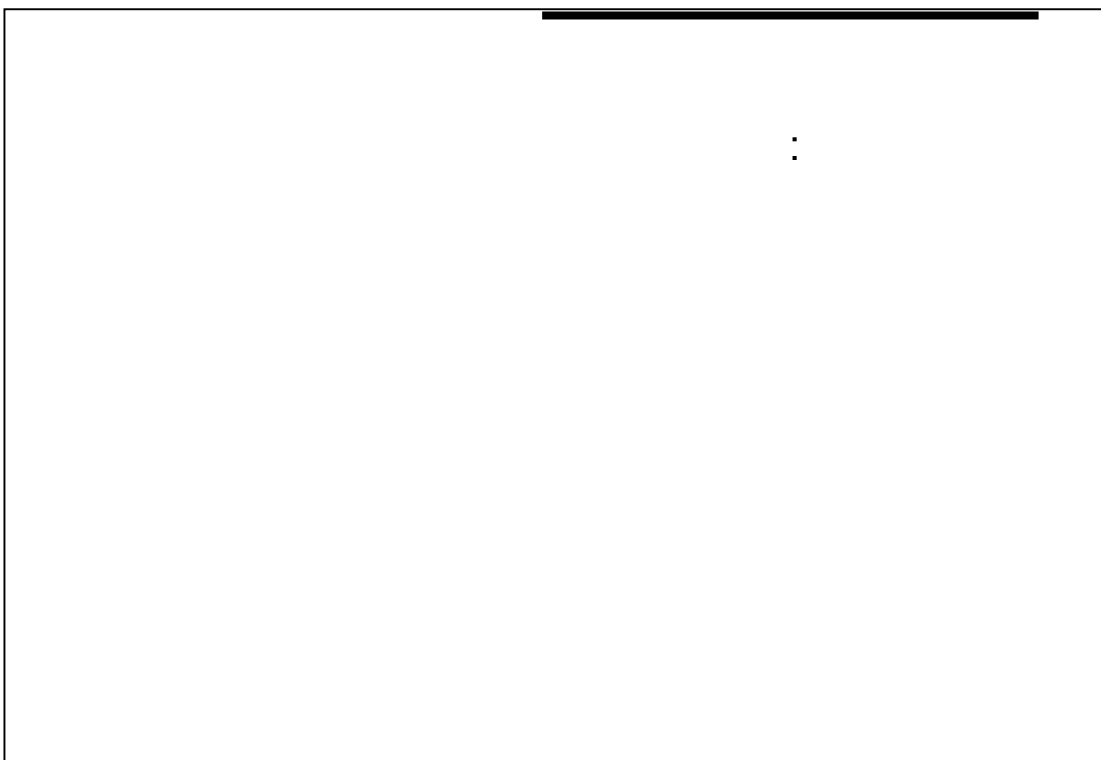
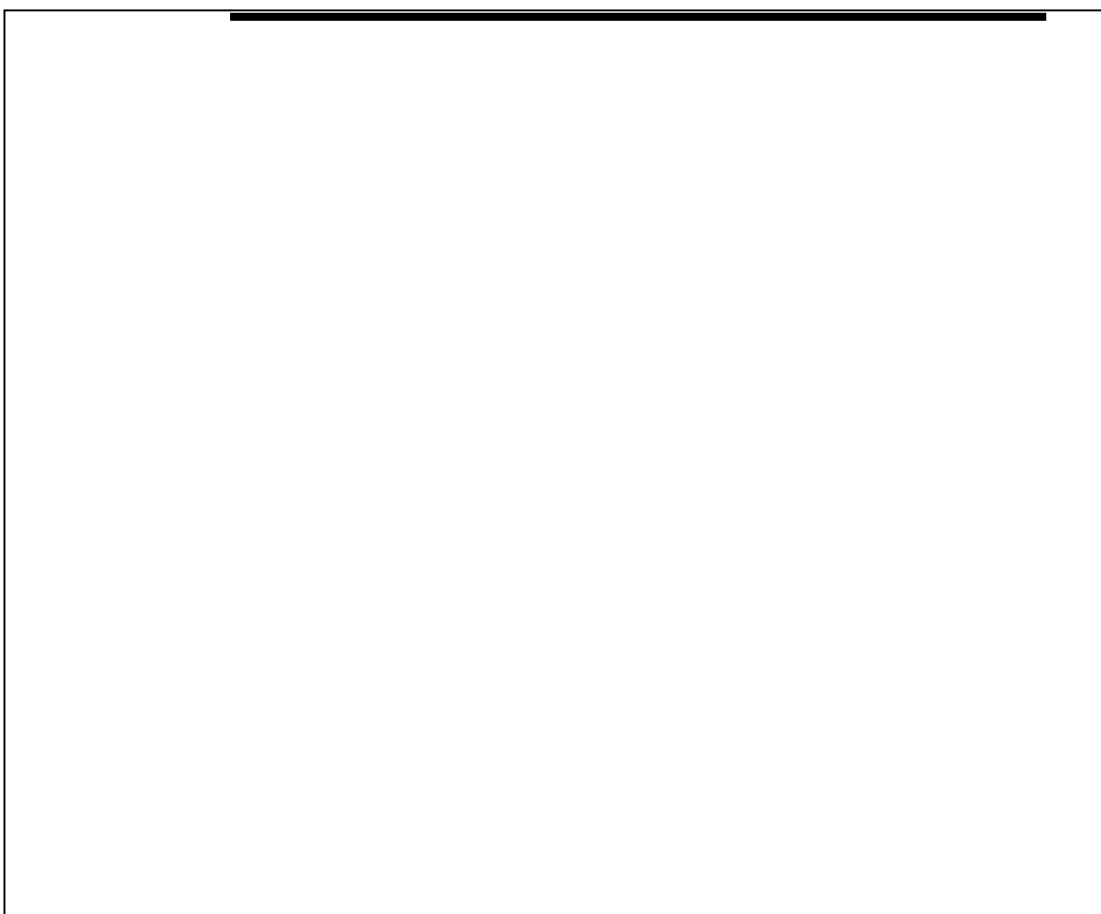
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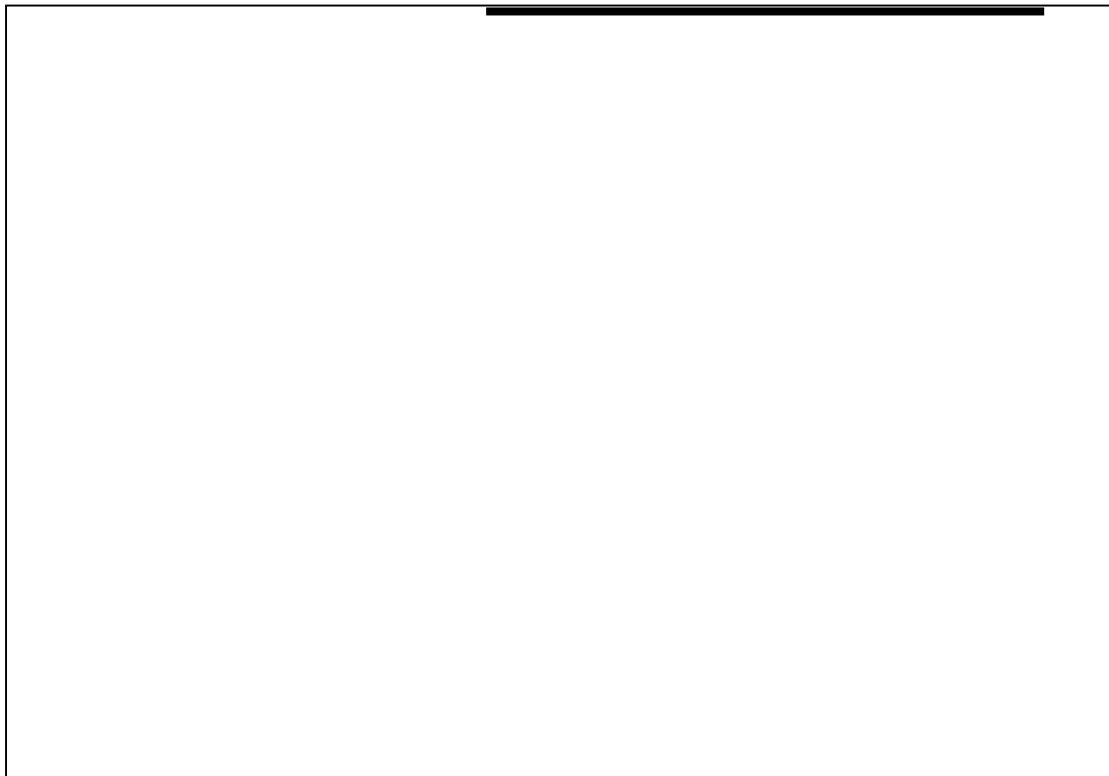
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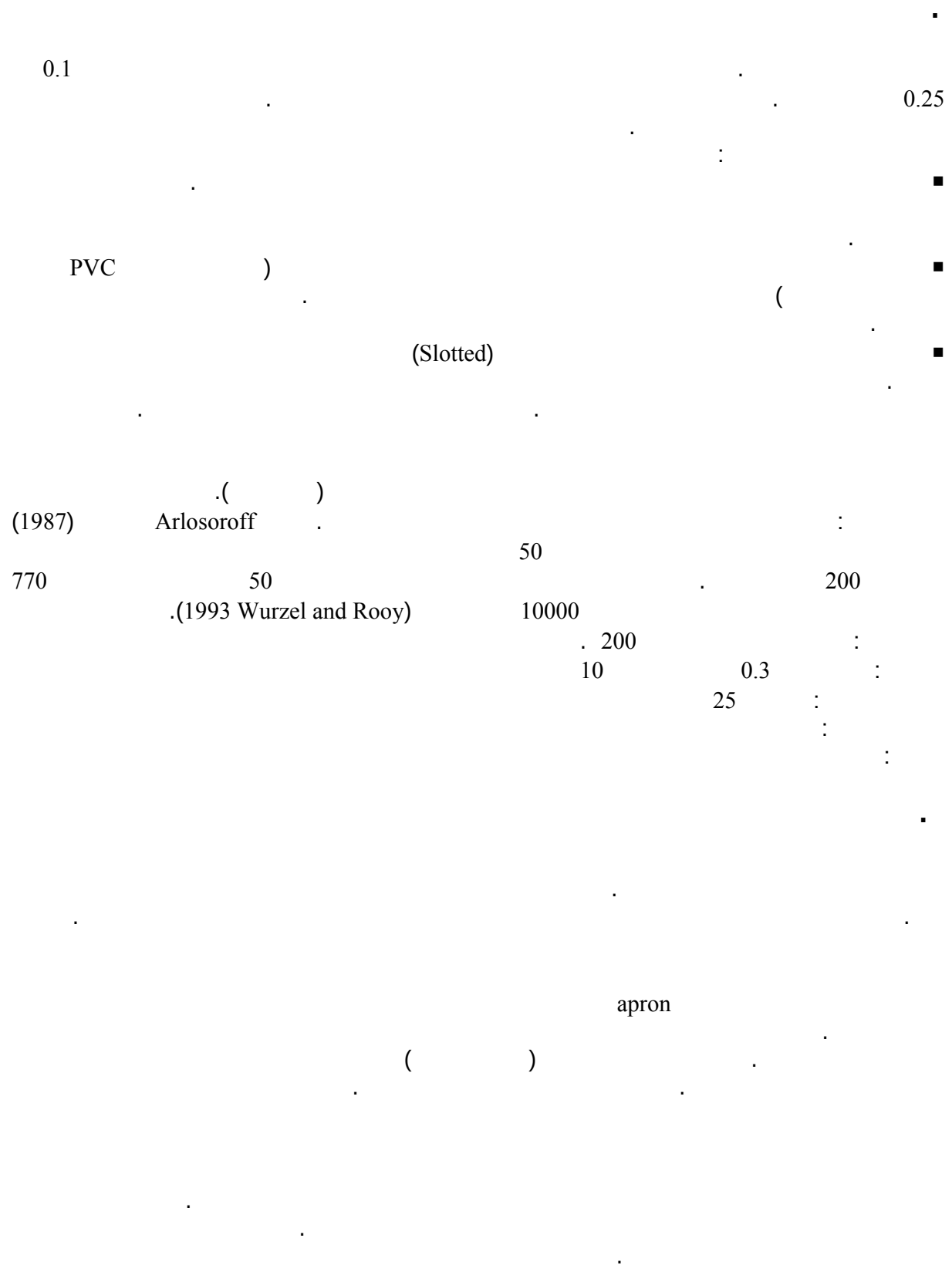
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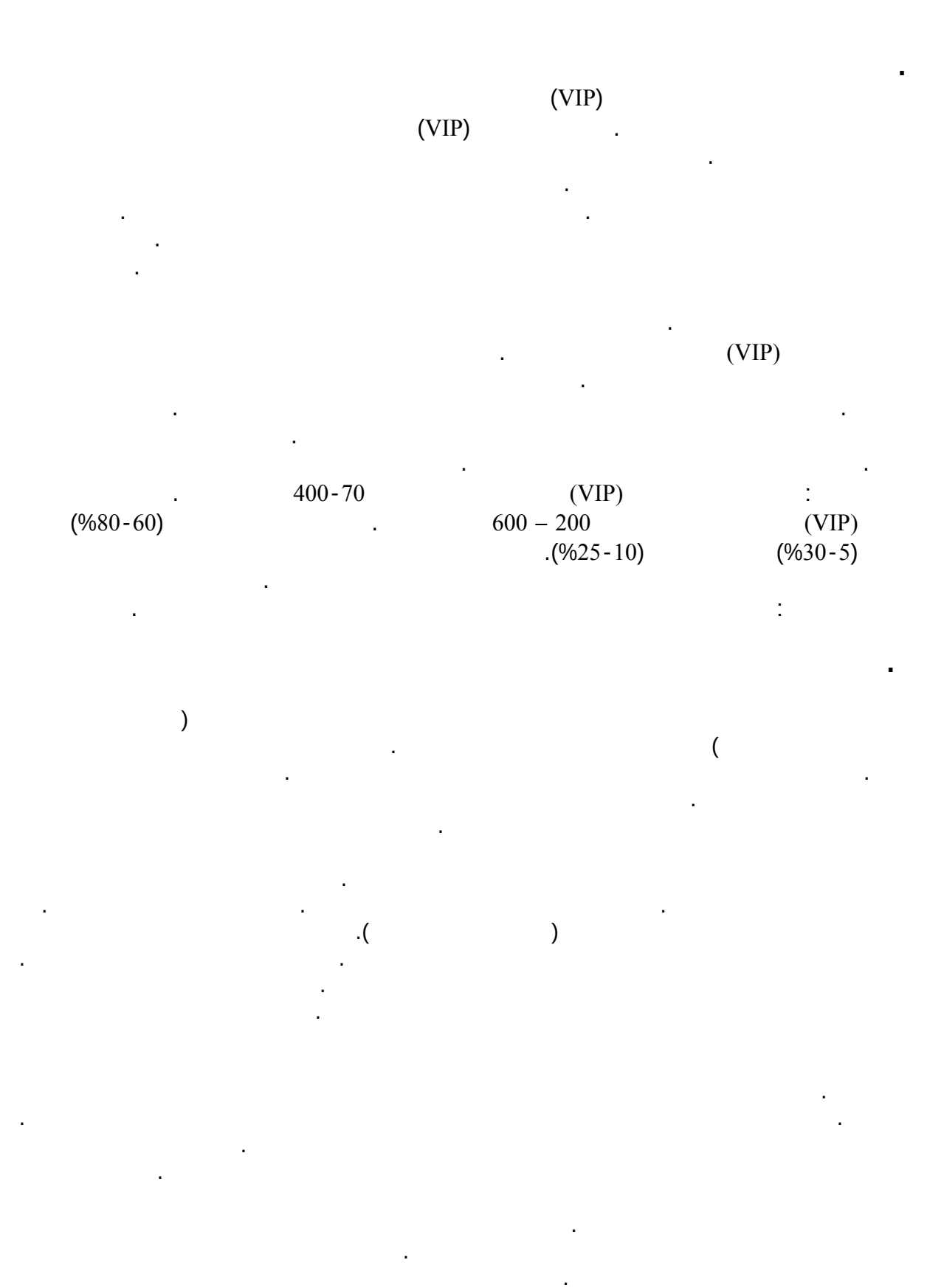
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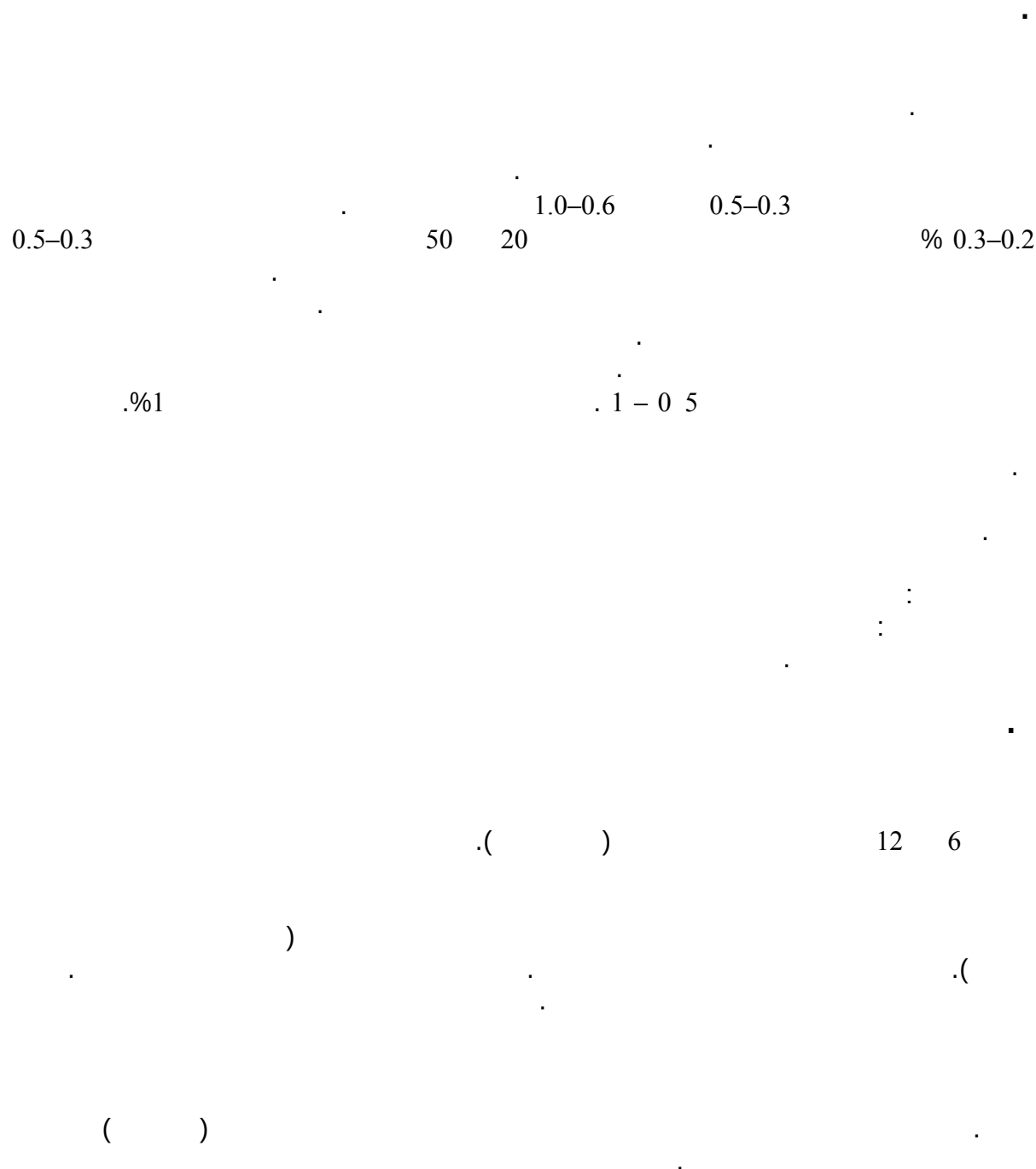
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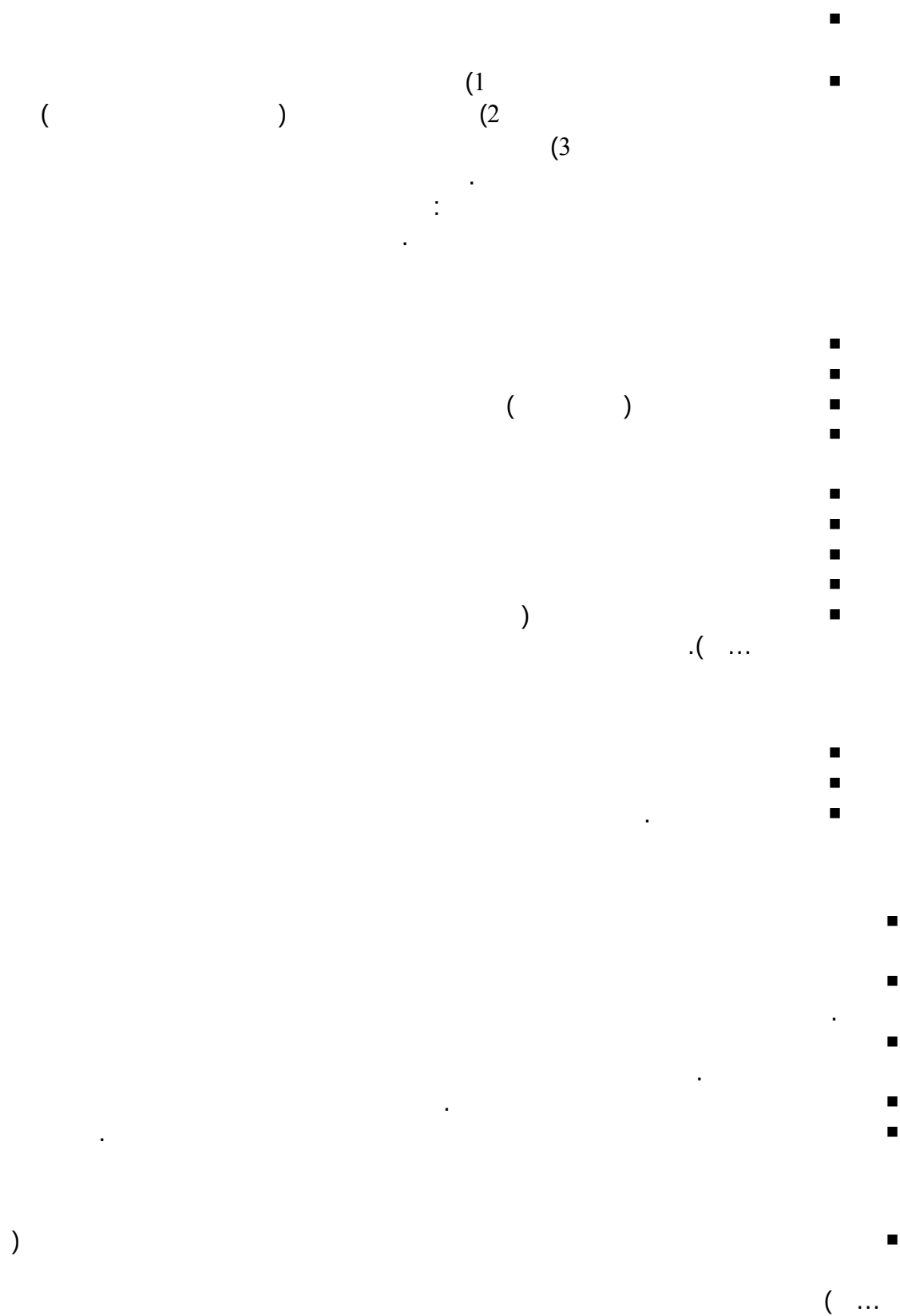
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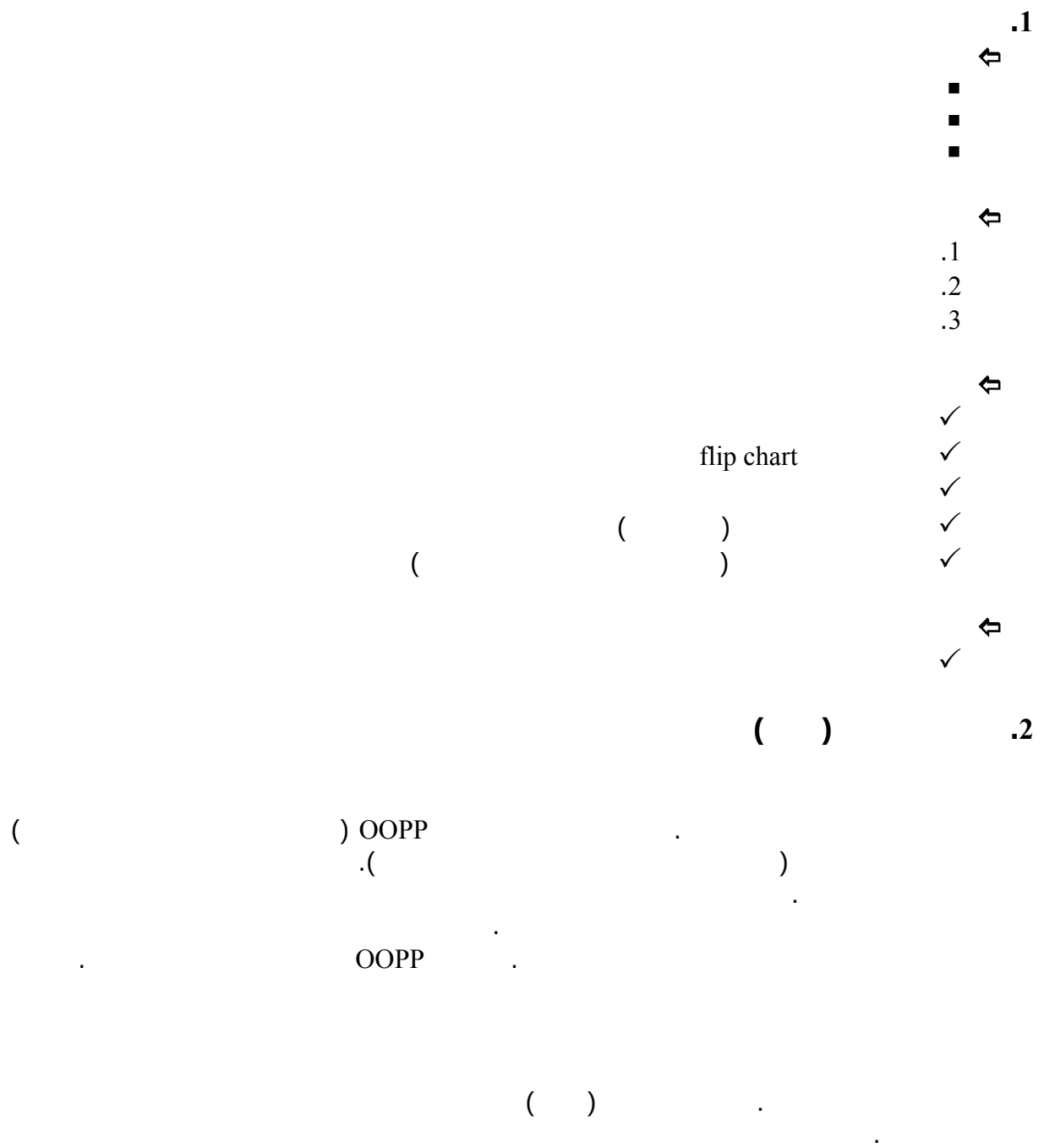
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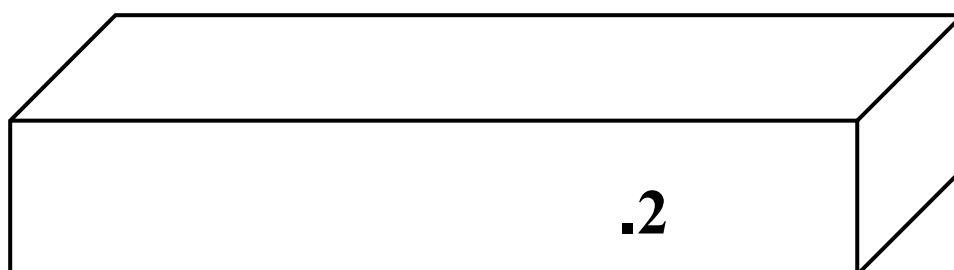
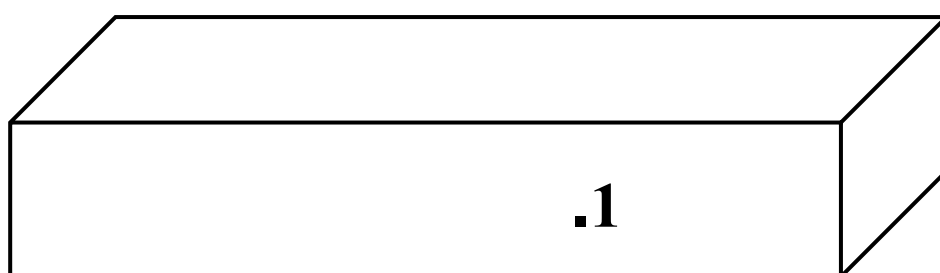
