

**MODULE 7: FOCUS ON PROCESSES AND SYSTEMS**

*Time: 1.5 hours*

**Objectives:** Participants will be able to:

- ◆ Explain that a focus on systems and processes is one of the four principles of quality improvement
- ◆ Explain the meaning of the term “process”
- ◆ Explain the meaning of the term “system”
- ◆ Differentiate between a process and a system
- ◆ Identify dependencies and decision points within a process
- ◆ Depict a process by creating a basic flowchart

**Materials:** Materials required for this module are:

- ◆ Participant Manual
- ◆ Quality Improvement Tools appendix (pp 51-76 of the Monograph)
- ◆ Flipchart, easel, and markers
- ◆ Overheads 7-1 thru 7-5
- ◆ Computer or overhead projector and projection screen

▶▶▶▶▶ **MODULE INTRODUCTION**

- OH 7-1
1. **DISPLAY** overhead 7-1.
  2. **REFER** participants to Module 7 in their manuals.
  3. **STATE** the following:  
  
 In module 5 we learned that quality improvement efforts are based upon four basic principles. In this module our focus is going to be on understanding work as processes and systems.
- OH 7-2  
OH 7-3
4. **DISPLAY** overheads 7-2 and 7-3.
  5. **REVIEW** the objectives for the module.

▶▶▶▶▶▶ **FOUR PRINCIPLES OF QI**

- OH 7-4
6. **DISPLAY** overhead 7-4.
  7. Briefly **REVIEW** the four principles of Quality Improvement introduced in Module 5:
    - Client focus
    - Understanding work as processes and systems
    - Testing changes and emphasizing the use of data
    - Teamwork

▶▶▶▶▶▶ **PROCESS AND SYSTEM DEFINITIONS**

- Manual
8. **REFER** participants to the definitions of “process” and “system” in their manuals.
  9. **EXPLAIN** what a process is using the Participant Manual as a reference
  10. **ASK** one or two volunteers to provide additional examples of a process.
  11. **EXPLAIN** what a system is using the explanation in the Participant Manual as a reference
  12. **ASK** one or two volunteers to provide additional examples of a system.

▶▶▶▶▶ **FLOWCHARTS**

Manual

13. **STATE** the following:

A flowchart is an illustration of a process. It shows the sequence of steps required to complete a process.

14. **REFER** participants to the sample flowchart of “getting to class” provided in their manuals.

15. **STATE** the following:

In your manuals is an example of a high level process of getting to class this morning. It includes high-level steps of getting out of bed, getting washed, getting dressed, walking to the bus, riding the bus, and walking to class.

16. **EMPHASIZE** that within each of these high level steps, are several other smaller processes.

17. **EXPLAIN** that as shown, the high level process of getting to class does not have an oval starting or stopping point. **ASK** what they might be.

- Starting point might be alarm ringing or being awoken by other family member
- Stopping point would be arrival at class

18. **INFORM** learners that a more detailed description of Flowcharts is provided in the tools appendix and you will review it as a group later in this module.

19. **REMIND** learners that flowcharting was a tool used in Story 3 of the Quality Improvement Success Stories reviewed in Module 2. Explain that you’ll revisit that flowchart at the end of this module.

▶▶▶▶▶ **SYSTEMS**

Manual

20. **REFOCUS** the learners to the high level flowchart provided in their manuals.

21. **STATE** the following:

I'm certain that getting to class was not as simple for you as this high level flowchart would lead us to believe. That's likely due to the fact that rarely do we act *independently* of one another. For example, riding the bus was contingent upon the bus arriving at the bus stop.

Let's take a few minutes now to discover some of the *interdependencies* associated with getting to class.

*Note: Be certain that learners understand the difference between independent and interdependent. Independent means acting alone, interdependent means that you're dependent on others to accomplish something.*

22. **REFER** participants to the exercise in their participant module entitled "Exploring Interdependencies."

