



Introduction to 5S

What is 5S?

- An easy definition is: ***Finding a place for everything and putting everything in its place.***
- 5S is also the foundation for Continual Improvement (CI) and Lean implementation.

What 5S Is Not

Must be embraced by the whole team.

It is not...

- A program
- A one time event
- Voluntary
- Something we tried before
- Too hard because we are “busy”



What Does 5S Mean?

English

- Sort
- Set In Order
- Shine
- Standardize
- Sustain

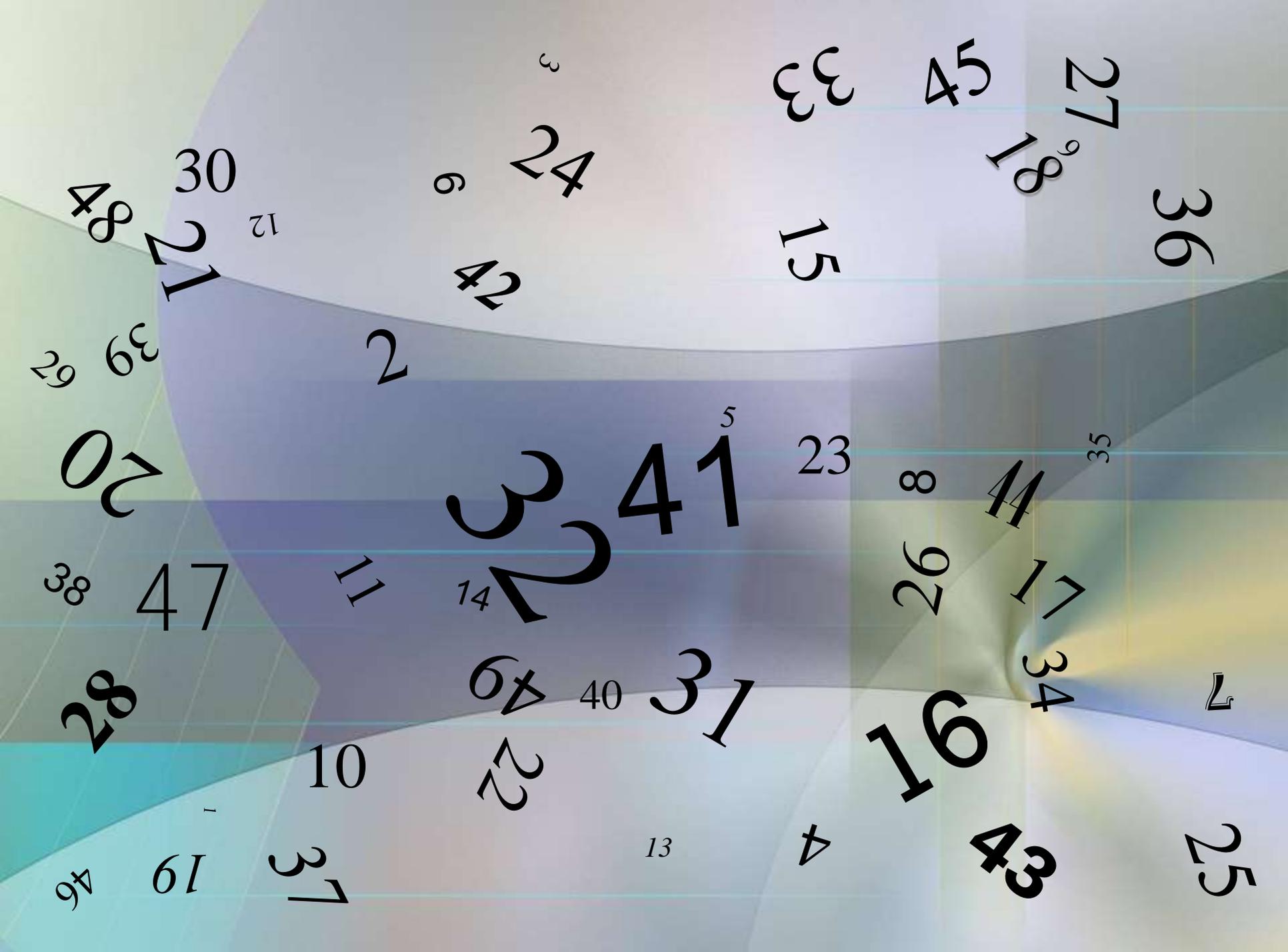
Japanese

- (Seiri)
- (Seiton)
- (Seiso)
- (Seiketsu)
- (Shitsuke)

What Does SORT Mean?

- SORT means we remove all items from the workplace that are not needed for current production (parts, tools, equipment, etc).