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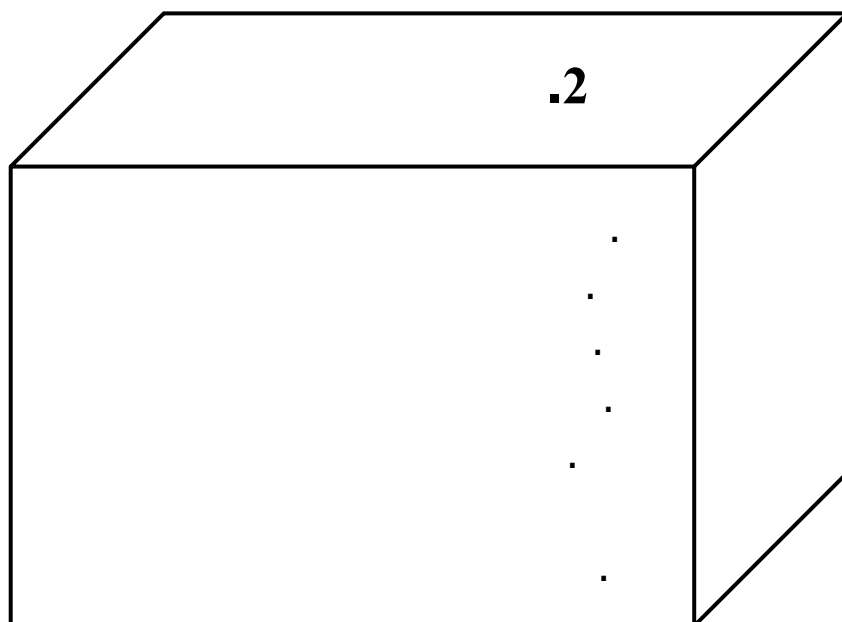
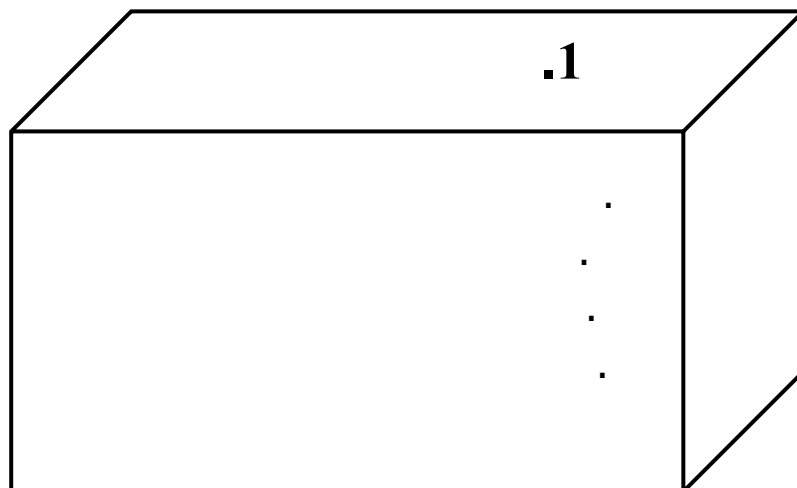
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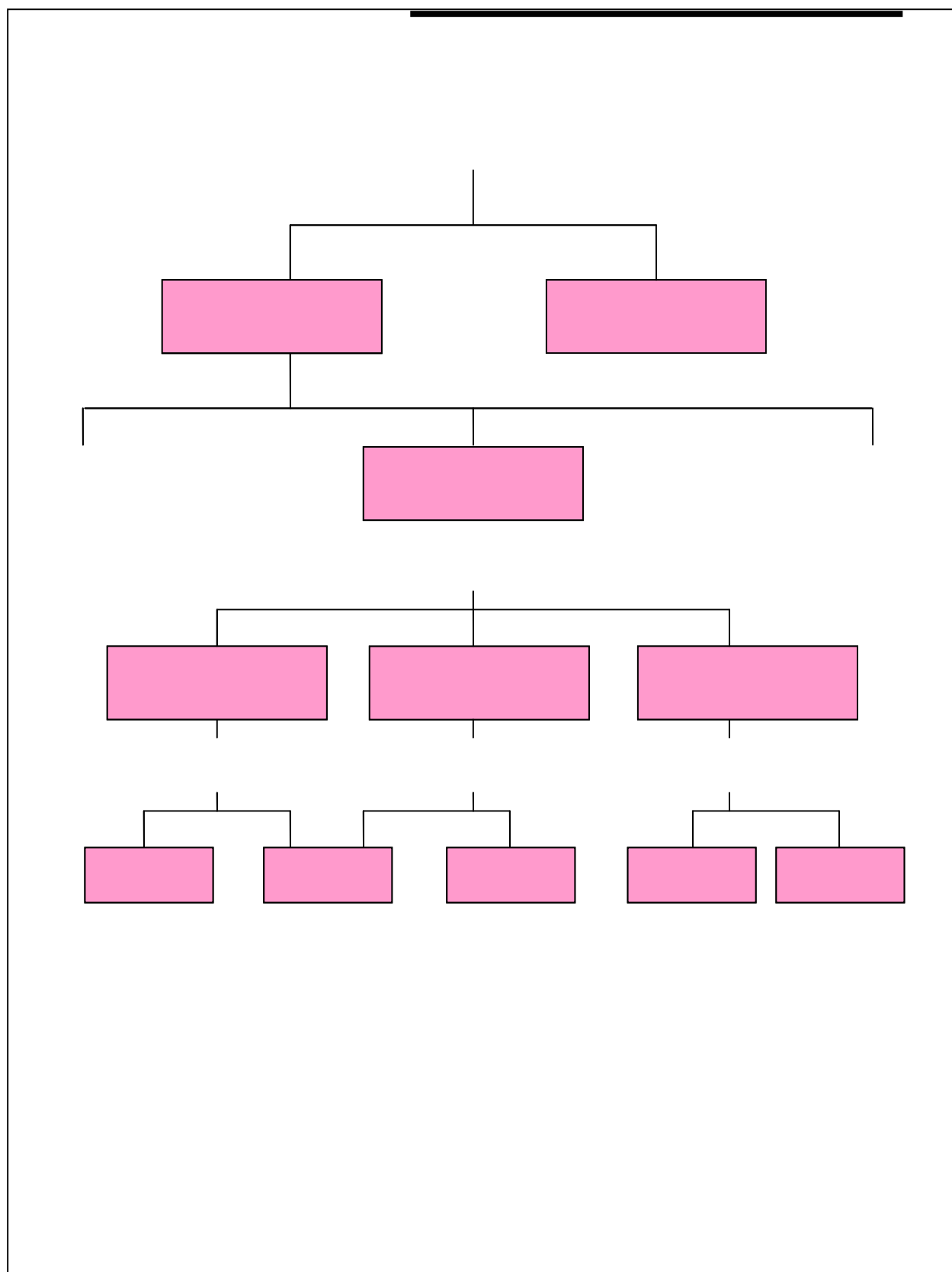
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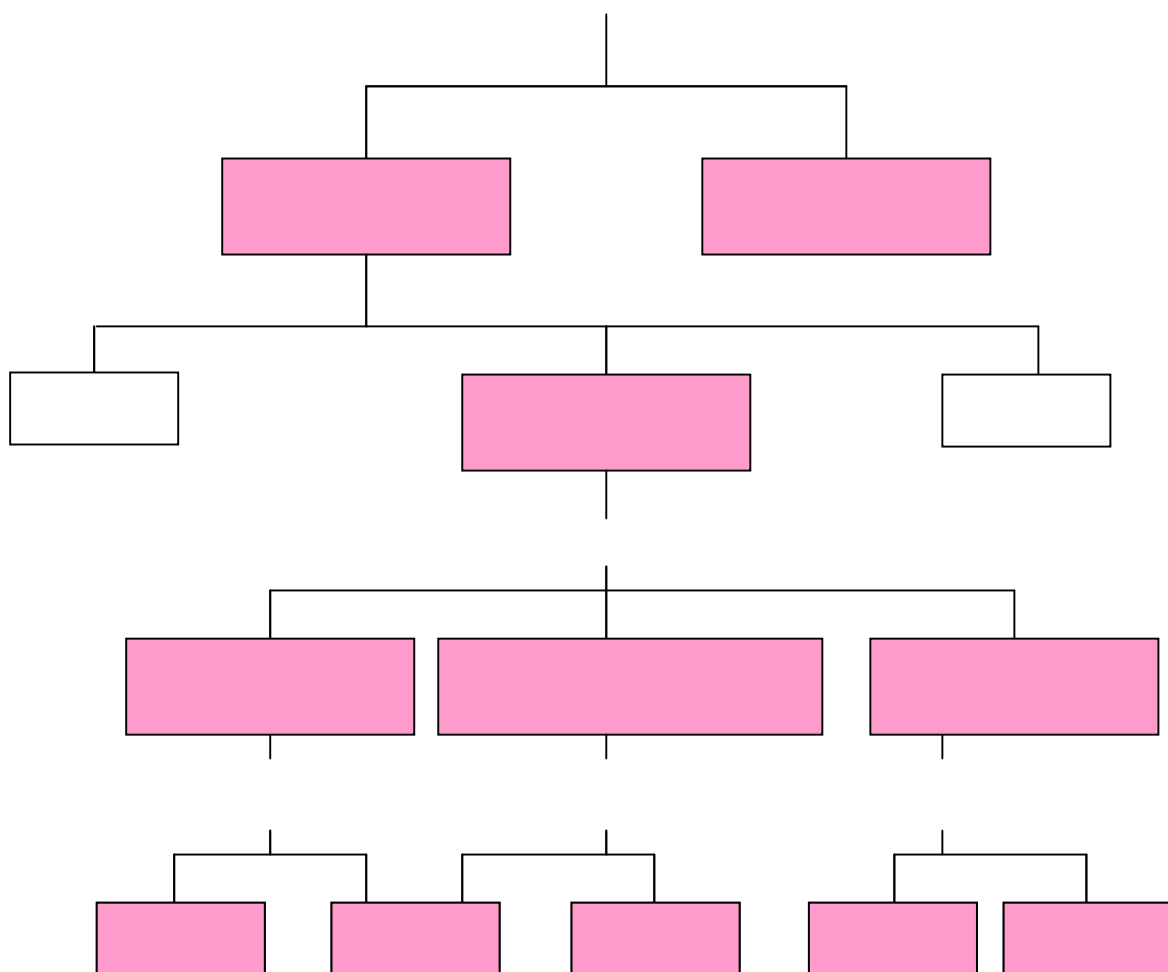
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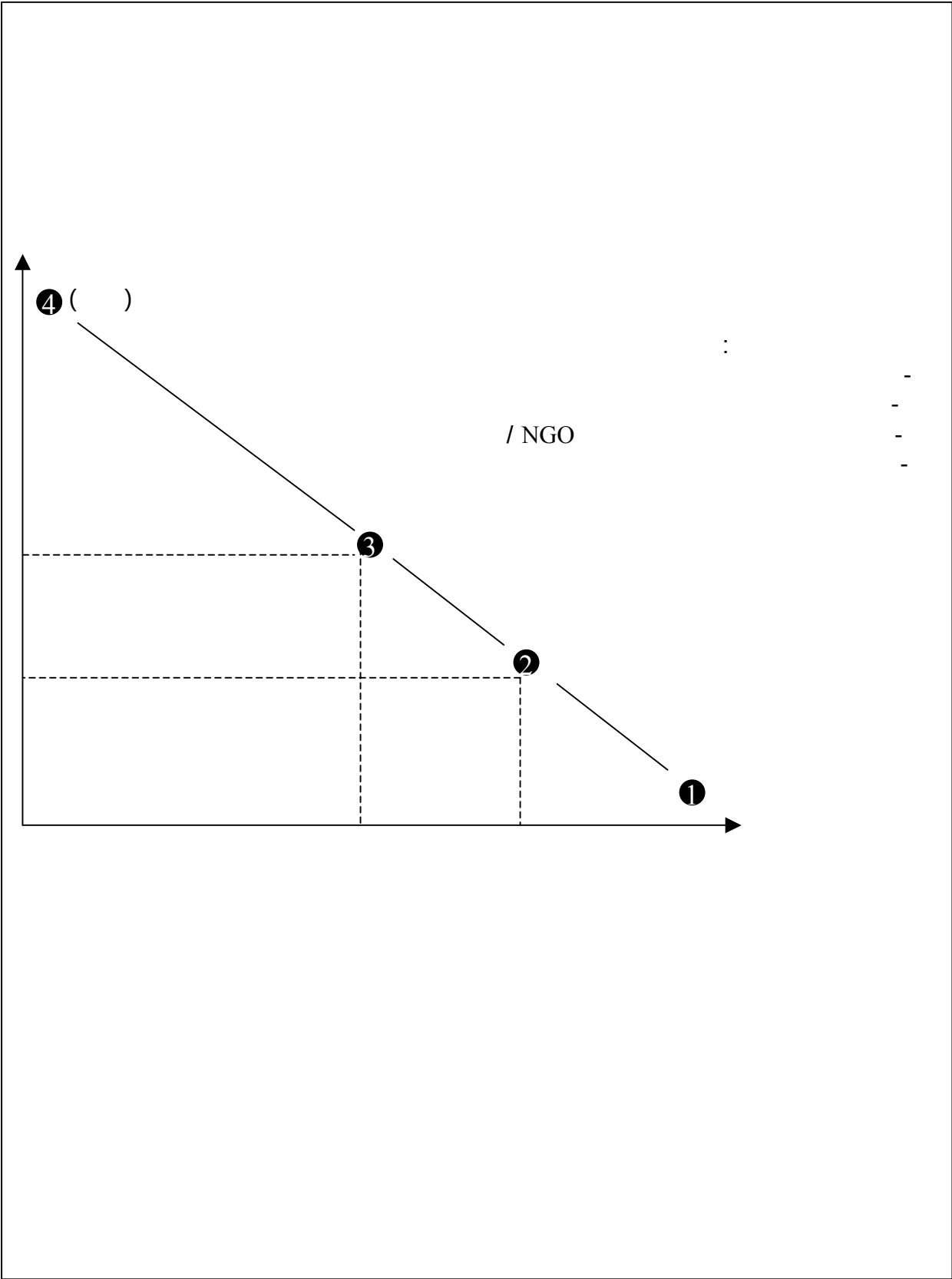
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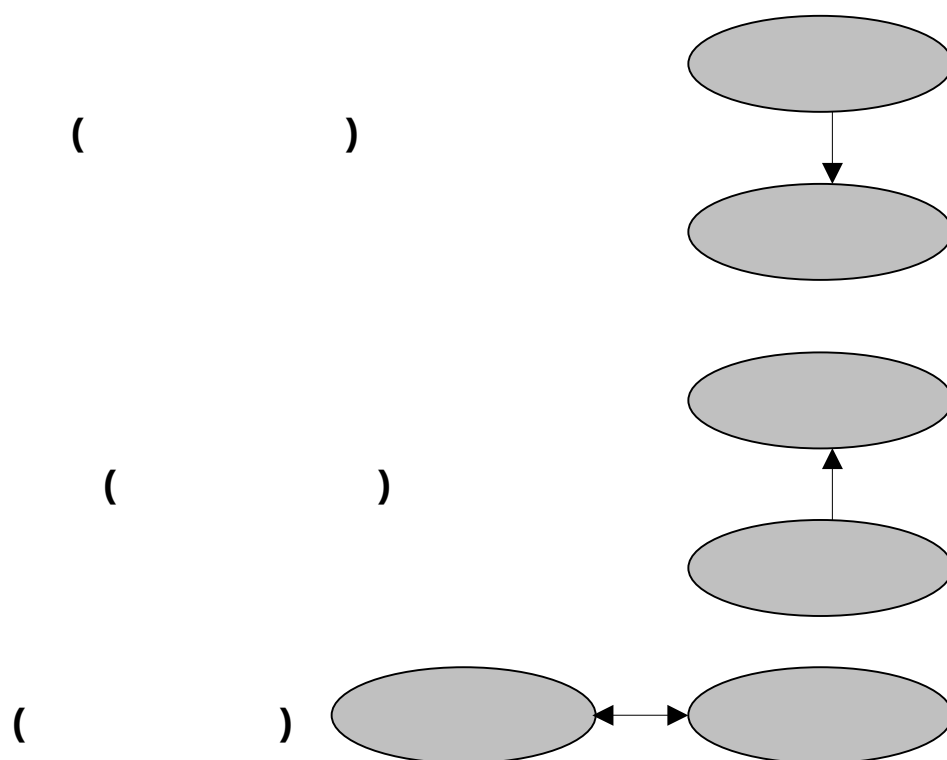
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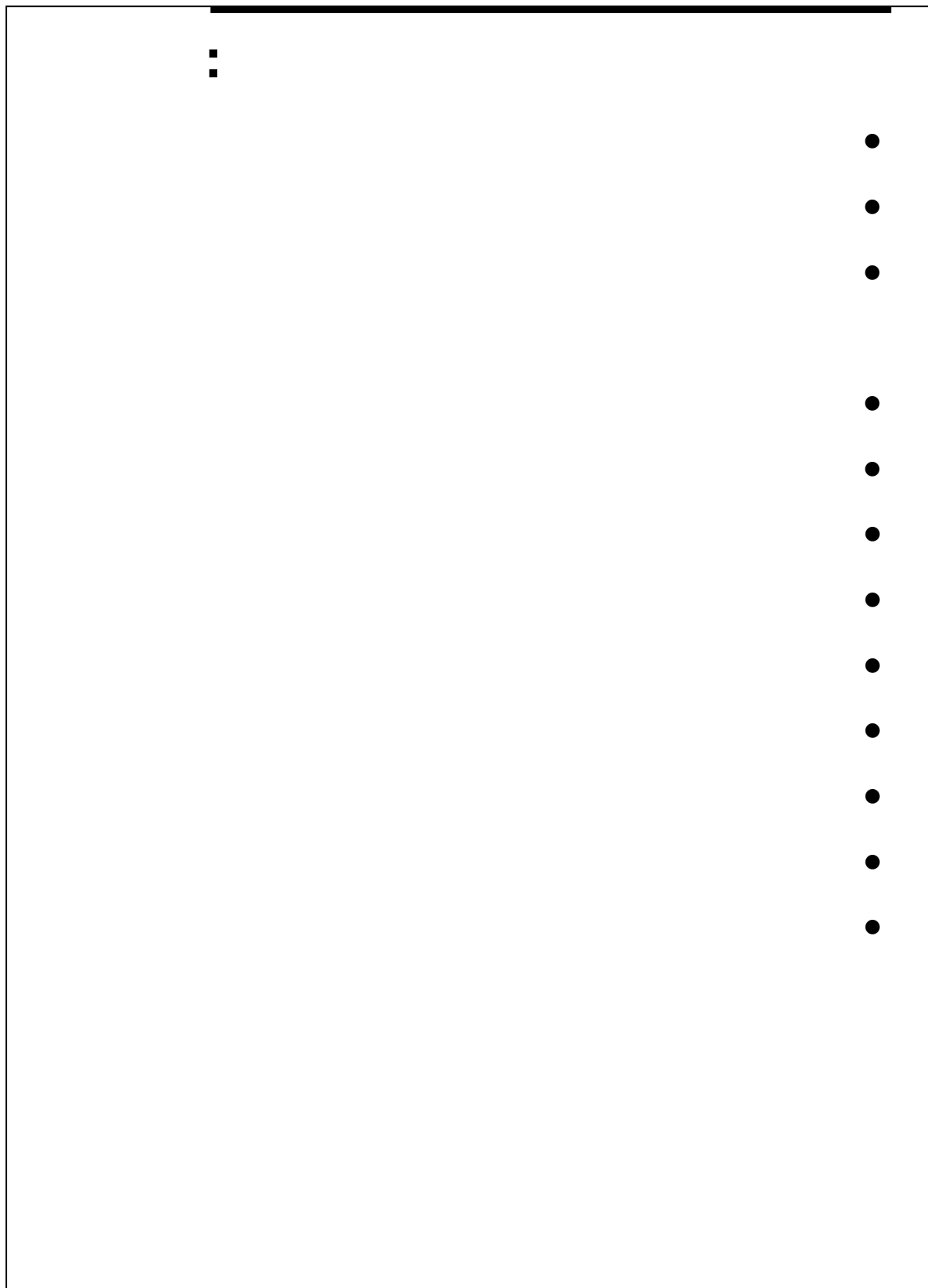
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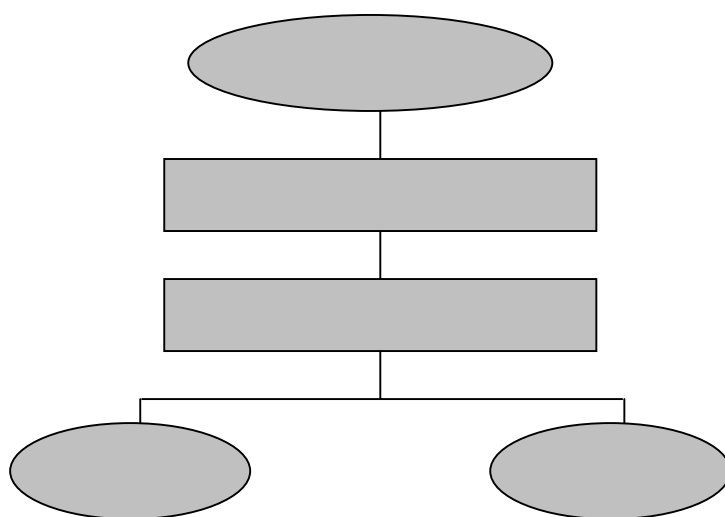
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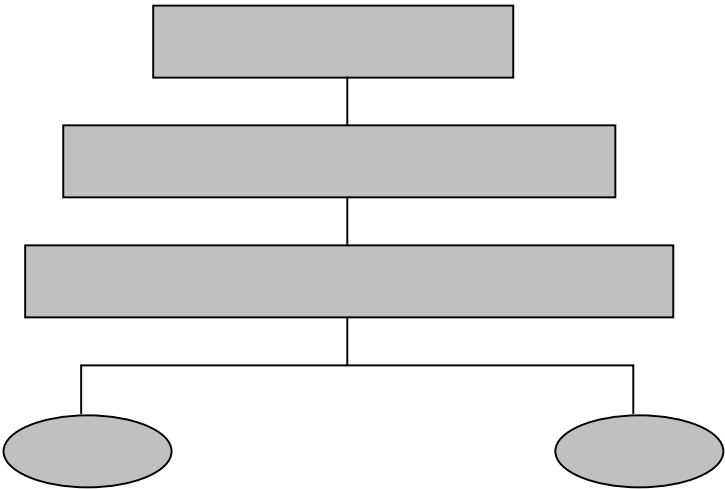