*Note: Another way this can be explained is that you want to explore inputs to your process.*

23. **DIRECT** participants to work alone on this exercise. Following are the directions: Think about the high-level process you used to get to class this morning. In the left column list the main steps in your process. In the right column, determine how your process was dependent upon other people and things. For example, taking a bus to class would mean you interacted with a transportation system, eating breakfast would mean you interacted with a food supply system, and getting a child ready for school would mean you interacted with a family system.

*Note: Allow participants about 10 minutes to complete the individual exercise.*

24. **DEBRIEF** exercise in a large group setting by asking each participant to share one examples of another process or system that they were dependent upon this morning.

25. **EMPHASIZE** and reinforce that when we look at processes, we need to understand the larger system. Explain that a system

can be thought of as interacting processes.

▶▶▶▶▶ **CREATING FLOWCHARTS**

26. **STATE** the following:

Let's now try and create a flowchart together.

27. **REVIEW** the basic steps of creating a flipchart in the participant manual and follow the steps as you lead the class in the creation of a flowchart. Use the process of brushing your teeth as an example.

*Note: Use the example of brushing your teeth. As you discuss the process with the class, be certain to add decision points to the process and identify dependencies or inputs to the process— e.g., availability of toothpaste, availability of water.*

Flipchart

28. Write on a **FLIPCHART** important details as you follow the steps to create a flowchart of brushing your teeth. For example, list the main steps first, then put in order prior to drawing the flipchart.

29. **ENCOURAGE** participants to copy the flowchart created by the class in their manuals

30. **ARRANGE** participants into groups of 3-4 people for a group exercise.

31. **REFER** participants to the exercise in flowchart exercise in their manuals entitled "Applying a Dressing."

32. **ASK** each group to pool their knowledge to create a flowchart of how to apply a dressing. Encourage them to identify the starting and stopping points and the decisions that must be made along the way.

*Note: If the participants need an additional example of a flowchart, refer them to the flowchart shown in Module 2 of the Participant Manual.*

33. **DEBRIEF** by having each group explain the flowchart created by them. **POINT OUT** the differences between groups. **EMPHASIZE** that because it is easy for people to focus in

on different details in a process, that it is important to assemble everyone involved in the process. This will help ensure that the flowchart makes sense to everyone.

*Note: Provide groups with flipchart paper and markers to draw their flowcharts.*

34. **EMPHASIZE** also, that when you draw a flowchart to improve a process, it is essential to draw the process as it exists, not how you want it to be. This will allow you to identify flaws and inefficiencies in the existing process so you can improve them..

*Note: Allow groups about 10 minutes to create this flowchart.*

▶▶▶▶▶ **MORE ABOUT PROCESSES AND FLOWCHARTS**

35. **EXPLAIN** that the information discussed in this module on flowcharts is high level.

36. **REFER** participants to the section on flowcharts in the tools appendix and **EXPLAIN** that more detailed information is provided in the appendix. This includes more detailed steps for creating flowcharts, and additional symbols not reviewed in class.

*Note: Based upon the level of sophistication of the class, you may opt to review some additional concepts about flowcharts provided in the tools appendix.*

OH 7-5

37. **DISPLAY** overhead 7-5

38. **EXPLAIN** that there are various types of processes in healthcare that can be illustrated by process flows including

- Clinical algorithms
- Information flow processes
- Material flow processes
- Patient flow processes
- Multiple flow processes

39. **REFER** participants to the process flow provided in Module 2 – Quality Improvement Success Stories.

40. **ASK** participants to take a closer look at the flowchart than before and to ask questions

that they might have. ANSWER any additional questions they might have.

▶▶▶▶▶ **MODULE REVIEW**

41. **FACILITATE** a discussion to review important concepts discussed in this module. Use the following questions as a guide:

- How might you explain the term process?
- How might you explain the term system?
- How might you differentiate between the two?
- What would be a good process for drawing a flowchart?
- Knowing what you now know about processes and systems, do you agree that a focus on them should be one of the four principles of quality improvement? Why or why not?

