

MODULE 15: A FOCUS ON MEASUREMENT: PART II***Time: 1 hour*****Objectives:** Participants will be able to:

- ◆ Explain the difference between common cause and special cause variation
- ◆ Explain the purpose of a run chart
- ◆ Explain procedures to interpret variation
- ◆ Identify potential sources of variation and change

Materials: Materials required for this module are:

- ◆ Participant Manual
- ◆ Quality Improvement Tools appendix (pp 51-76 of the Monograph)
- ◆ Flipchart, easel, and markers
- ◆ Overheads (OH) 15-1 thru 15-5
- ◆ Computer or overhead projector and projection screen
- ◆ Colored pencils to distribute to participants for the run chart exercise. Several sets of 5 colors each are suggested.

▶▶▶▶▶▶ MODULE INTRODUCTION

- OH 15-1
1. **DISPLAY** overhead 15-1.
 2. **REFER** participants to Module 15 in their manuals.
 3. **STATE** the following:

In Module 8 we began our discussion of both common cause and special cause variation. In this module we're going to look at variation to processes a bit more closely and provide you some experience making sense of the variation in a particular situation.
- OH 15-2
4. **DISPLAY** overhead 15-2.
 5. **REVIEW** the objectives for the module.

▶▶▶▶▶ **TYPES OF VARIATION**

OH 15-3

6. **DISPLAY** overhead 15-3.
7. **REVIEW** the definition of common cause variation provided on the slide and in the participant manual.

It reads, “common cause variation is variation that is predictable or expected within a stable situation.”

8. **ASK** a volunteer to restate some of the examples that were discussed earlier in Module 8.
9. **REVIEW** the definition of special cause variation provided on the slide and in the Participant Manual.

It reads, “special cause variation is variation that is neither predictable nor expected. Variation that occurs as a result of a special cause can point to a possible worsening or improvement in a situation and should therefore be examined.”

10. **ASK** a volunteer to restate some of the examples that were discussed earlier in Module 8.
11. **DIRECT** participants to the chart on page 15-2 of their participant modules related to the duration of phototherapy.
12. **EXPLAIN** that the minor variation at each level was due to common cause variation. Explain that the major variation (major reduction in hours of phototherapy) was due to special cause variation.
13. **PROVIDE** additional examples as needed until this concept is understood.

▶▶▶▶▶▶ **RUN CHARTS**

- Manual
14. **REFER** participants to page 15-3 in their manuals.
 15. **REVIEW** the information on run charts, including when to use them, how to use them, and steps to create them, using the participant guide as a reference.
 16. **REINFORCE** the idea that run charts provide a visual of variation over time, making it easier to see the variation.

▶▶▶▶▶▶ **EXERCISE: CREATING A RUN CHART**

- Manual
17. **REFER** participants to page 15-4 in the participant manual.
 18. **INTRODUCE** the exercise by explaining that participants will have an opportunity to create a run chart using data collected by the District Health Officer of Lower Mulilinka during the course of a year.
 19. **EMPHASIZE** that participants will actually plot several runs on the chart, as each location (e.g., Bombo, Coanga, etc.) have their distinct data to be plotted.
 20. **SUPPLY** participants with the colored pencils to create the chart.
 21. **DIRECT** participants to plot the data found in their manuals on the graph paper provided in their participant guides. **ENSURE** participants understand that the graph should be drawn in “landscape” format (turn paper sideways).

Note: About 4 people can share a set of colored pencils.

Note: If colored pencils aren't available, have participants designate the locations with various types of lines, including solid lines, broken lines, etc.

▶▶▶▶▶ **INTERPRETING VARIATION**

Manual

22. **DIRECT** participants to the discussion questions on page 15-5 in their manuals.

23. **FACILITATE** a discussion using the questions provided in the participant manual. They are:

- What general patterns, if any, can you identify in this data?
- What patterns, if any, can you see within a single health centre?
- Based on this data, would you agree that user fees are resulting in decreased use of the health centres? Why or why not?

ENSURE that some discussion is based upon the idea that the number of visits to the centre is stable in some communities, while at others it is not. **EMPHASIZE** that additional investigation might need to be conducted to determine if the reduction in visits in those locations is due to the cost of the visit, or the result of something else. Also, the fact that the number of visits to facilities remained stable in some communities should be investigated to help understand why the variation occurs in some communities and not in others.