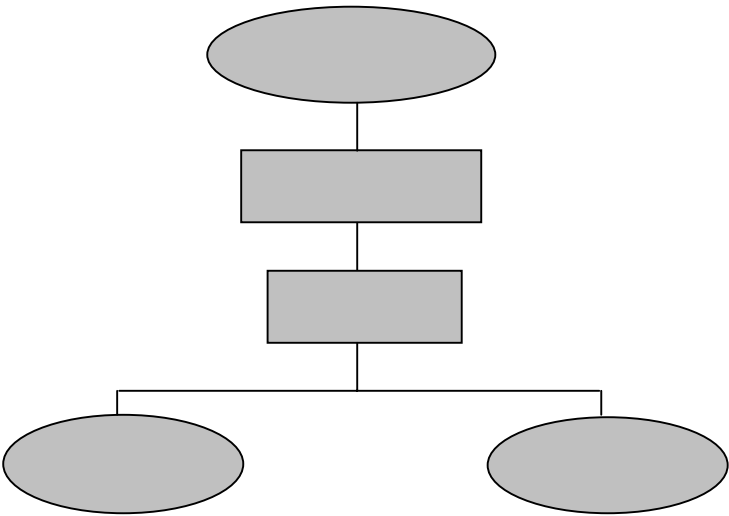
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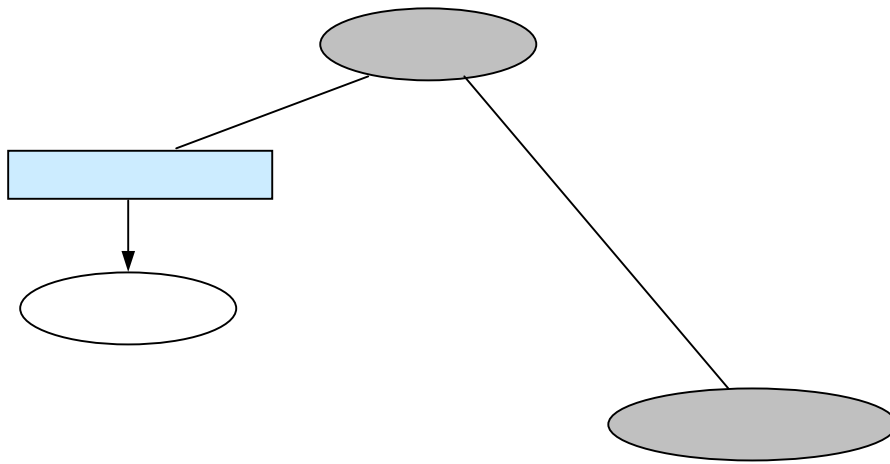