**MODULE 8: FOCUS ON MEASUREMENT**

***Time: 2 hours***

**Objectives:** Participants will be able to:

- ◆ Explain why it is important to use data to analyze processes, identify problems and test interventions
- ◆ Determine how to measure various quality improvement goals
- ◆ Explain the difference between quantitative and qualitative data
- ◆ Explain why there is variation in all measures
- ◆ Explain the difference between common cause and special cause variation

**Materials:** Materials required for this module are:

- ◆ Participant Manual
- ◆ Flipchart, easel, and markers
- ◆ Overheads (OH) 8-1 thru 8-8
- ◆ Computer or overhead projector and projection screen

▶▶▶▶▶ **MODULE INTRODUCTION**

- OH 8-1
1. **DISPLAY** overhead 8-1.
  2. **REFER** participants to Module 8 in their manuals.
  3. **STATE** the following:  
In the previous module we focused on the principle that providers must understand the service system and its key service processes in order to improve them.

In this module we're going to begin to equip you to do just that. We will begin to look at the type of data that can be collected in a healthcare setting.

- OH 8-1  
OH 8-2
4. **DISPLAY** overhead 8-2 thru 8-3.



5. **REVIEW** the objectives for the Module.

▶▶▶▶▶ **FOCUS ON MEASUREMENT**

- OH 8-3
6. **DISPLAY** overhead 8-3.
  7. **REINFORCE** the idea that testing changes and emphasizing the use of data is one of the four principles of quality assurance.

▶▶▶▶▶ **WHY MEASURE?**

- OH 8-4
8. **DISPLAY** overhead 8-4.  

“A difference that makes no difference is no difference.”
  9. **FACILIAE** a discussion of the quote’s meaning.  

Basically, the quote points to the fact that people can engage in activity to try and make a difference, but activity is meaningless unless a change is realized.
  10. **EMPAHASIZE** that it is through the measurement of data that we can determine if a change is effective or if it makes no difference.

- OH 8-5
11. **DISPLAY** overhead 8-5.
  12. **REVIEW** the five reasons on the overhead for measuring data. They are:
    - Identify and analyze problems
    - Verify possible causes of problems
    - Show if a change yielded initial improvement

- Monitor change to ensure improvement is maintained over time
- Make decisions based upon fact, not opinion.

▶▶▶▶▶ **IDENTIFYING MEASURES**

Manual

13. **REFER** participants to the exercise page in their manuals called "Identifying Measures".
14. **ARRANGE** participants into small groups of 3 to 4 people.
15. **DEBRIEF** in a large group setting. **ENCOURAGE** discussion about how each item could be measured.
16. **EMPHASIZE** that in their own settings, a great deal of discussion will also ensue when they try to define the best way to measure something.
17. **EMPHASIZE** that without measurement it would be impossible to determine if a change occurred, e.g., a decrease in infant mortality, improved client satisfaction, etc.

*Note: Allow groups approximately 20-30 minutes to identify some possible ways the various quality improvement initiatives could be measured.*

▶▶▶▶▶ **QUANTITATIVE AND QUALITATIVE DATA**

18. **STATE** the following:

In the previous exercise, we identified ways we could measure to determine if a change we wanted to occur did in fact change. When we measure with numbers, they are called quantitative measures, because you "quantify" or use numbers.

There is a second type of data that is known as qualitative data. Qualitative data uses words, often through detailed reports.

OH 8-6  
OH 8-7

19. **DISPLAY** Overheads 8-6 and 8-7.
20. **REVIEW** the characteristics of quantitative data and qualitative data provided in the Participant Manual.
21. **ASK** for a volunteer to provide examples of quantitative data and qualitative data.

▶▶▶▶▶ **EXERCISE: QUANTITATIVE OR QUALITATIVE**

22. **ARRANGE** participants into groups of 3 to 4 people.
23. **DIRECT** them to review the sample client satisfaction survey in their manuals and discuss each of the questions about it.
24. **DEBRIEF** in a large group setting. The following main ideas should be communicated:
  - While the data asks for opinions that are typically qualitative in nature, the data can be quantified by assigning a number value to each response. For example
    - Strongly agree (5)
    - Agree (4)
    - Neutral (3)
    - Disagree (2)
    - Strongly disagree (1)
  - These values can then be collected over time to create a quantitative measure of client satisfaction.
  - To make these questions more

*Note: Allow groups approximately 10 minutes to discuss this.*

qualitative in nature, the respondents should be asked more open-ended questions that allow them to elaborate and provide additional information.