Note: The numbers 8, 6, and 14 used in the analysis to determine special v. common cause variation are based on non-parametric statistics. These values are valid for universes of 10 – 30 points (points below/above mean); a universe of 25 or above (the trend test). For further information, see Tague, Nancy R., “The Quality Toolbox” ASQC Quality Press, Milwaukee, WI 1995,. pp 86 – 89, 245 – 249.

OH 15-4

24. **DISPLAY** overhead 15-4.

25. **REVIEW** the rules for interpreting run charts.

Note: Use the tools appendix as a secondary reference for the rules for interpreting variation.

▶▶▶▶▶ **SOURCES OF VARIATION**

OH 15-5 26. **DISPLAY** overhead 15

27. **REVIEW** the sources of variation explained on the side.

- People
- Machines
- Materials
- Methods
- Measurements
- Environment

28. **ASK** volunteers to provide examples of each type of variation for each source that are relevant to their environment. **TELL** participants that a space is provided in their manuals to record the examples.

29. **ASK** participants if they have any additional questions about common cause and special cause variation.

MODULE 16: QI SUCCESS STORIES: A FINAL LOOK**Time: 1 hour****Objectives:** Participants will be able to:

- ◆ Analytically review quality improvement success stories and identify aspects of them that were critical to their success
- ◆ Begin to assess their own facility for factors that will help them be successful in a QI endeavor

Materials: Materials required for this module are:

- ◆ Participant Manual
- ◆ Quality Improvement Tools appendix (pp 51-76 of the Monograph)
- ◆ Flipchart, easel, and markers
- ◆ Overheads 16-1 thru 16-2
- ◆ Computer or overhead projector and projection screen

▶▶▶▶▶▶ MODULE INTRODUCTION

- OH 16-1
1. **DISPLAY** overhead 16-1.
 2. **REFER** participants to Module 16 in their manuals.
 3. **STATE** the following:

This is an important point for us in the course. Upon completion of this module, you'll begin working with other members of your facility to begin planning a quality improvement initiative.

With that in mind, I want to provide you with one last opportunity to look at what has been done by others to help them be successful in their QI endeavors.

In this module we're going to take a final

look at the Quality Improvement Case Studies provided in Module 2. Up to now, we've relied upon them to provide us with concrete examples of the different approaches of quality improvement, the four principles of quality assurances, and the different steps of quality improvement. They've also been useful in our examination of various quality improvement tools.

At this juncture, we're going to review analytically the success stories to identify aspects of them that were critical to the success of the initiative.

- OH 16-2
4. **DISPLAY** overhead 16-2.
 5. **REVIEW** the objectives for the module.

▶▶▶▶▶▶ **QI SUCCESS FACTORS SUCCESS STORY 1**

6. **REFER** participants to Success Story 1: Helping Patients Find Their Way in Module 2.
7. **ASK** participants to take a few minutes to re-familiarize themselves with the case.

- Flipchart
8. **FACILITATE** a large group discussion of what factors were critical to the success of this initiative. Post participants' responses on a flipchart

Note: At this time you are looking for very general responses.

*Possible responses:
 Receptionist was observant; someone cared about the patient; they looked at the problem through the eyes of the patient.*

▶▶▶▶▶▶ **QI SUCCESS FACTORS SUCCESS STORY 2**

- 9. **REFER** participants to Success Story 2: Decreasing the Duration of Phototherapy in Module 2.
- 10. **ASK** participants to take a few minutes to re-familiarize themselves with the case.

Flipchart

- 11. **FACILITATE** a large group discussion of what factors were critical to the success of this initiative. Post participants' responses on a flipchart.

Note: At this time you are looking for generalized responses.

Examples:

Doctor was observant; someone cared about the patient; they collected and used data rather than relying on memory or opinion; they were systematic in their problem solving; they tried a solution out before implementing it in full.

▶▶▶▶▶▶ **QI SUCCESS FACTORS SUCCESS STORY 3**

- 12. **REFER** participants to Case 3: Improving Malaria Treatment Outcomes in Module 2.
- 13. **ASK** participants to take a few minutes to re-familiarize themselves with the case.

Flipchart

- 14. **FACILITATE** a large group discussion of what factors were critical to the success of this initiative. Post participants' responses on a flipchart.

Note: at this time you are looking for generalized responses.

Examples:

Staff member was observant; someone cared about the patient; they identified the root of the problem rather than just focusing on the symptoms of the problem; they consulted with the mothers to make sure

the solution made sense; they collected and used data rather than relying on memory or opinion; they were systematic in their problem solving; they tried a solution out before implementing it in full.