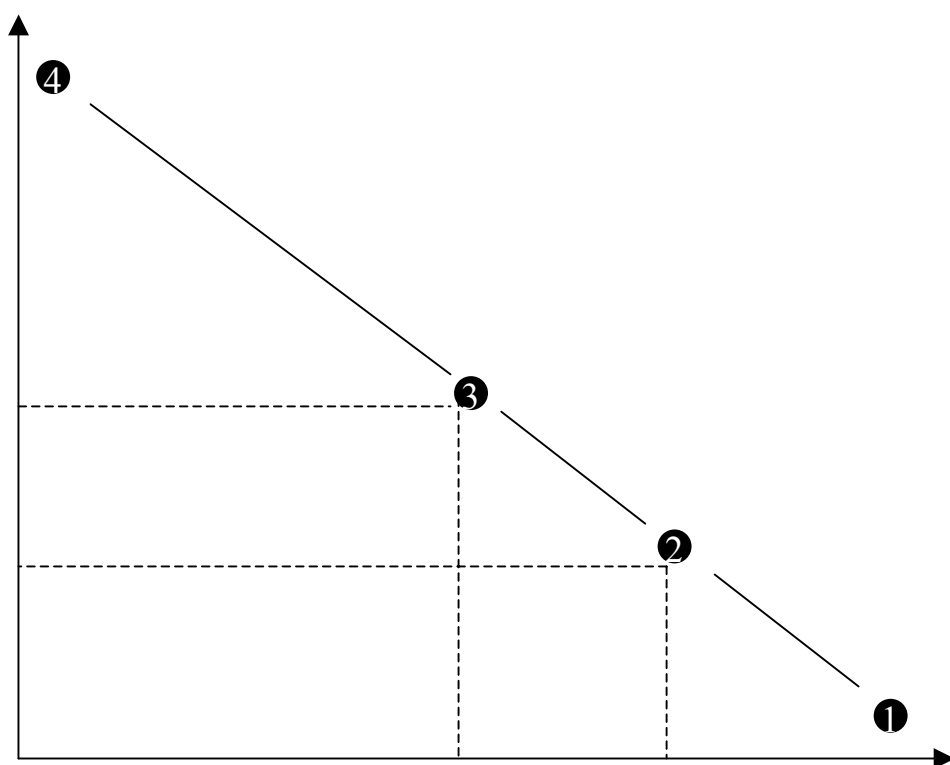












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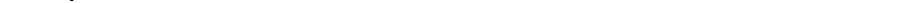
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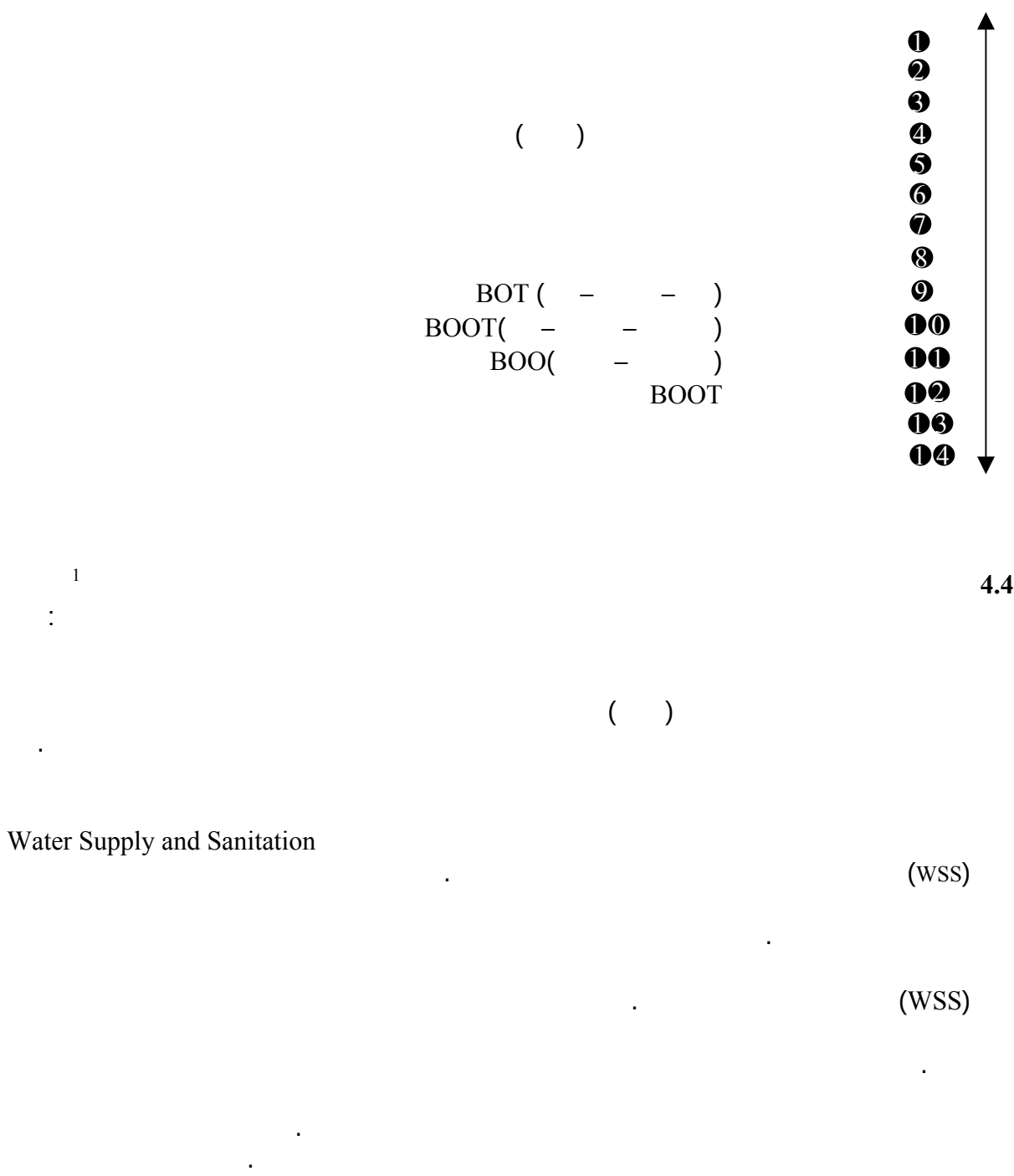
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Management models for the operation and maintenance of rural water supply and sanitation systems, by Phil Poark. Arlington, VA, WASH Project of the U.S. Agency for International Development, 1993 (WASH Technical Paper No. 71).