▶▶▶▶▶ **VARIATION TO DATA**

OH 8-8      25. **DISPLAY** overhead 8-8.

26. **STATE** the following:

The last important concept I'd like to share with you in this module is the concept of data variation. It's important to keep in mind as you interpret data that there is some variation in everything you measure.

Provide the following example. If you had a jar of jelly beans or other multi-color candy and scooped out 100, counted all the blue beans, placed them back into the jar, scooped out another 100, counted all the blue beans, placed them back into the jar, and continued doing this 20 times, you would likely end up with a different count of blue jelly beans scooped out each time.

That's because some variation in what we measure is normal, and due to chance.

This type of variation is called "common cause variation." It is predictable and expected.

27. **STATE** the following:

The second type of variation is known as special cause variation. It is neither predictable or expected, and signals something is wrong.

For example, a healthy person's normal

temperature is 98.6 degrees Fahrenheit and 37 degrees Celsius. If you took a man's temperature every day for a month, you might have small variations that might occur due to the time of day that you took his temperature or other small changes in their system – again common cause variation.

However, if one day his temperature was 102 degrees Fahrenheit or 38.9 degrees Celsius, it would signal that something was wrong.

28. **ASK** a volunteer to provide another example of common cause and special cause variation.

Possible example: Typical numbers of people visit the clinic daily; a spike in the amount might demonstrate that a disease or illness is spreading.

▶▶▶▶▶ **VARIATION TO DATA / CONTINUED**

29. **STATE** the following:

However, just because there isn't a lot of variation to a measure doesn't mean that a problem doesn't exist.

*Note: The concepts of common cause and special cause variation will be further discussed in Module 15.*

30. **ASK** participants to reflect back on the Red Bead Game. **ASK** the following:

Would you say that the type of variation found in the production of the beads was common cause or special cause?

Answer: The variation was common cause. The number of red and white beads in the bin was stable, and there were no changes to the production process, the beads, or the paddle, therefore the ratio of red/white beads was due to chance. If the supervisor

had picked out the red beads as they were produced, or if the changes were made when the beads came into the factory, it could have caused special cause variation – a massive reduction in the number of red beads produced.

31. **EMPHASIZE** that if people rely solely on data, they may actually miss a problem. **ASK** participants to reflect back to Success Story 2: Reducing the Duration of Phototherapy. In this case, the length of time the babies spent in phototherapy was reliably longer than anticipated. Dr. Awadella's knowledge of phototherapy at other facilities led him to investigate the situation.

Therefore, common cause is predicable, but it might not mean that a problem doesn't exist; it just means that the current process is stable.

▶▶▶▶▶ **MODULE REVIEW**

32. **ASK** participants to identify the most important concept learned from this module and how they think it will help them in their effort to improve quality at their facility.

**MODULE 9: USING QI TOOLS TO FOCUS ON  
MEASUREMENT**
***Time: 2 hours***
**Objectives:** Participants will be able to:

- ◆ Explain why it is important to be familiar with various tools for quality improvement
- ◆ Name three important rules for brainstorming
- ◆ Identify (through brainstorming) a number of different things that can be measured in a health facility
- ◆ Discuss strengths and weaknesses of alternative brainstorming techniques
- ◆ Determine the most appropriate quality improvement tools (presented in the appendix) for various situations

**Materials:** Materials required for this module are:

- ◆ Participant Manual
- ◆ Quality Improvement Tools appendix (pp 51-76 of the Monograph)
- ◆ Flipchart, easel, and markers
- ◆ Overheads 9-1 thru 9-6
- ◆ Computer or overhead projector and projection screen

**▶▶▶▶▶▶ MODULE INTRODUCTION**

1. **DISPLAY** overhead 9-1.
2. **REFER** participants to Module 9 in their manuals.
3. **STATE** the following:

In the last module we began to look at how data can and should be used in quality improvement initiatives to identify problems, analyze processes, and measure performance. In this module we're going to continue our focus on measurement, and begin to look at how the various quality

improvement tools can be used in this regard.