▶▶▶▶▶ **QI SUCCESS FACTORS SUCCESS STORY 4**

15. **REFER** participants to Success Story 4: Increasing Patients' Attendance at Postpartum Appointments in Module 2.

16. **ASK** participants to take a few minutes to re-familiarize themselves with the case.

Flipchart

17. **FACILITATE** a large group discussion of what factors were critical to the success of this initiative. Post participants' responses on a flipchart.

Examples:

Staff member was observant; someone cared about the patient; they identified the root of the problem rather than just focusing on the symptoms of the problem; they collected and used data rather than relying on opinion or incidental information; they monitored the solution.

▶▶▶▶▶ **FACTORS VISIBLE IN ALL SUCCESS STORIES**

18. **DISPLAY** all the flipcharts that have been created during this module.

Flipchart

19. **FACILITATE** a discussion that helps participants discover the common

successful factors. Write participants' responses on a **FLIPCHART**.

20. **GUIDE participants in the realization** that their facilities likely have the same strengths, i.e., staff members that care about patients; the ability to collect data, the ability to work with patients to understand their needs; the tools to get at the root cause of the problem; knowledge of a quality improvement methodology, etc.

MODULE 17: TEAM ENERGIZERS

Time: varied

Objectives: These energizers will help participants:

- ◆ Relax during a needed break
- ◆ Challenge their problem solving abilities
- ◆ Be creative
- ◆ Learn about their classmates
- ◆ Enjoy a change of pace

Materials: Materials required for this module are:

- ◆ Participant Manual
- ◆ Copies of Module 17 of the Instructor Manual for each participant (see below)
- ◆ Flipchart, easel, and markers

Note: This module provides several energizers that can be used to energize a class or a team meeting. They are to be used at your discretion at various times during the course when you feel the participants need a break.

At the end of the course, provide participants with a copy of this module of the Instructor Manual so they can facilitate the energizers at their own facilities.

▶▶▶ Changing Times¹

The equation below is incorrect. Interchange two digits to make it correct.

$$\begin{array}{r}
 324 \\
 X 68 \\
 \hline
 2992 \\
 2744 \\
 \hline
 25432
 \end{array}$$

¹ Reproduced from BRAIN TWISTERS FROM THE FIRST WORLD PUZZLE CHAMPIONSHIPS. Will Shortz, Editor. New York: Random House, Inc., 1993.

▶▶▶ 13 Squares²

Begin in any square in the grid and travel horizontally and vertically (never diagonally) from square to square through 13 connected squares. The 13 squares contain different numbers that total 100 exactly. What 13 connected squares total 100?

10	5	15	8	2
4	13	10	1	4
3	9	6	3	7
14	7	5	9	12
1	13	6	15	2

² Reproduced from BRAIN TWISTERS FROM THE FIRST WORLD PUZZLE CHAMPIONSHIPS. Will Shortz, Editor. New York: Random House, Inc., 1993. (Originally published as *Travels with My Ant*)

▶▶▶ Lucky Seven³

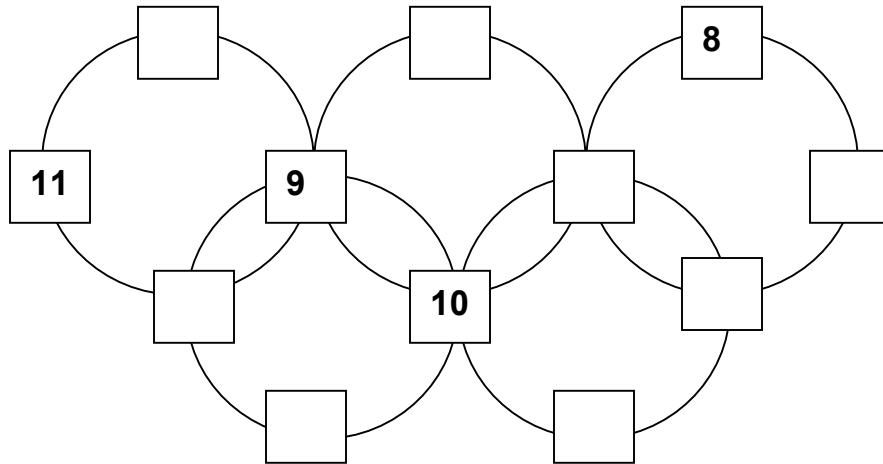
Put each of the numbers 1 thru 9 into the boxes in order to make the equation correct.

$$\begin{array}{r}
 \square \square \\
 \hline
 \square \square \square
 \end{array}
 +
 \begin{array}{r}
 \square \square \\
 \hline
 \square \square
 \end{array}
 = 7$$

³ Reproduced from BRAIN TWISTERS FROM THE FIRST WORLD PUZZLE CHAMPIONSHIPS. Will Shortz, Editor. New York: Random House, Inc., 1993.