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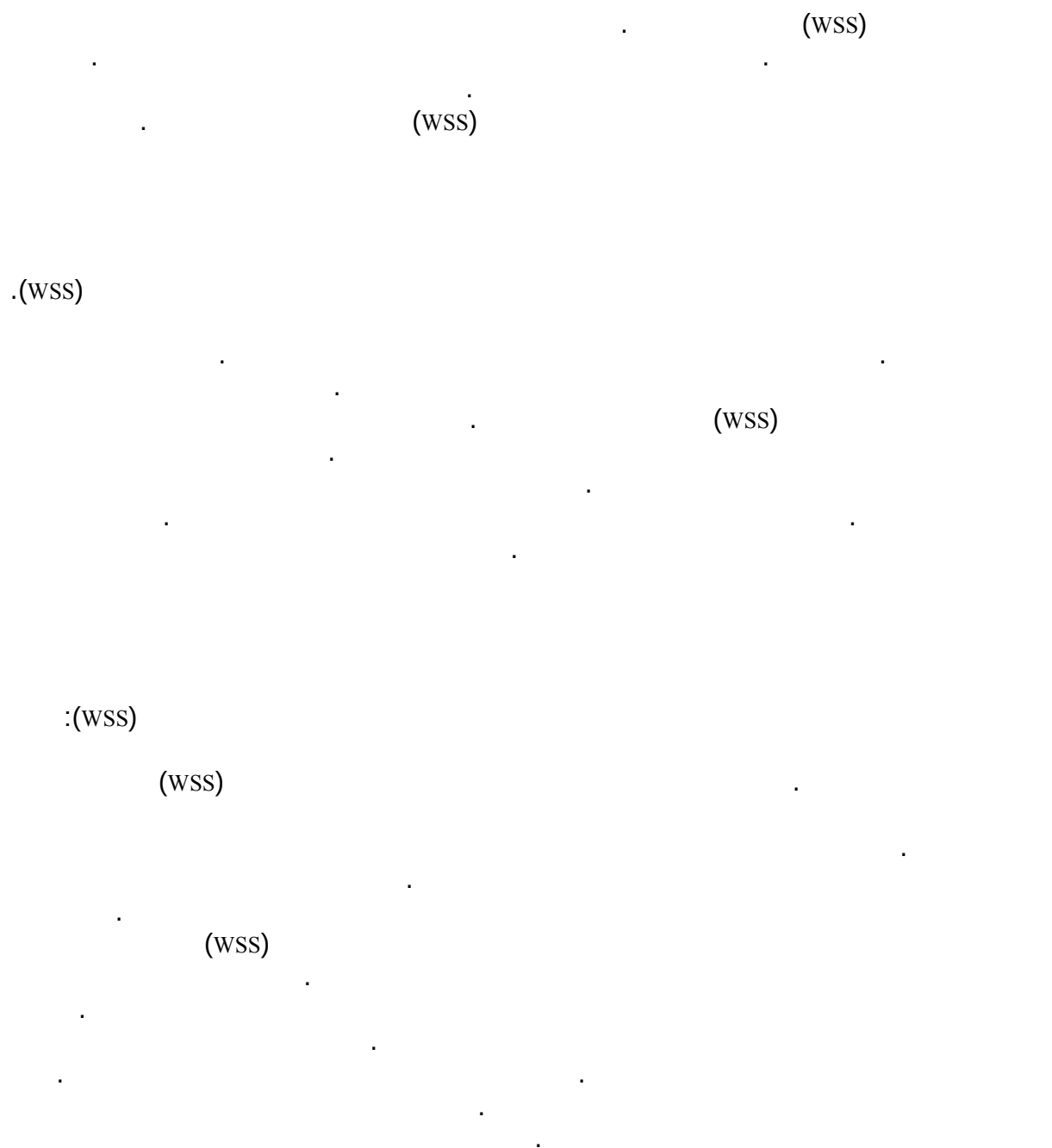
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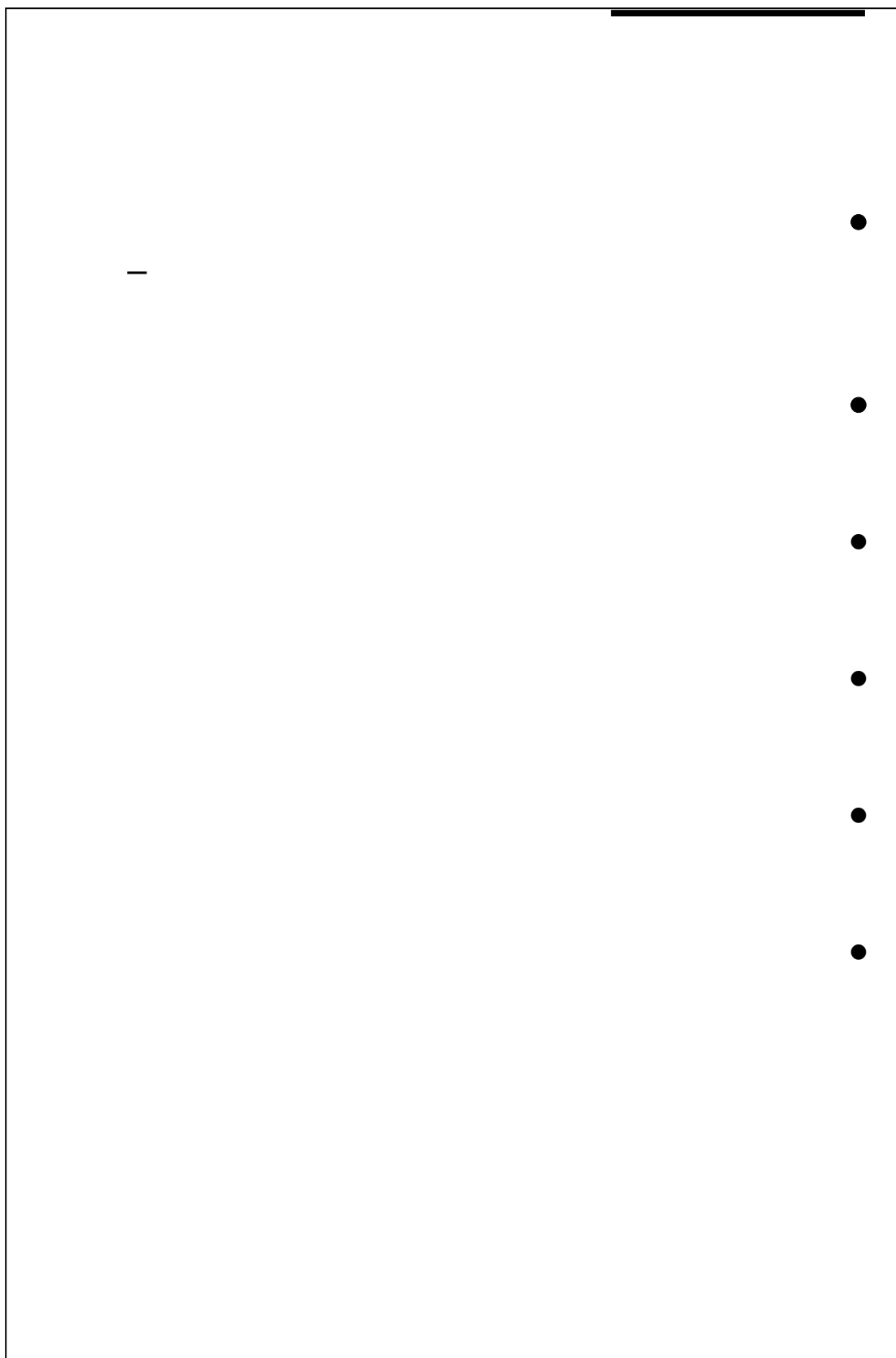
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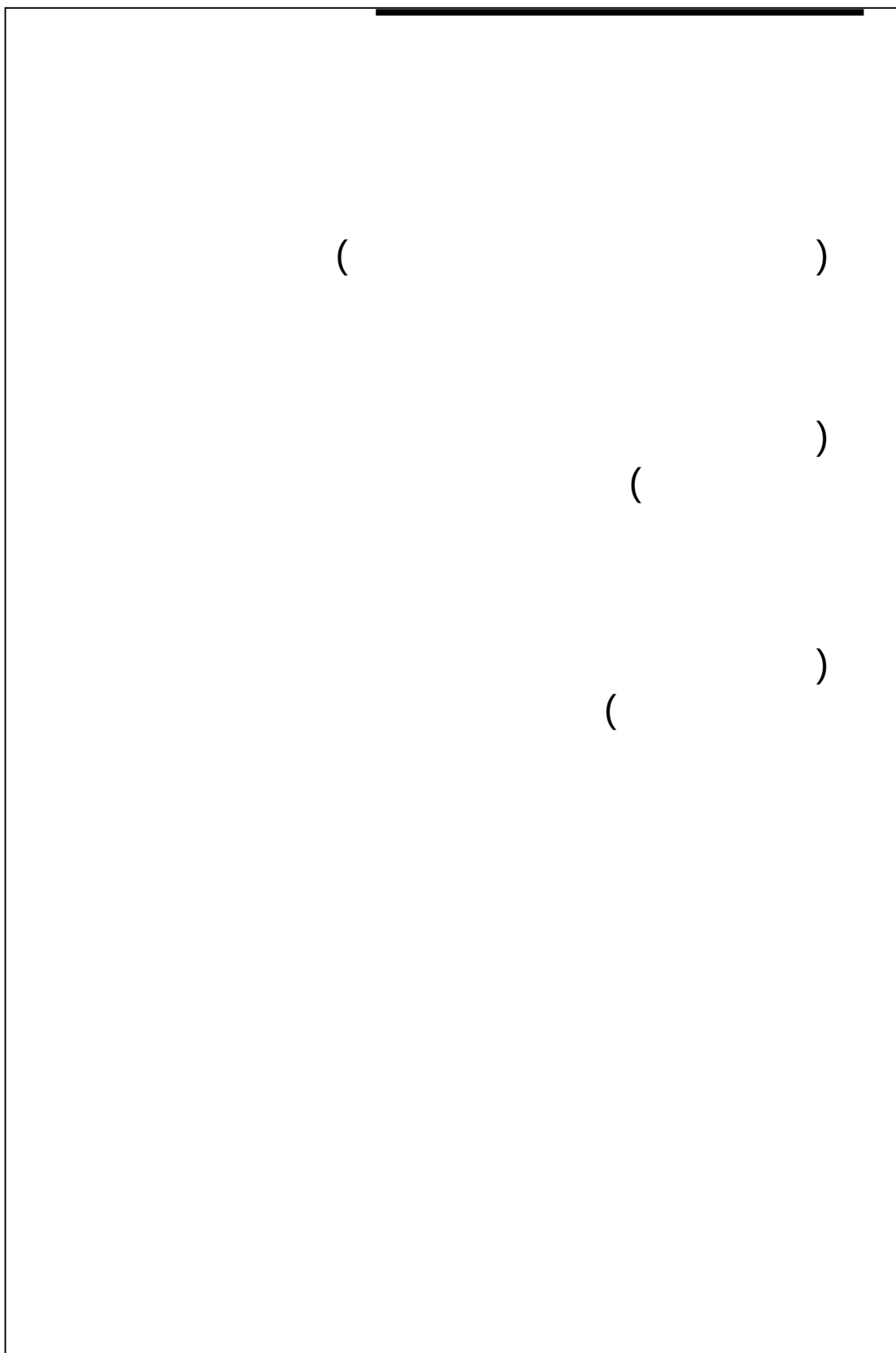
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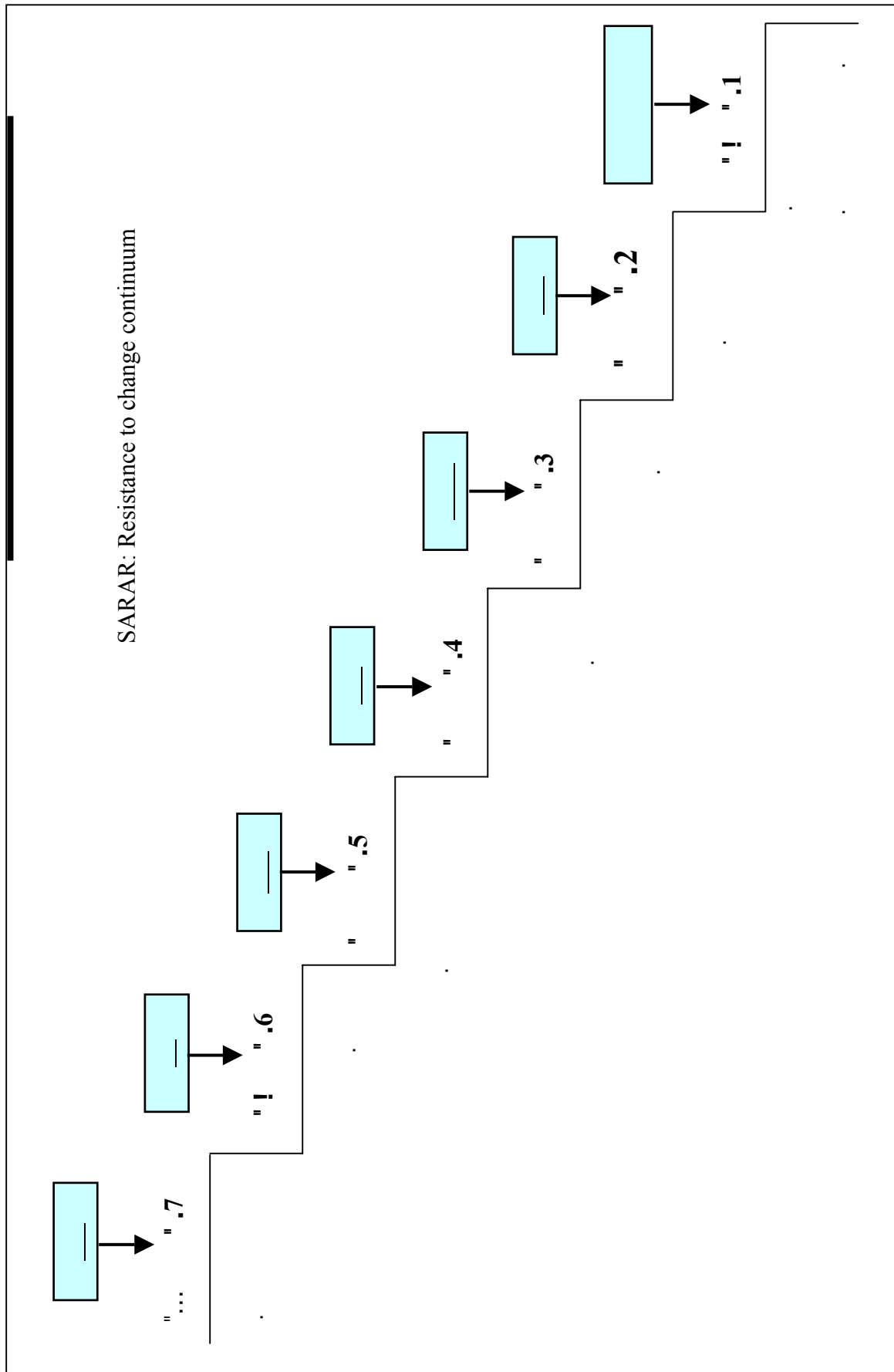
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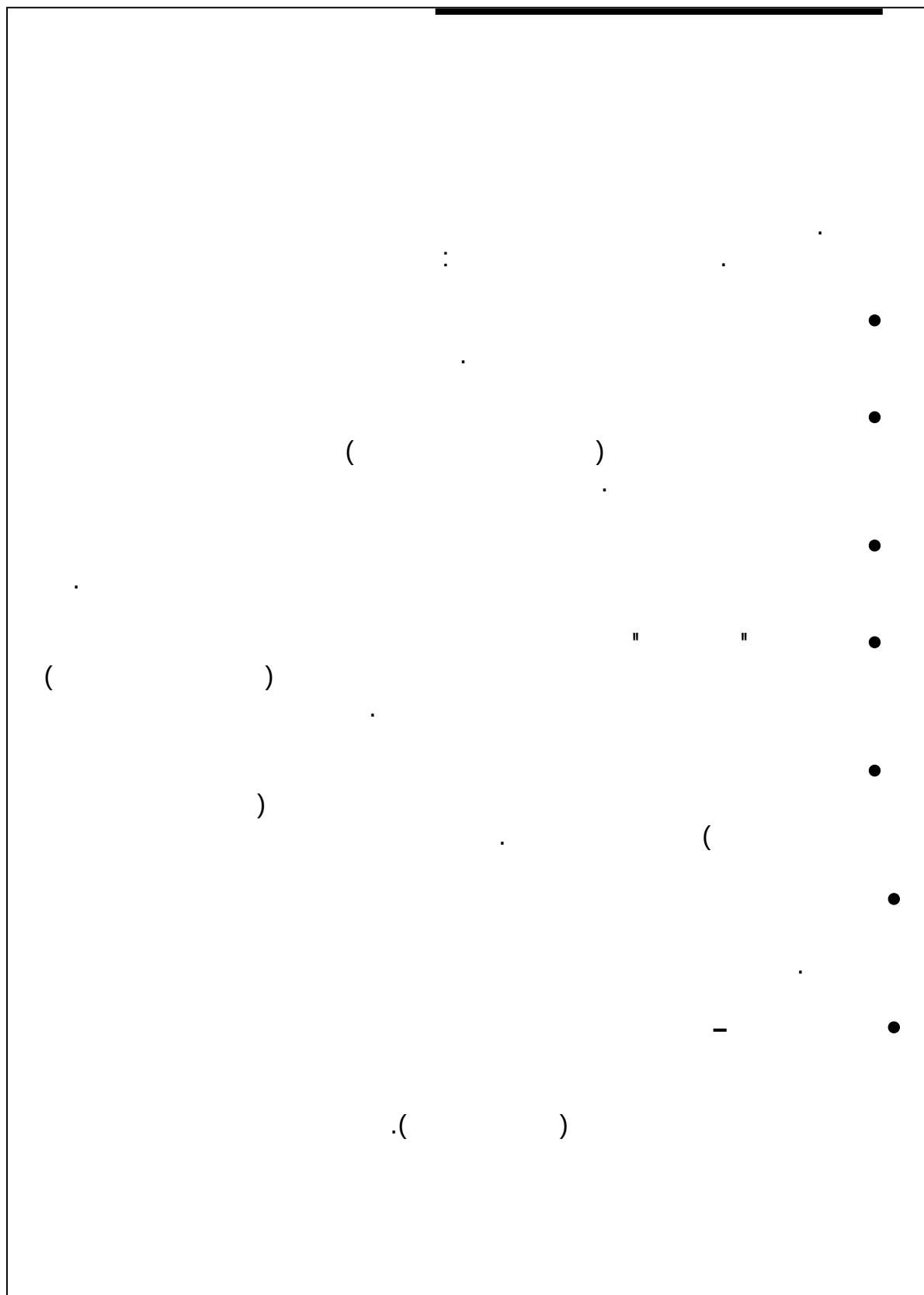
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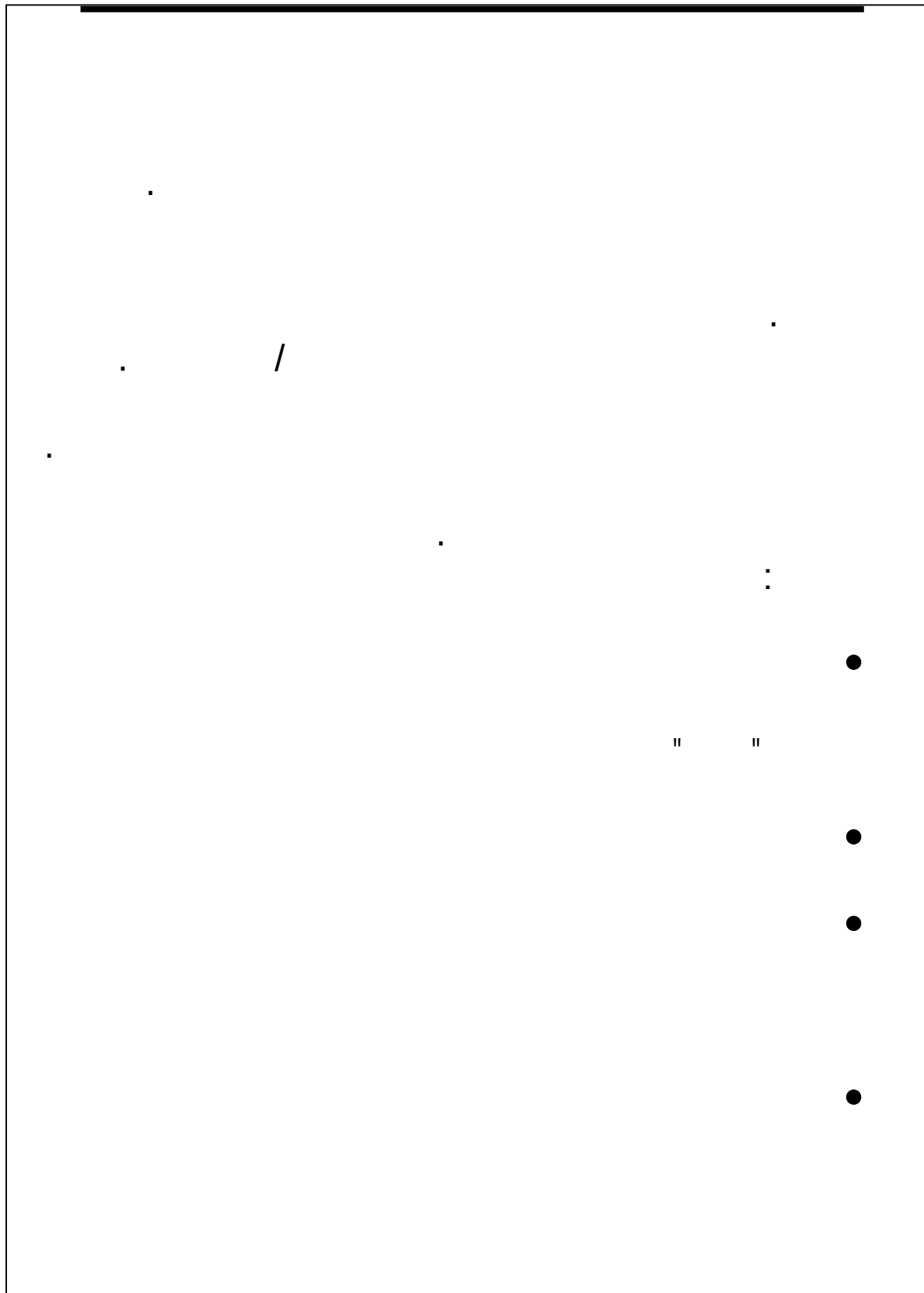
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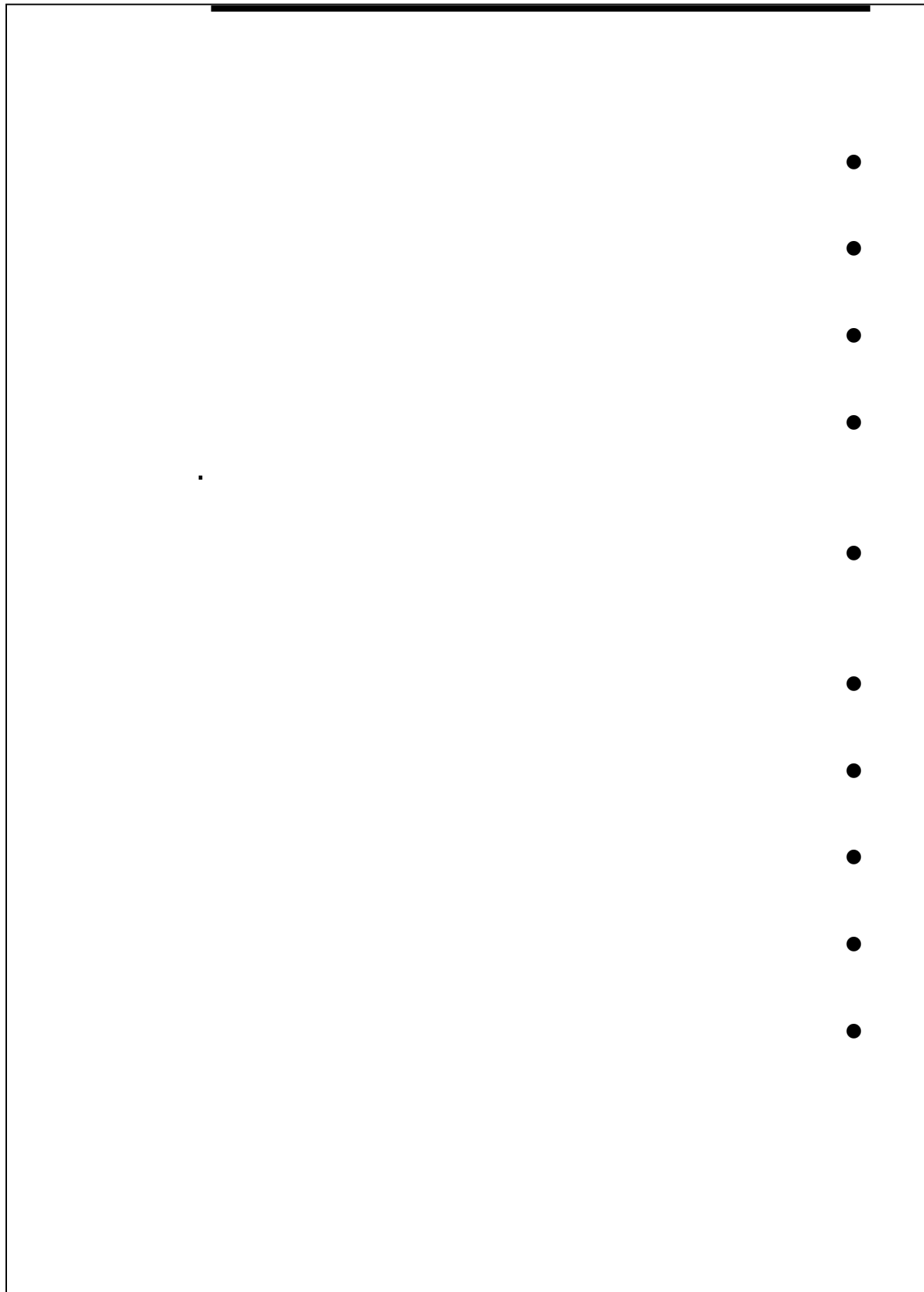
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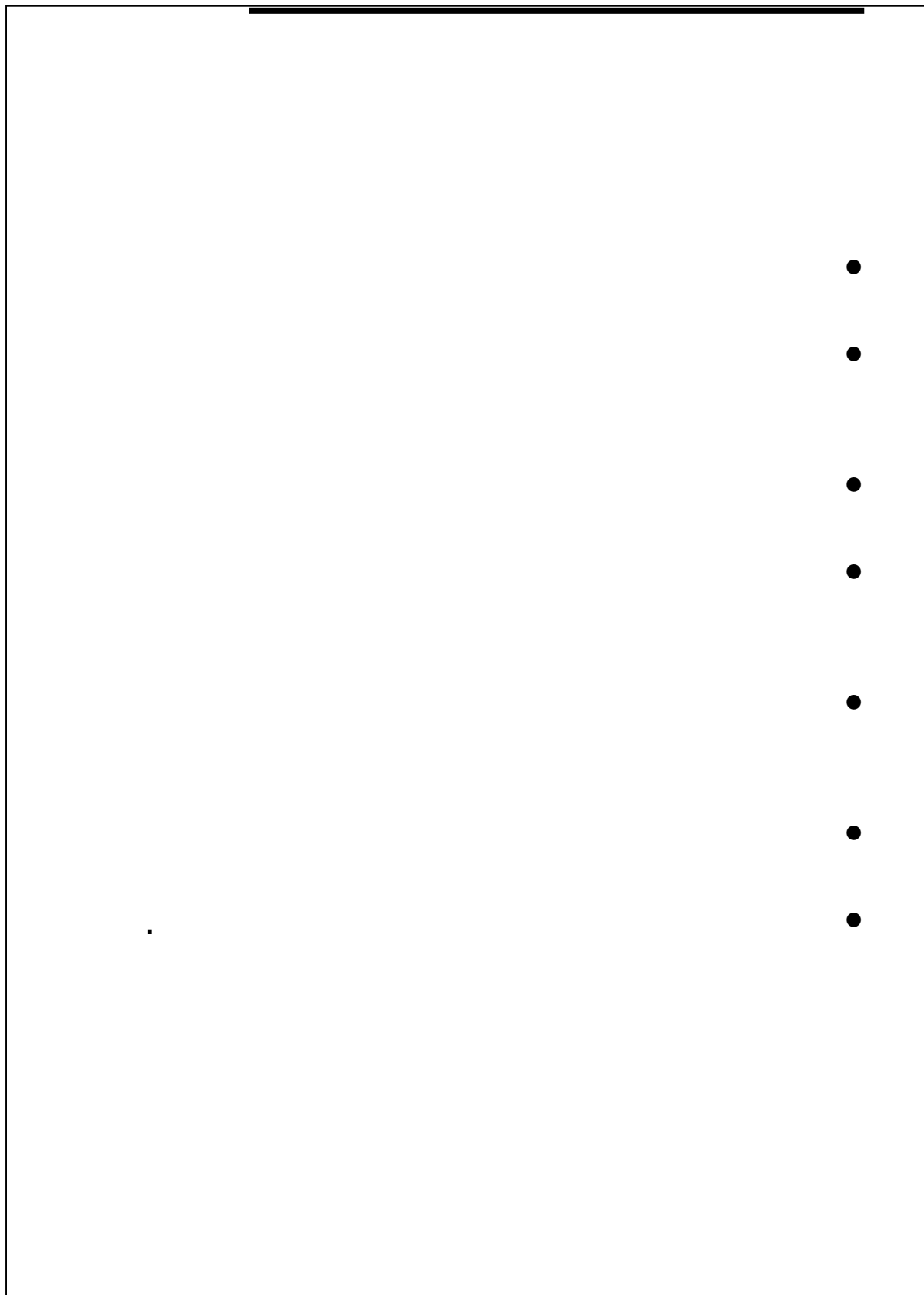
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This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page.