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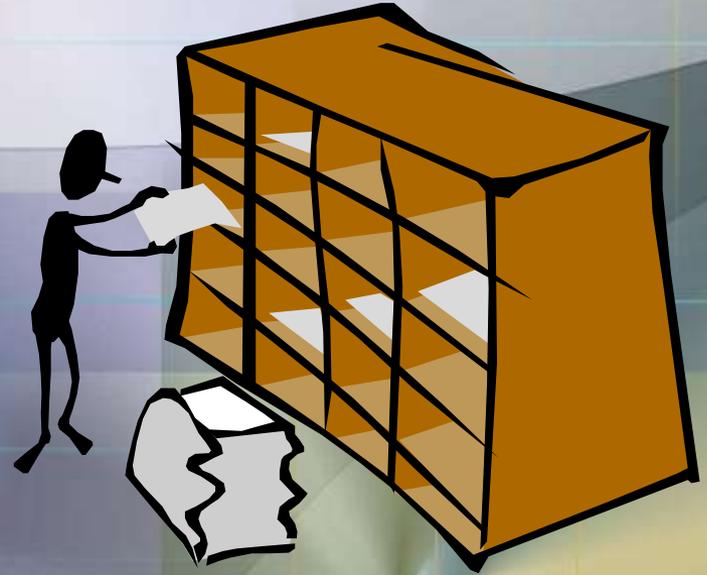
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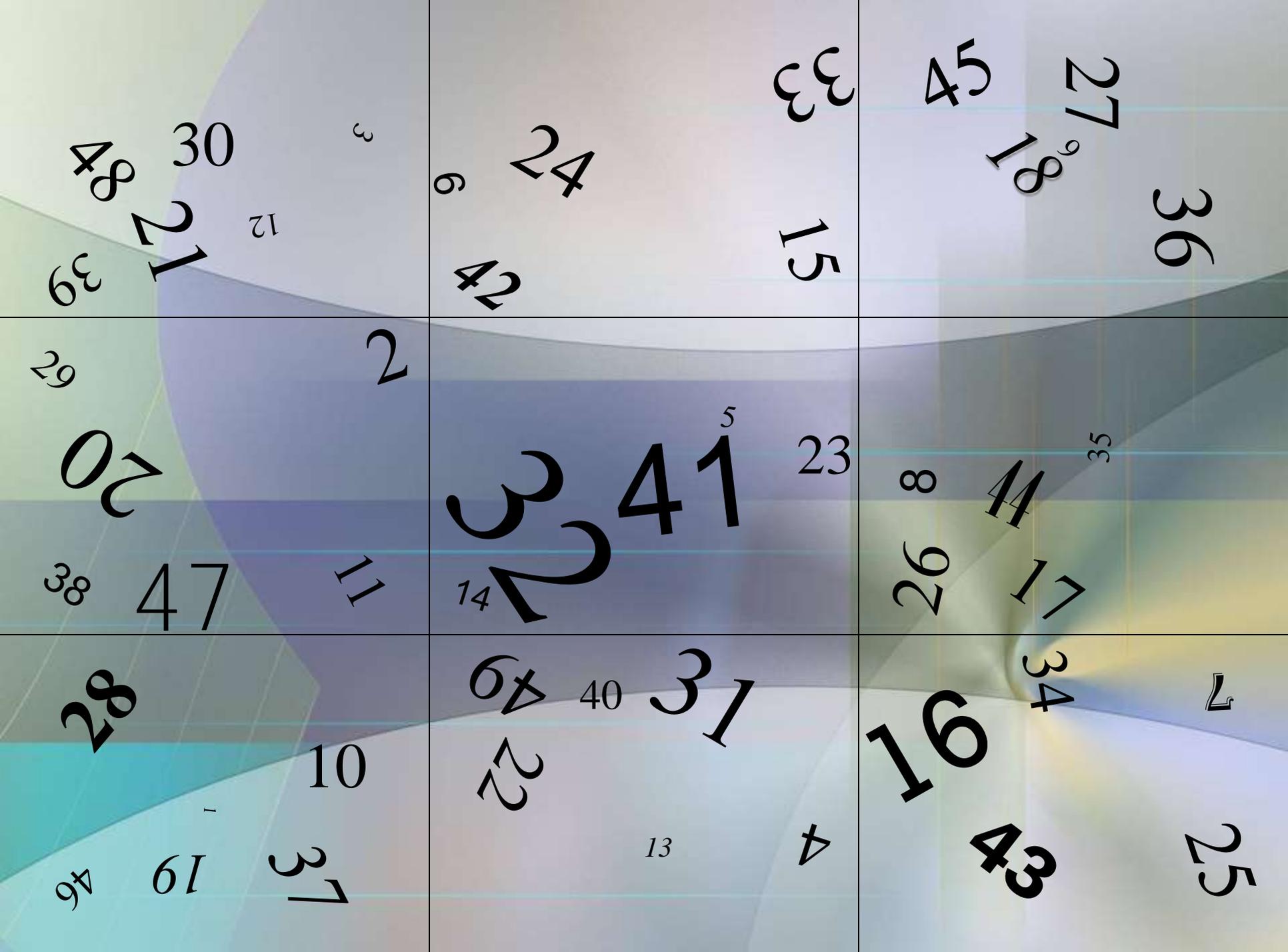
Example of SORT