▶▶▶ **Olympic Rings⁴**

Place each of the numbers 1 thru 12 in the squares, one number per square, so that the sum of each circle is 28. Four numbers have been placed already.



⁴ Reproduced from BRAIN TWISTERS FROM THE FIRST WORLD PUZZLE CHAMPIONSHIPS. Will Shortz, Editor. New York: Random House, Inc., 1993.

►►► Quality Improvement Word Search

Q	U	D	I	M	E	N	S	I	O	N	S
A	U	T	R	S	I	N	A	P	W	M	V
B	R	A	I	N	S	T	O	R	M	E	U
T	R	Q	L	D	P	O	M	Z	W	A	E
R	B	P	R	I	N	C	P	L	E	S	S
A	B	D	L	R	T	I	R	T	D	U	T
C	C	S	A	R	C	Y	O	H	T	R	Y
E	L	A	R	T	Y	V	C	A	R	E	M
A	I	R	J	O	L	E	E	D	S	M	A
S	E	A	T	O	O	L	S	A	A	E	N
E	N	K	R	M	B	U	S	T	G	N	I
T	T	E	A	M	W	O	R	K	N	T	W

Search the grid of letters for the following quality improvement words:

Brainstorm
 Client
 Dimensions
 Measurement
 Quality

PDSA
 Principles
 Process
 Teamwork
 Tools

►►► Quality Improvement Tools Word Search

S	T	A	N	A	L	Y	S	I	S	T	A
G	B	E	A	D	Y	P	B	C	T	W	F
F	A	N	V	D	T	W	F	R	O	R	F
T	A	N	N	E	S	F	L	O	R	N	I
J	O	H	T	N	S	H	O	P	Y	U	N
P	A	R	E	T	O	T	W	H	T	A	I
T	O	M	B	O	N	D	C	A	E	N	T
A	P	M	I	N	S	Y	H	S	L	T	Y
P	I	T	B	D	L	A	A	P	L	D	F
B	E	N	C	H	M	A	R	K	I	N	G
A	D	I	A	G	R	A	T	N	N	S	M
R	G	O	R	V	O	T	I	N	G	V	P

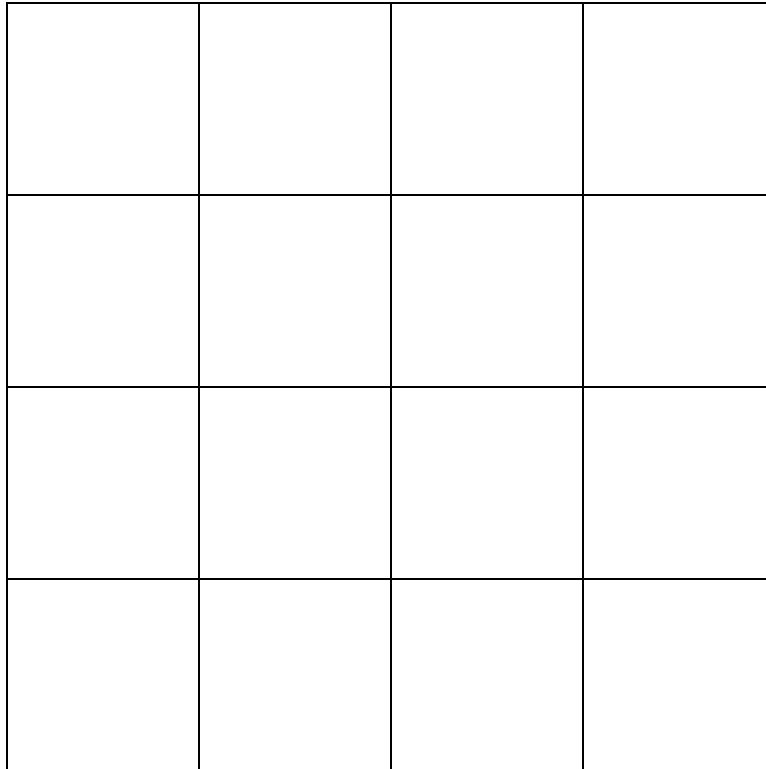
Search the grid of letters for the following quality improvement tools:

Pareto
Pie
Benchmarking
Gantt
Analysis

Affinity
Voting
Bar
Flowchart
Storytelling

▶▶▶ **Hidden Squares**⁵

Count the number of squares in the visual below.