S. Fry. *Helping communities manage their finance – a manual for extension personnel working in rural or peri-urban communities*. Arlington, VA, WASH Project of the U.S. Agency for International Development, 1993 (WASH Technical Report No. 93) .

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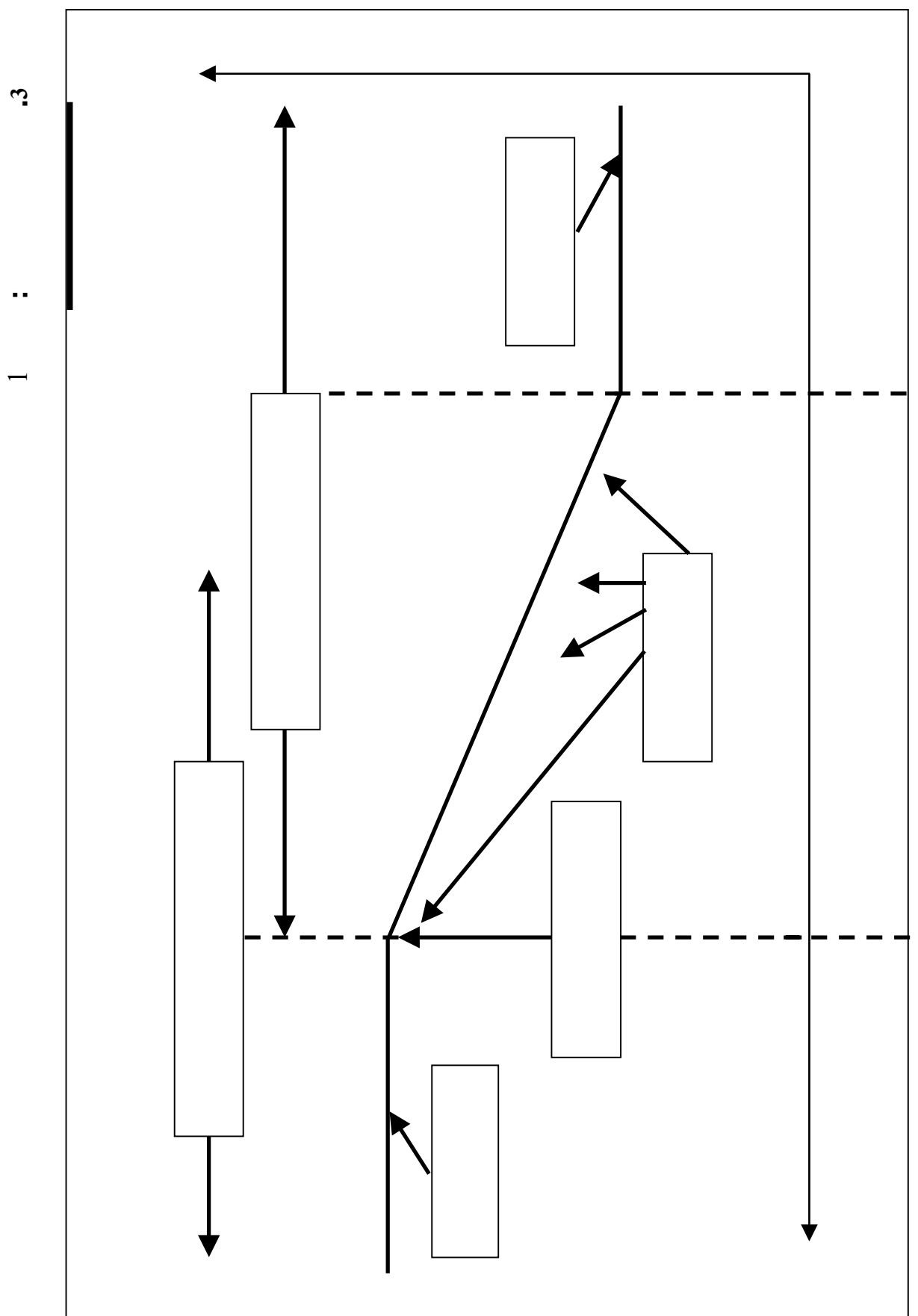
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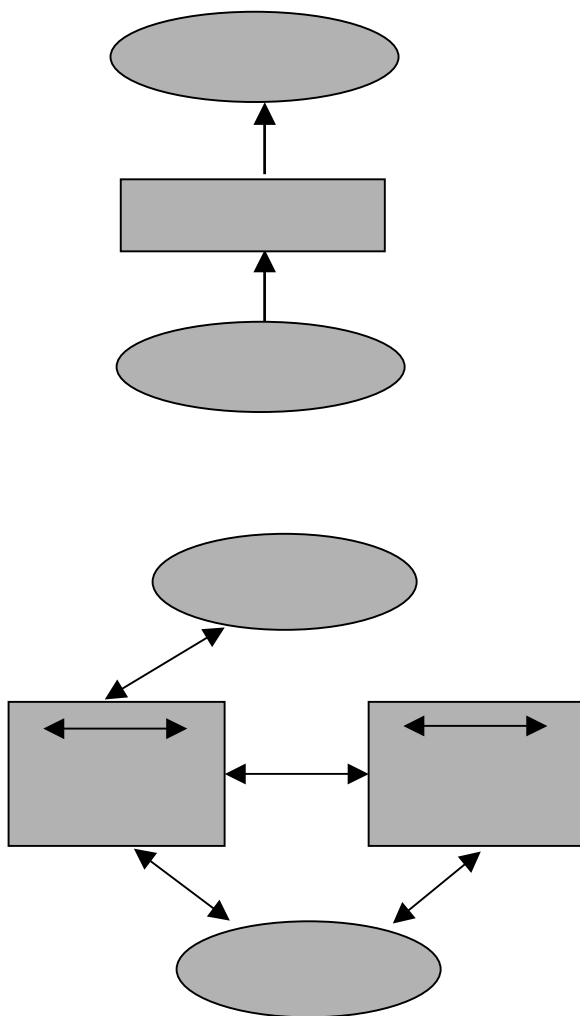
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¹Adapted from unpublished course material: K Skordt. *Monitoring for effectiveness*. The Hauge, IRC, 1997/98.