4. **DISPLAY** overhead 9-2 and 9-3.
5. **REVIEW** the objectives for the module.

▶▶▶▶▶▶ **DISCUSS “HAMMER-TOOLBOX” QUOTE**

OH 9-4

6. **DISPLAY** overhead 9-4 and read the quote.

“To someone with only a hammer in his/her toolbox, everything looks like a nail”.

7. **FACILITATE** a discussion of the quote’s meaning. **ASK** participants what might happen if a provider had only limited knowledge of patient treatment options.

Basically, the quote points to the idea that if people’s knowledge of different tools is limited; they will always try to use what they’re familiar with to solve a problem.

8. **EMPAHSIZE** that to minimize this phenomenon, it’s important to become familiar with as many tools as possible, so that it’s possible to make informed choices.

▶▶▶▶▶▶ **BRAINSTORMING**

Manual

9. **REFER** participants to the Brainstorming section in their manuals.
10. **REVIEW** the background information about brainstorming.



11. **DISPLAY** overhead 9-5.
12. **REVIEW** the Brainstorming Rules.
13. **DISPLAY** overhead 9-6.
14. **REVIEW** the Brainstorming Steps.

▶▶▶▶▶▶ **BRAINSTORM HEALTH FACILITY MEASURES**

15. **CONDUCT** a Brainstorming Session following the ground rules provided in the participants guide and the directions provided below.

*Note: Conduct a shortened session until you have about 10-15 ideas on each of the four flip charts.*

Flipchart

16. To begin, **LABEL** 4 sheets of flipchart paper with the following heading:

- Clients / Clients' Families
- Healthcare Providers / Employees
- Facilities / Equipment / Supplies
- Processes and procedures

17. **TELL** participants that the goal of the brainstorming session is to generate a list of various things to measure in each of the four categories.

18. **FACILITATE** the Brainstorming session using the rules and steps provided in the participant guide and tools appendix. Allow participants time first to think of some ideas before you begin. Use a structured brainstorming session if you have difficulty getting participants to contribute or if one or two people dominate the session.

*Note: To use a structured format go around the room and have each person take a turn. They may skip a turn if they don't have anything to say.*

For example, you can go around the room to give each person a chance to add a new idea. They may "pass" when it is their turn if they do not have an idea on that round.

Keep going until all ideas are exhausted and everyone passes.

19. **COMBINE** ideas on the flipchart to reduce duplicate ideas.
20. **FACILITATE** a discussion around effectiveness of the brainstorming rules and steps. **DISCUSS** various options for brainstorming and their potential effectiveness, e.g., in this exercise one flipchart could have been used to gather all ideas (instead of 4) and then the ideas could have been divided by headings later. Also discuss effectiveness of non-structured vs. structured formats.

▶▶▶▶▶ **QUALITY IMPROVEMENT TOOLS**

Manual

21. **REFER** participants to the section on Quality Improvement Tools in their manuals and to the tools appendix.
22. **ARRANGE** participants into small groups of 3 to 4 people. Assign a few tools to each group to review. Try to assign all the tools (see exceptions below), Do NOT assign brainstorming, flowcharts, force field analysis, or Gantt charts. These tools have or will be reviewed in a different module of the course. Assign the following tools:

- Data collection
- Affinity analysis
- Creative thinking techniques
- Voting
- Prioritization matrices
- Expert decision making
- Systems modeling
- Cause and effect analysis
- Bar and pie charts
- Run charts

*Note: Allow groups approximately 10 minutes for each tool they are to review, e.g., if the group is assigned 3 tools, allow 30 minutes for them to create summaries of all three tools, if assigned 2 tools allow 20 minutes.*

- Pareto charts
  - Benchmarking
  - Quality assurance storytelling
23. **DIRECT** the groups to review the tools assigned to them and prepare a short summary of each to present to the rest of the class. Provide them with flipchart paper and markers to help them prepare important points. As the groups prepare their summaries, have them determine an appropriate use for the tool (in their setting).
24. **DEBRIEF** by asking each group to present their summaries. **FACILITATE** discussion during the debriefing session and add comments where necessary.
25. **THANK** participants for their help in facilitating this module and ask if they have any final questions before you conclude the module.