⁵ Reproduced from THE BIG BOOK OF TEAM BUILDING GAMES. John Newstrom and Edward Scannell. New York: McGraw Hill, 1998.

▶▶▶ Can you guess?⁶

Give each participant a small piece of paper. Ask participants to write down something about themselves (a secret) that no one else in the group knows. Have them fold their secret and place it in a paper bag. Have participants stand and form a circle. Ask a volunteer to select one folded secret from the paper bag, read it aloud, guess who the person might be, and give a reason for their guess. The person who is the subject of the guess should not confirm or refute the correctness of the guess. Then, go around the circle and have each person select a secret from the bag and guess whom it might be. A person may not have more than one secret attached to them, but the person whose turn it is may move a secret to a different person. After everyone has had a turn and all the secrets are matched to a person, go around the room have each person share their secret with the group.

⁶ Adapted from WARMUPS FOR MEETING LEADERS. Sue Bianchi, Jan Butler, and David Richey. San Diego, California: University Associates, 1990.

▶▶▶ **A Poem, A Skit, and A Song**⁷

Divide participants into teams of 3 or 4 people. Have one team write a poem, another a skit, and another a song about a topic you discussed that morning. After about 10 to 15 minutes, have each team present their work. As a variation, have each team present the work of another team.

⁷ Reproduced from WARMUPS FOR MEETING LEADERS. Sue Bianchi, Jan Butler, and David Richey. San Diego, California: University Associates, 1990.

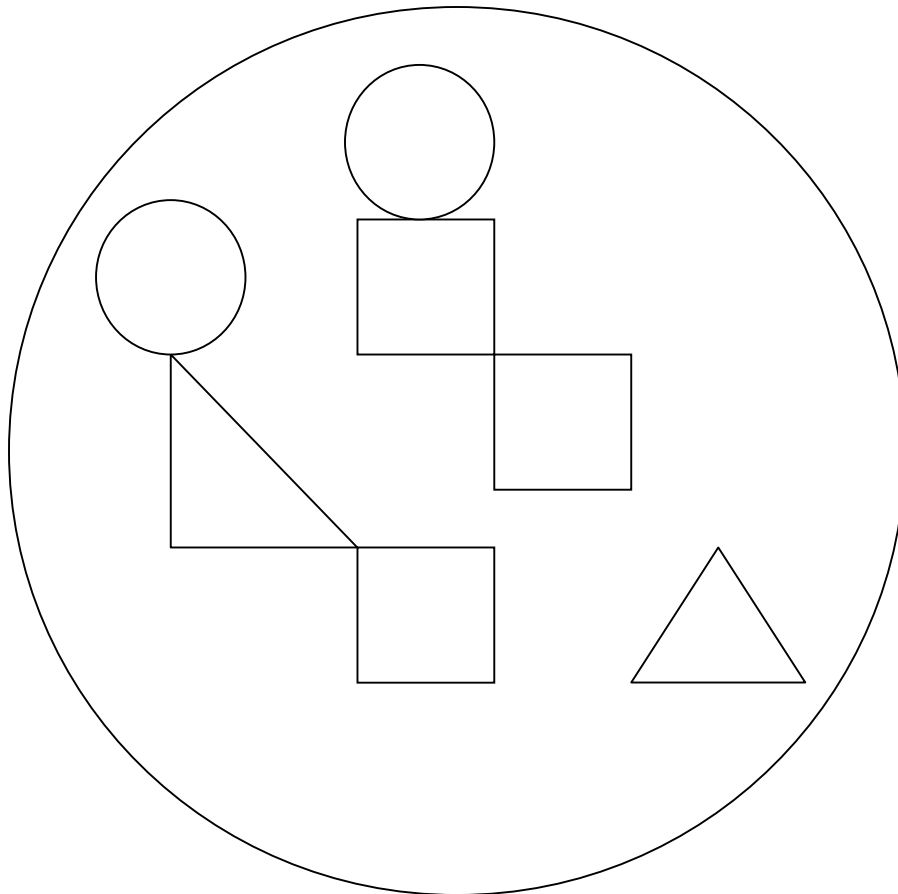
▶▶▶ Clear Instructions⁸

Ask for a volunteer from the class to facilitate the energizer. This person will provide the group with instructions on how to draw the diagram below.