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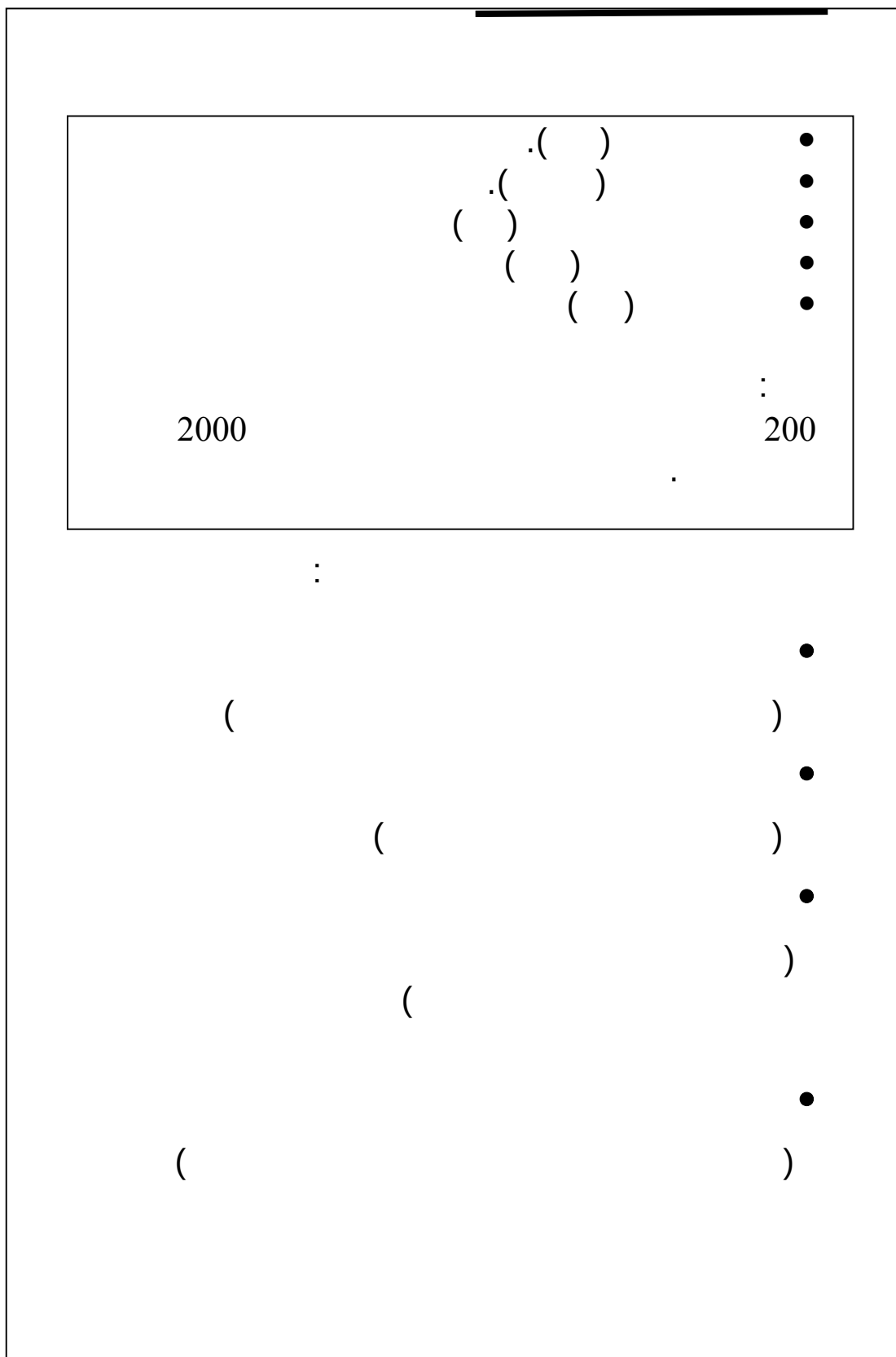
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¹Adapted from unpublished course material: K Skordt. *Monitering for effectiveness*. The Hauge, IRC, 1997/98.

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D. Narayan. Participatory evaluation: tools for managing change. :
 Washington, DC, World Bank, 1993 (World Bank Technical Paper No. 207)

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PHAST *step-by-step* guide: *A participatory approach for the control of:*¹
diarrhoeal disease. PHAST (Participatory Hygiene and sanitation Transformation).
SIDA, UNDP-World Bank, WHO, Geneva, 1998.

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M. Lammerink et al., *Facilitating community discovery: getting to know about community : management*. The Hague, IRC, 1998 (Community Managers for Tomorrow Series, No.4).

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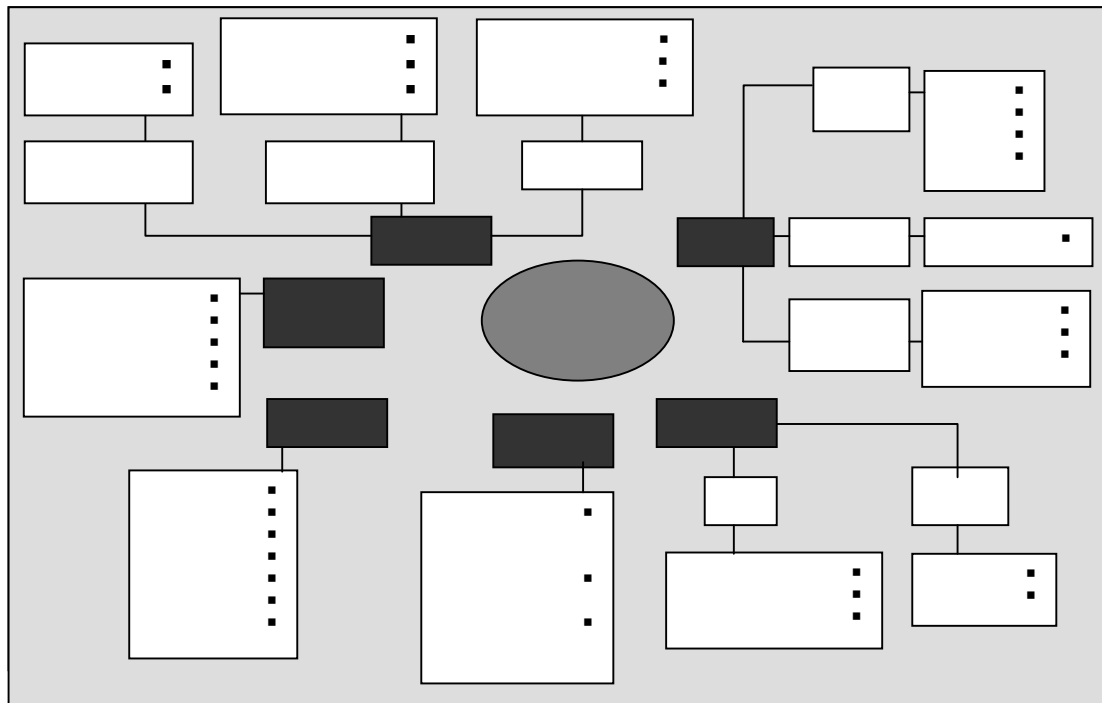
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McCracken/Pretty/Conway. *Introduction to RRA for agricultural development*. IIED, 3 : ¹
Endsleigh Street, London WC1H 0DD, England (1998). In: *Cooperation planning-A working aid for
beginners and for more experienced planners*. Swiss Development Cooperation, Evaluation Service,
CH-3003 Berne, Switzerland (1993).



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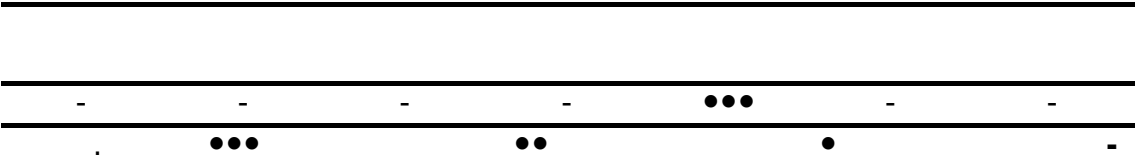
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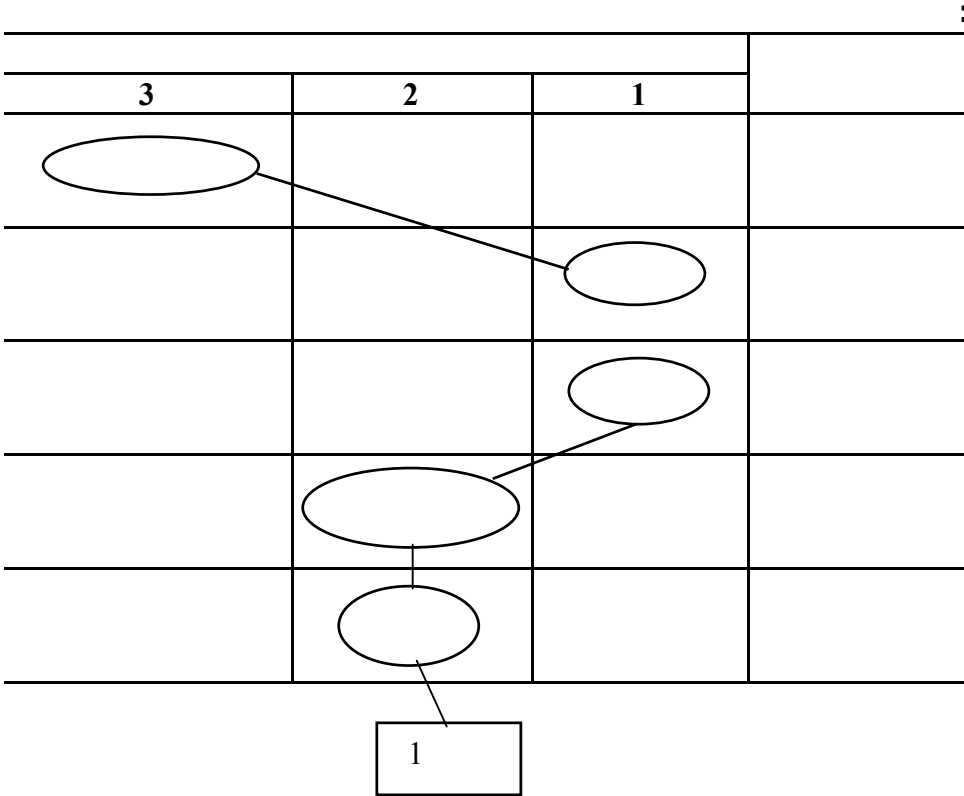
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Cooperation planning-A working aid for beginners and for more experienced planners. Swiss :
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Voelkner J. *Planungsmethoden in Verwaltung und Wirtschaft*. Regensburg-Berlin-Bonn :¹
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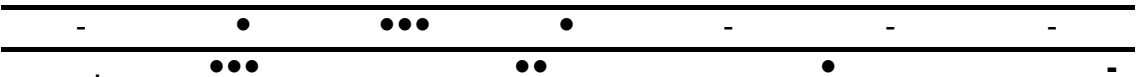
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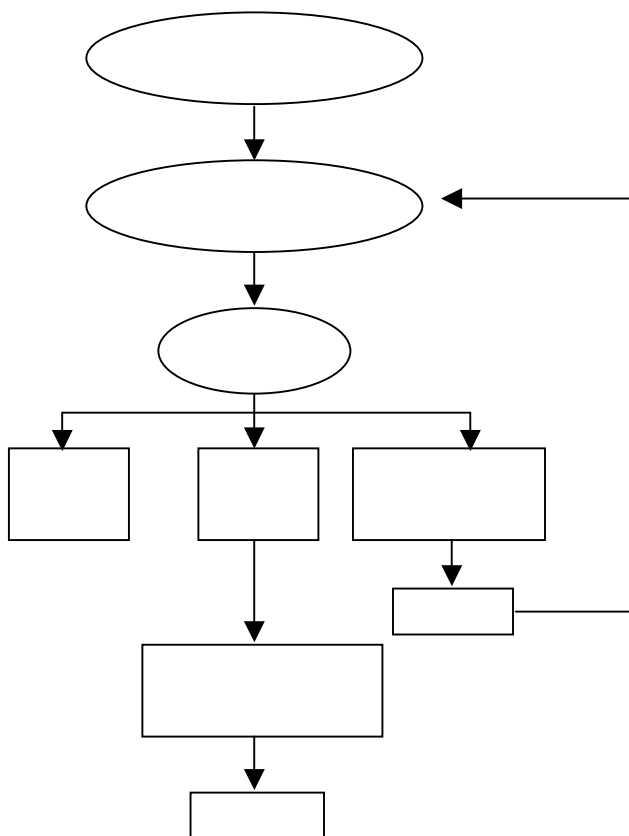
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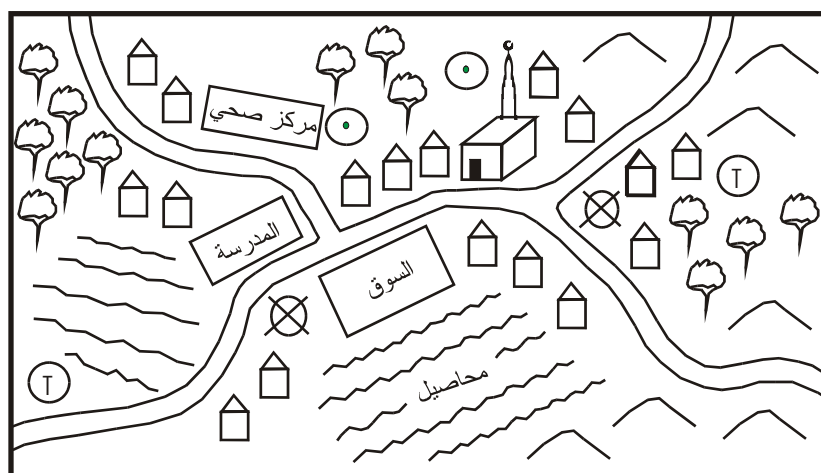
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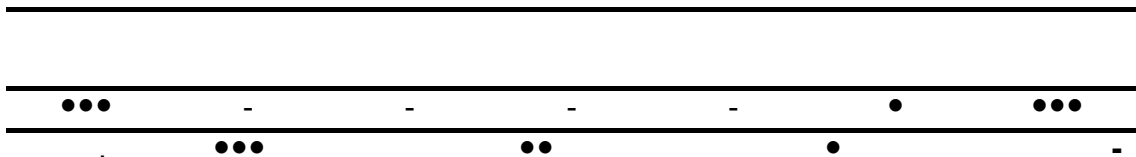
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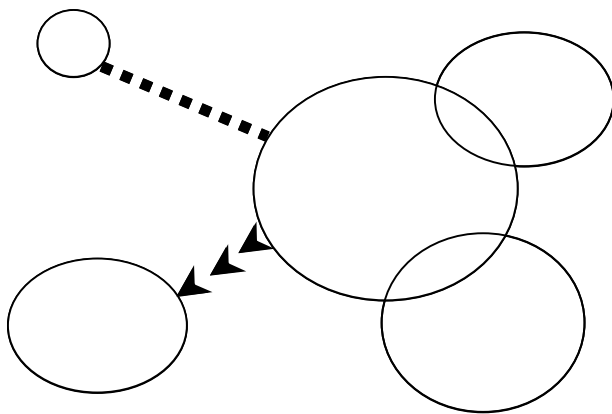