What Does SET IN ORDER Mean?

- SET IN ORDER means we arrange items so they are easy to use, and labeling them so they are easy to find and put away.
- It also means operating efficiency.





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Example of SET IN ORDER

BEFORE



AFTER



What Does SHINE Mean?

- SHINE means we sweep floors, scrub machines, apply a fresh coat of paint, and then we KEEP it that way. This way, everything will be in top working condition so that it may be used when it is needed.
- It also means preventive maintenance.



SHINE



What Does **STANDARDIZATION** Mean?

STANDARDIZATION happens when the first three S's are properly implemented and maintained.

- It means that racking, paint colors, labeling, operational layouts are designed in a standard fashion.
- Everything will be in place so everyone will know exactly what they are responsible for; and, exactly when, where, and, how to do it.

Numbers from 1 to 49

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| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | |

STANDARDIZE



What is **SUSTAIN**?

We SORT areas. We SET IN ORDER work places. We SHINE areas. With STANDARDIZATION it is easy to identify anything out of place. **SUSTAIN is different. It isn't a single separate activity.** We SUSTAIN when we have developed **habits of always using the first 4 S's** together on a daily basis.

When Does 5S Happen?

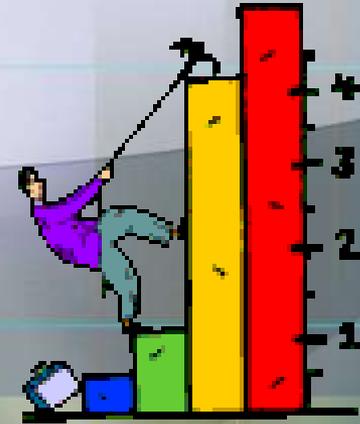
ALL THE TIME!! 5S is a mindset and a culture. The 5S's are a part of each Associate's workday. There will also be CI Events and WPO (WorkPlace Organization) Events. In an Event, Associates are taught how to implement the principles of Continual Improvement.

How is 5S Implemented?

By the associates! Who has a better idea to make our jobs easier than us? Our management is committed to improving how we work. We want to work smarter, not harder. Along the way, support will come from EVERYONE. We will teach the 5S process, and together we will implement it and make it work.

What are the Benefits to Our Organization?

- Improved Safety
- Improved Customer Focus
- Improved Delivery
- Improved Productivity
- Improved Job Security



Applications to P2

- Sort
 - Identify waste stream components by origin and character
 - Understand every process in waste generation and every component of the process
 - Substitute or change processes
 - Substitute or change raw materials
 - Reduce waste quantity or toxicity

Applications to P2

- Set in Order
 - Properly maintain process
 - Streamline work flow
 - Operate within designed tolerances
 - Check operating data often
 - Operational control and efficiency

Applications to P2

- Shine
 - Clean up the process to determine where the dirt comes from
 - Change employee behavior
 - Recycling programs
 - Integral to proper maintenance programs
 - Audit yourself

Applications to P2

- Standardize
 - Document processes
 - Follow written procedures
 - Say what we do, do what we say
 - Monitoring and measuring
 - Training, competence, awareness

Applications to P2

- Sustain
 - Management commitment
 - Objectives and targets
 - Corrective and preventive action
 - Internal audit – prove it to yourself
 - Voluntary programs – prove it to others
 - Management review

Real Life Example

- Change diesel engine to reduce emissions
- Sort
 - Base line emissions
- Set in Order
 - Find better components – turbo charger
- Shine
- Standardize
 - We modified all vessels with similar engines
- Sustain
 - New emissions and operating tolerances