**MODULE 10: THE NEW ZIN OBELISK<sup>1</sup>**

**Time: 1 hour**

**Objectives:** Participants will be able to:

- ◆ Recognize behaviors that are conducive to team performance
- ◆ Recognize behaviors that hinder team performance
- ◆ Suggest ways to improve team problem solving in your own facility
- ◆ Discuss important leadership behaviors that emerged during the game
- ◆ Explain some of the lessons learned by participating in The New Zin Obelisk

**Materials:** Materials required for this module are:

- ◆ Participant Manual
- ◆ Flipchart, easel, and markers
- ◆ Overheads (OH) 10-1 thru 10-2
- ◆ Computer or overhead projector and projection screen
- ◆ Several sets of The New Zin Obelisk information cards. One set is required for each team of 4 to 7 members.

**Simulation Objective:** This simulation provides participants with the opportunity to experience and examine the sharing of information in team problem solving. Participants will also have the opportunity to study leadership, cooperation, and other issues associated with working in teams.

▶▶▶▶▶ **MODULE INTRODUCTION**

- OH 10-1
1. **DISPLAY** overhead 10-1.
  2. **REFER** participants to Module 10 in their manuals.
  3. **STATE** the following:

<sup>1</sup> Reproduced from IMPROVING WORK GROUPS: A PRACTICAL MANUAL FOR TEAM BUILDING (Revised). Dave Francis and Don Young. San Diego, California: Pfeiffer & Company, 1992

In this module you will participate in a game called The New Zin Obelisk. It will provide you with the opportunity to experience and examine the sharing of information in team problem solving. It will also provide you the opportunity to study leadership, cooperation, and other issues associated with team problem solving.

- OH 10-2
4. **DISPLAY** overhead 10-2.
  5. **REVIEW** the objectives for the module.

▶▶▶▶▶▶ **SET UP AND START GAME**

6. **ARRANGE** participants into teams of 4 to 7 people.
7. **TELL** participants to turn to the instructions for the game found on page 10-2 in their participant manuals.
8. **ENSURE** each team has a pencil and a sheet of paper for their use.
9. **REVIEW** the instructions for the game located in the participant manual on page 10-2 and provided below.
  - In the ancient city of Atlantis, a solid, rectangular obelisk called a Zin was built in honor of the goddess Charlotta. The structure took less than two weeks to complete.
  - The task of your team is to determine on which day of the week the obelisk was completed. You have twenty minutes to complete this task. Each team member will be given cards containing information related to building the Zin. You may share this information orally, but you may not show your cards to other team members.

10. **DISTRIBUTE** to each team a set of **The New Zin Obelisk Information Cards**. Within each team, distribute the cards randomly. For example, if a team has 5 members, each team member should receive 6 information cards.
11. **DIRECT** participants to begin the task as described in the instructions. Allow **25 minutes** for the task.

*Note: One set of information cards is provided at the end of this instructor manual. Reproduce the 30 statements onto cards or photocopy the appropriate number of copies from the instructor manual and cut with scissors accordingly.*

*Note: Allow teams 25 minutes to solve the problem.*

▶▶▶▶▶▶ **DISCUSS GAME**

12. **DISPLAY** overheads 10-3 and 10-4.
13. **FACILITATE** a discussion of what participants experienced in the game using the questions for discussion located in the Participant Manual and provided on the overheads.
14. **EXPLAIN** that the next module will focus on teamwork.

*Note: Additional notes to the facilitator containing observations of past sessions are provided at the end of this module.*

### THE NEW ZIN OBELISK INFORMATION

Instructions: Make a set of thirty 3"x5" index cards for each group, each containing one item of information from the list below or simply cut along the dotted lines between each statement. Do not copy the question numbers onto the cards. The cards should be distributed randomly among members of the team.

✂ -----

In Atlantis, time is measured in days.

✂ -----

Each day is subdivided into wickles and wackles.