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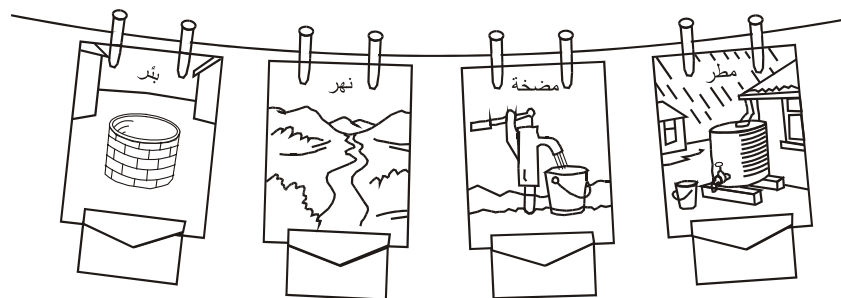
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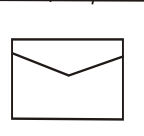
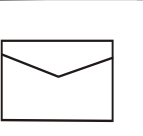
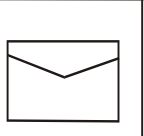
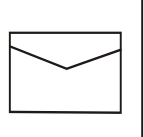
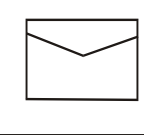
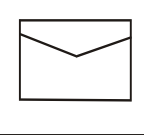
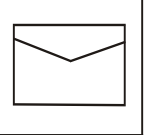
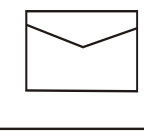
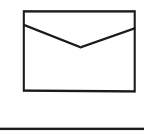
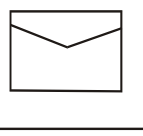
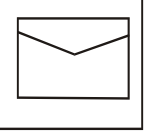
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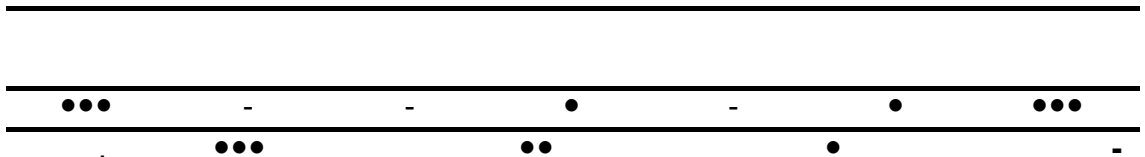
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2.4	2,1,2,3,2,3,2,3,2,4	90	9
3.6	4,5,2,3,4,3,3,3,4,5	50	5
3.8	4,4,5,3,2,4,3,5,4,4	60	6
4.9	5,5,5,5,5,5,5,5,4,5	20	2
2.5	2,3,2,3,2,3,2,3,2,3	70	7
4.7	5,4,5,4,5,5,5,5,4,5	30	3
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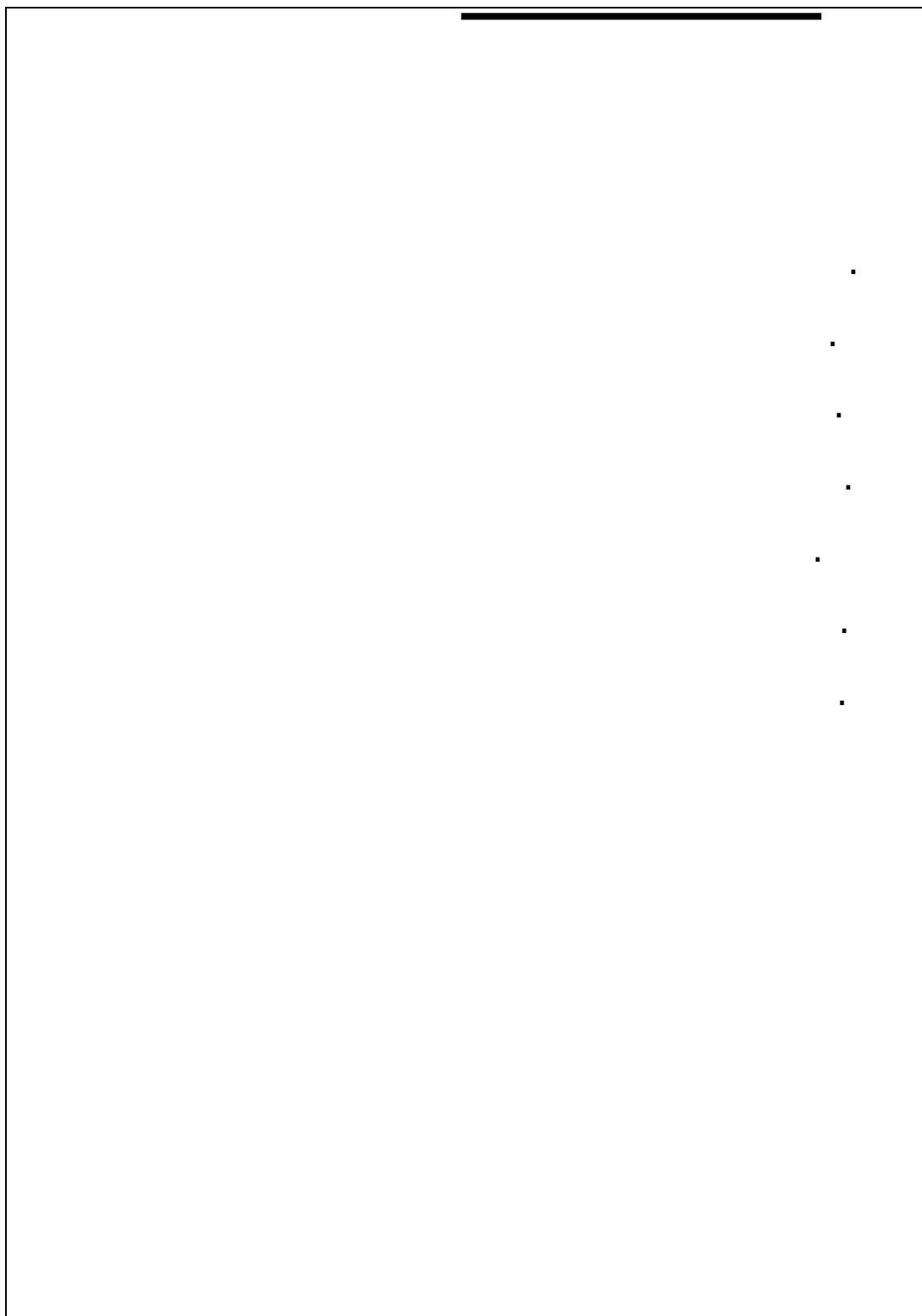
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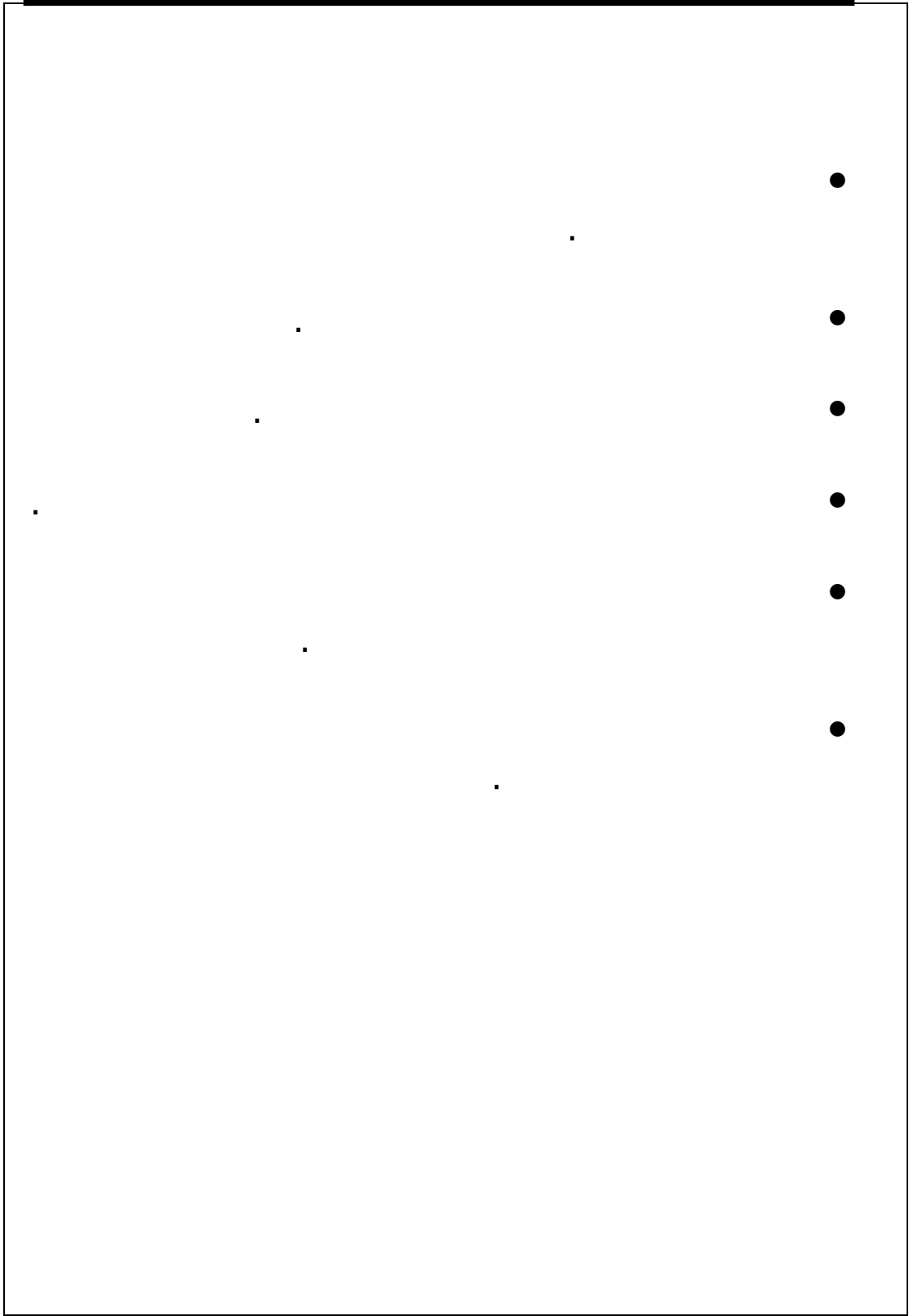
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Accountants	
Accounts	
Administrators	
Analysis of Constraints	
Analysis of Objectives	
Analysis of Participation	
Analytical Phase	
Appraisal	
Artificial Recharge	
Ascariasis	
Assignments	
Audiovisual Materials	
Audit	
Autonomous System	()
Awareness	
Awareness – Raising	
Behavior and Management	
Behavioral Change	
Behavioral Change	
Bilharzias	
Block Rates	
BOO contracts	— —
Book-Keeping	
BOOT Contracts	— — —
BOT contracts	
Brainstorming	
Build-Own-Operator Transfer (BOOT)	— — —
Capacity-building	
Caretaker	
Caste Study	
Catchment Protection	
Centralized Government	
Centralized System	
Characteristics	
Check Lists	
Cholera	
Communication	
Communication Planning	
Community	
Community Cohesion	

Concepts and Trends	
Conflict Resolution	
Conservation Techniques	/
Constraints	
Construction Phase	
Control	
Cost Recovery	
Crisis Maintenance	
Decision – Making	
Delegate Management	
Demand Responsive Approach	
Demand Responsive Approach	
Diarrhea	
Direct Observations	
Drilled Wells	
Dug Wells	
Dysentery	
Effective Use	
Effectiveness	
Efficiency	
Efficient Service	
Enthusiasm	
Equity	
Expectations and Fears	
External Support Agencies	
Facilitator	
Fact Sheet	
Field Visit	
Final Evaluation	
Financial Flows	
Financial Management	
Financial Responsibilities	
Focused Discussion	
Formal Agreement	
Functioning Costs (f.c.)	
Gantt Chart	
Gender	
Gender Awareness	
Gender Specificity	
General Assembly	
General Objectives	
Governing Board	
Handouts	
Handpump	

Health	
Hookworms	
Human Excreta	
Human Resources Development	
Hygienic Use	
Impact Evaluation	
Implementation Phase	
Improved Service	
Indicators	
Infection	
Information Flow	
Initial Investment (IV)	
Initial Presentations	
Initiative	
Institutional Framework	
Institutional Set-up	
Institutional Support	
Interactive Exercise	
International Consultants	
Interviews	
Lack of Self-Confidence	
Least Cost	
Legal Framework	
Legal Status	
Legislation and Enforcement	
Leisure and Recreation	
Level of Benefits	
Level of Income	
Life Cycle (LC)	
Local Authorities	
Local Contractors	
Local Government	
Log Books	
Low-Cost	
Maintenance	
Managers	
Marginal Cost	
Methodology	
Mid-term Evaluation	
Mobilizing Resources	
Monitoring	
Monitoring Sheets	
Municipal Council	
Municipal Management	

National Institutions	
Nongovernmental Organizations (NGO's)	
Non-metered Flat Rates	()
Non-metered Graded Rates	()
NTU- Nephelometric Turbidity Unit	
O & M	
Objective Oriented Project Planning (OOPP)	
Objective Tree	
Operation	
Optimal Use	
Oral Rehydration	
Overhead Sheets	
Ownership	
Ownership of the System	
Package	
PAD-Participatory Action Development Approach	
Participation of Communities	
Participatory and Integrated Government	
Perceived Benefits	
Periodic Reports	
Periodicity	
Personal Hygiene	
Planners	
Planning and Design Phase	
Policies and Legislation	
Pot Chlorination in Well	
Presentations	
Prevention of Diseases	
Preventive Maintenance	
Preventive Measures	
Principles of Monitoring	
Priority Ranking	
Private Management	
Private Sector	
Processes	
Project Cycle	
Promotion Campaign	
Public – Private Partnership	
Public Services	
Recovery of Investment Cost (RIC)	

Recurrent Cost	()
Reforestation	
Regional Autonomy	
Regulation of Demand	
Relative Costs	
Reliability of the System	
Repair	
Resistance to Change	
Ringworms	
Risk	
Role-Playing	
Roundworms	
Rural	
Rural Communities	
RWSS-Rural Water Supply and Sanitation	
Safe Disposal	
Sand Filter	
Sanitary Survey	
Sanitation	
Selection	
Sense of Humor	
Sensitivity Analysis	
Service level	
Situation Analysis	
Situation Analysis	
Social Management	
Solar Disinfections	
Sound Financial Management	
Source Selection	
Spar-Parts	
Standardization	
Storage and Sedimentation	
Strategic Issues	
Sustainable	
SWOT-Successes, Weaknesses, Opportunities, Threats	
Tapeworms	
Tariff	
Tariffs	
Technical and Managerial Capacity	
Technical Management	
Technical Skills	
Theme	

Tools	
Training	
Transparency of Financial Management	
Typhoid	
Variables	
Venn Diagram	
Village Level Operation & Maintenance (VLOM)	
VIP-Ventilated Improved Pit	
Visualization	
Wastewater Recycling	
Wastewater Treatment	
Water Committee	
Water Purification	
Water Quality	
Water Supply and Sanitation (WSS)	
Whipworms	
WHO-World Health Organization	
Willingness of Pay (WTP)	