Emission Testing

Turbocharger Changeover



Before



After

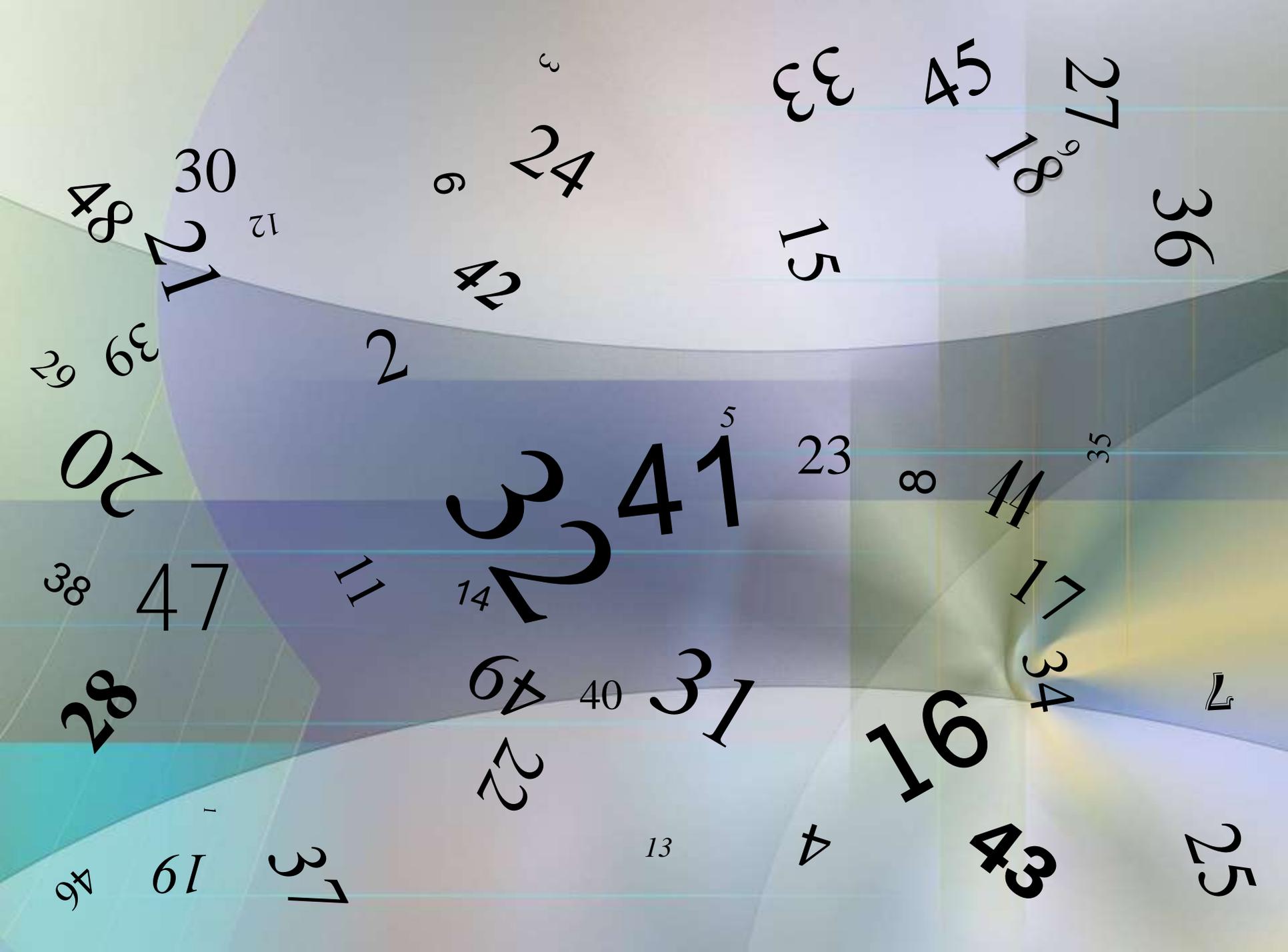
Summary of Criteria Pollutant Emission Results

| Test Run | PM + CPM Emissions (Lbs/Hr) | PM Emissions (Lbs/Hr) | NOx Emissions (Lbs/Hr) | CO Emissions (Lbs/Hr) | VOC Emissions (Lbs/Hr) |
|-----------------------|-----------------------------|-----------------------|------------------------|-----------------------|------------------------|
| 1 (Pre Modification) | 0.45 | 0.30 | 20.70 | 0.90 | 0.07 |
| 2 (Pre Modification) | 0.60 | 0.30 | 20.26 | 1.06 | 0.04 |
| Runs 1 and 2 Average | 0.53 | 0.30 | 20.48 | 0.98 | 0.06 |
| 3 (Post Modification) | 0.86 | 0.41 | 19.81 | 0.75 | <0.01 |
| 4 (Post Modification) | 0.59 | 0.28 | 19.95 | 0.79 | <0.01 |
| Runs 3 and 4 Average | 0.72 | 0.34 | 19.88 | 0.77 | <0.01 |

Q & A

Questions / Comments.?!





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