✂ -----

A Zin is a sacred object that is cared for by priests.

✂ -----

All Zins are the same size.

✂ -----

A Zin is fifty feet in length.

✂ -----

A Zin is one hundred feet high.

✂ -----

A Zin is ten feet wide.

✂ -----

Zins are made of stone blocks.

✂ -----

Each stone block measures one cubic foot.

✂ -----

Day one in the Atlantean week is called Coday.

✂ -----

Day two in the Atlantean week is called Octiday.

✂-----

Day three in the Atlantean week is called Eelday.

✂-----

Day four in the Atlantean week is called Clamday.

✂-----

Day five in the Atlantean week is called Salmonday.

✂-----

There are five days in the Atlantean week.

✂-----

Atlantean workers have a standardized working day.

✂-----

The Atlantean standardized working day has nine wickles, beginning at daybreak.

✂-----

Sixteen wackles of each standardized working day are devoted to rest.

✂-----

There are eight wackles in a wickle.

✂-----

Each worker lays 150 blocks per wickle.

✂-----

There are always nine workers in a gang.

✂-----

One member of the gang is attached to the Atlantean army and does not lay blocks.

✂-----



Every Salmond day is a public holiday.

✂ -----

Work on the Zin starts at daybreak on Codd day.

✂ -----

Only one gang is working on the construction of the Zin.

✂ -----

There are eleven gold scales in a gold fin.

✂ -----

Each block costs twenty-two gold fins.

✂ -----

Bonus payments are made if religious devotions are made as blocks are laid.

✂ -----

A shortage of funds means that only three Zins can be constructed this year.

✂ -----

An allocation of 30,000 gold fins is available for monuments this year.

✂ -----

## THE NEW ZIN OBELISK / ANSWER SHEET

The answer to the problem is Octiday.

### Rationale

1. The dimensions of the Zin indicate that it contains 50,000 cubic feet of stone blocks.
2. The blocks are one cubic foot each; therefore, 50,000 blocks are required.
3. Each worker works seven wickles per day (two wickles are devoted to rest).
4. Each worker lays 150 blocks per wickle; therefore, each worker lays 1,050 blocks a day.
5. There are eight workers per day; therefore 8,400 blocks are laid per working day.
6. The fifty-thousandth block, therefore, is laid on the sixth working day.
7. Work started at daybreak on Coddday, and as work does not take place on Salmonday, the sixth working day is Octiday.

## Comments to the Facilitator

Over time, some common observations and key concepts have emerged from this exercise.

- ◆ Teams in which everyone understands the issues (problems, tasks to be accomplished) do “better” than teams where this is not true. In this exercise, because some people have key information and some people have useless information (the clues about the gold fins, for example) teams do much better if they first share all the clues and then display them in a way that all can see – perhaps posting on newsprint.
- ◆ Teams generally do better when there is leadership, facilitation, and prioritization. In this exercise, a leader might direct the posting of clues, A facilitator might see if a member is not giving his or her clues (for whatever reason – shy, afraid, vengeful, not asked) and encourage full participation. Someone who perceives the parts of the work might encourage the team to form subsets of the team to work on certain parts of the problem (calculations of volume, or of time for example).
- ◆ The pressure of getting a solution by the end of the exercise may cause some teams to guess at an answer – if they guess right, are they lucky or experts? In real life, sometimes you get lucky – be careful to know when it is luck and when it is expertise and don’t sell your team as Zin building experts if they are not!
- ◆ In wide experience, only a very few teams have been known to solve the problem within the assigned time. In each case, there was something about the team that enabled them to see through the problem. In one case in Poland, the people were a real team – familiar with each other, used to working with each other, with a leader and a facilitator, and the team posted their work on newsprint. One person saw the relationships between clues; the team split the work and reached the answer. In one case in Zambia, the team members asked each other “what are your clues” to hear all the clues then wrote them on paper in a way that related them – all the wickles and wackles clues together, all the height, length clues together, etc. In another case, we are told of a team who had a very bright person who, after hearing the clues developed an agenda of what needed to be calculated first, second, third, then moved the clues so people with the related clues sat together to work on parts of the problem.