Give the volunteer the diagram below. Make sure no one else from the class can see it. Instruct the group to draw the diagram as the volunteer describes it. Emphasize that the volunteer must only use words, no gestures. Participants are not allowed to ask questions.

When instructions are complete, have the participants compare their drawings with the diagram below.

If time permits, have a large group discussion on the use of visual aids, demonstrations, and step-by-step instructions when working with co-workers and clients.



⁸ Adapted from WARMUPS FOR MEETING LEADERS. Sue Bianchi, Jan Butler, and David Richey. San Diego, California: University Associates, 1990

▶▶▶ **Answer Key**

This section contains the answers to the energizers in this module. Provide a copy of the answer key to participants at the end of the course.

◆ **Changing Times**

Interchange the 2 in 324 with the 7 in 2744 to make the equation correct.

$$\begin{array}{r}
 3 \ 2 \ 4 \\
 X 6 \ 8 \\
 \hline
 2 \ 9 \ 9 \ 2 \\
 2 \ 7 \ 4 \ 4 \\
 \hline
 2 \ 5 \ 4 \ 3 \ 2
 \end{array}$$

◆ **13 Squares**

The 13 connected squares that total 100 are 8, 1, 10, 13, 4, 3, 14, 7, 5, 6, 15, 2, and 12.

10	5	15	8	2
4	13	10	1	4
3	9	6	3	7
14	7	5	9	12
1	13	6	15	2

◆ **Lucky Seven**

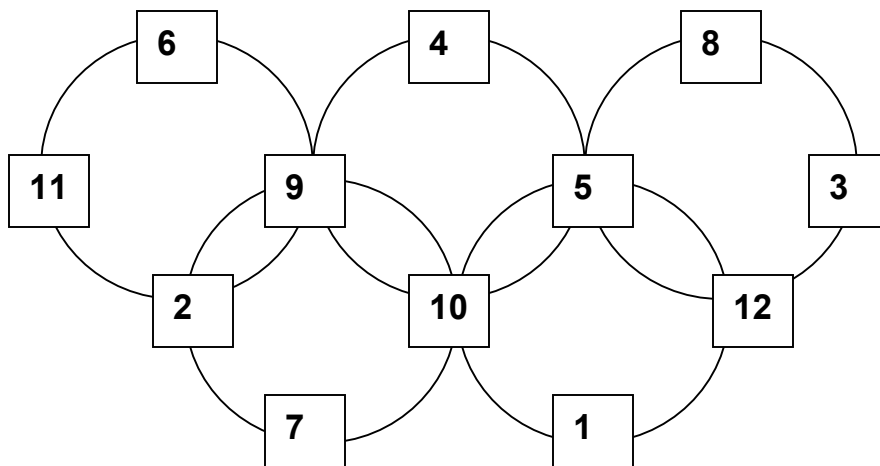
When placed in the equation as shown below, the numbers 1 through 9 equal 7.

$$\begin{array}{|c|c|} \hline 9 & 5 \\ \hline \end{array} + \begin{array}{|c|c|} \hline 8 & 6 \\ \hline \end{array} = 7$$

$$\begin{array}{|c|c|c|} \hline 2 & 4 & 7 \\ \hline \end{array} + \begin{array}{|c|c|} \hline 1 & 3 \\ \hline \end{array} = 7$$

◆ **Olympic Rings**

When the numbers 1 through 12 are placed in the squares as shown below, the numbers in each circle equal 28.



◆ **Quality Improvement Word Search**



Search the grid of letters for the following quality improvement words:

Brainstorm
 Client
 Dimensions
 Measurement
 Quality

PDSA
 Principles
 Process
 Teamwork
 Tools

◆ **Quality Improvement Tools Word Search**



Search the grid of letters for the following quality improvement tools:

Pareto
Pie
Benchmarking
Gantt
Analysis

Affinity
Voting
Bar
Flowchart
Storytelling

◆ Hidden Squares

The correct answer is 30, developed as follows:

- 1 Whole square
- 16 Individual squares
- 9 Squares of 4 units each
- 4 Squares of 9 units each

