

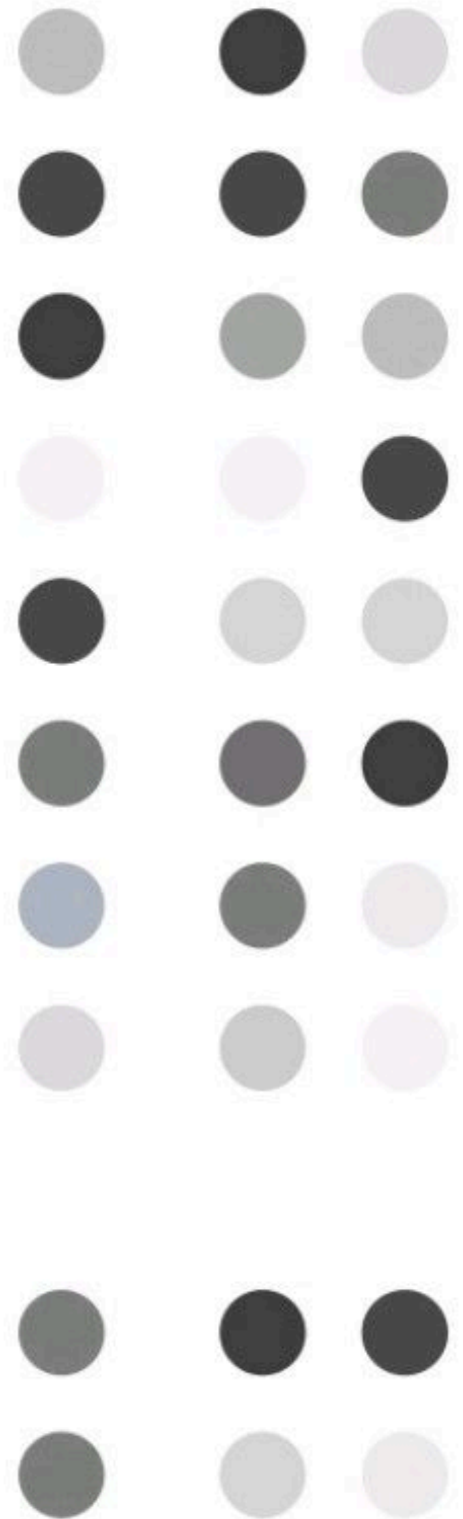


# **Introduction to Technical Writing**

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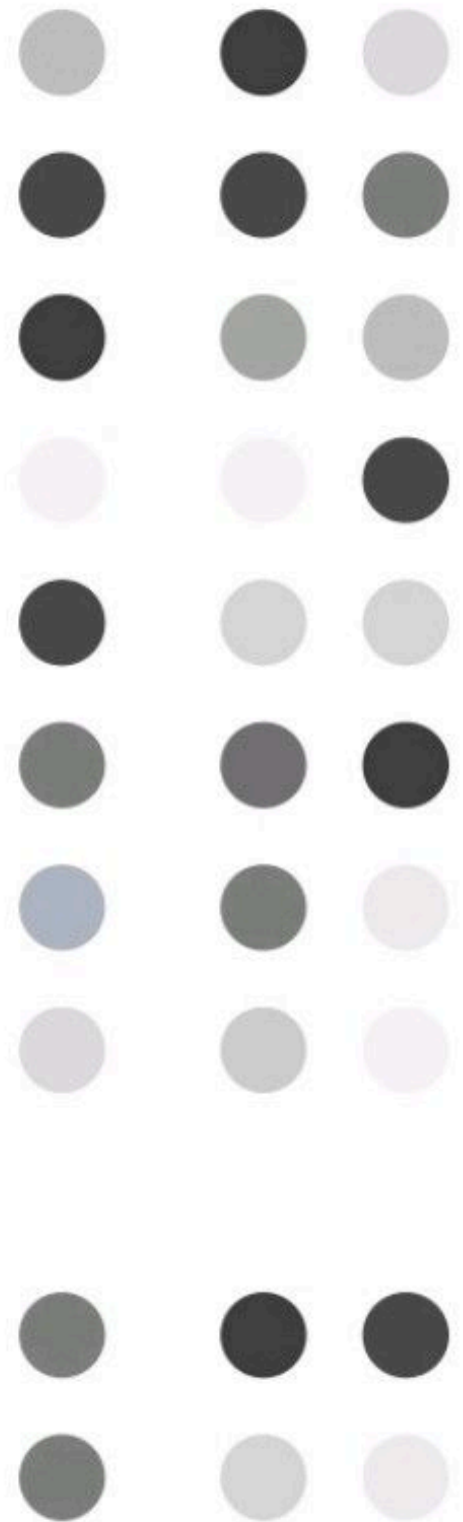
# Definition

Technical writing is a type of writing where the author is writing about a particular subject that requires direction, instruction, or explanation.



# Goals

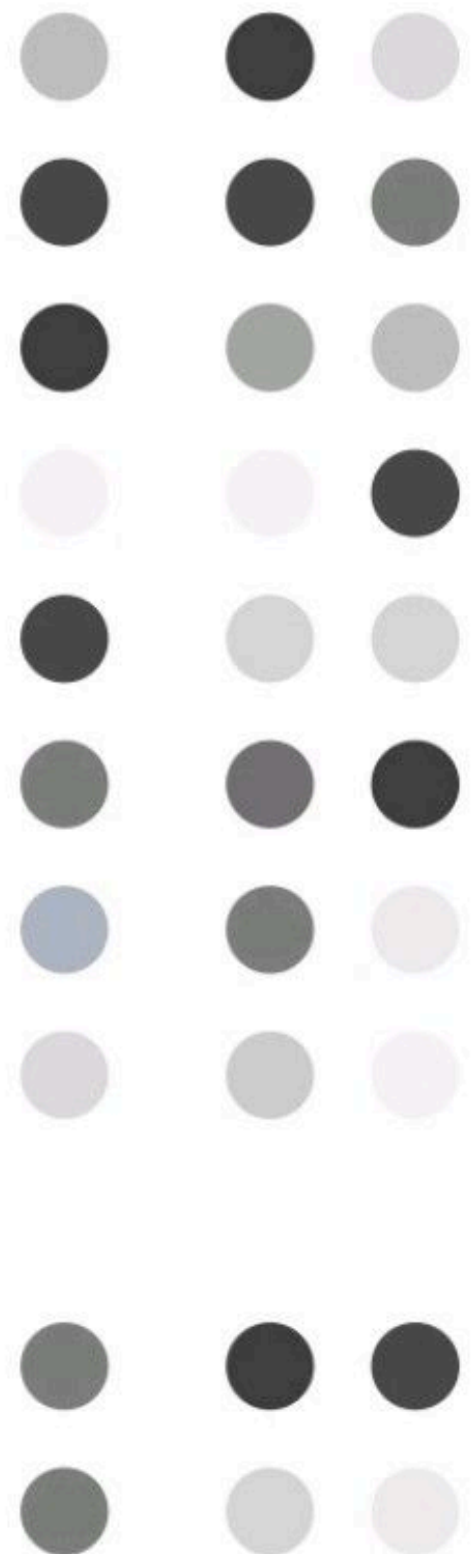
- To deliver technical information for readers in a manner that is adapted to their needs, level of understanding, and background.
- To communicate with specific audience, for a specific purpose.



# Characteristics

- Understanding what is the purpose and why you are writing.

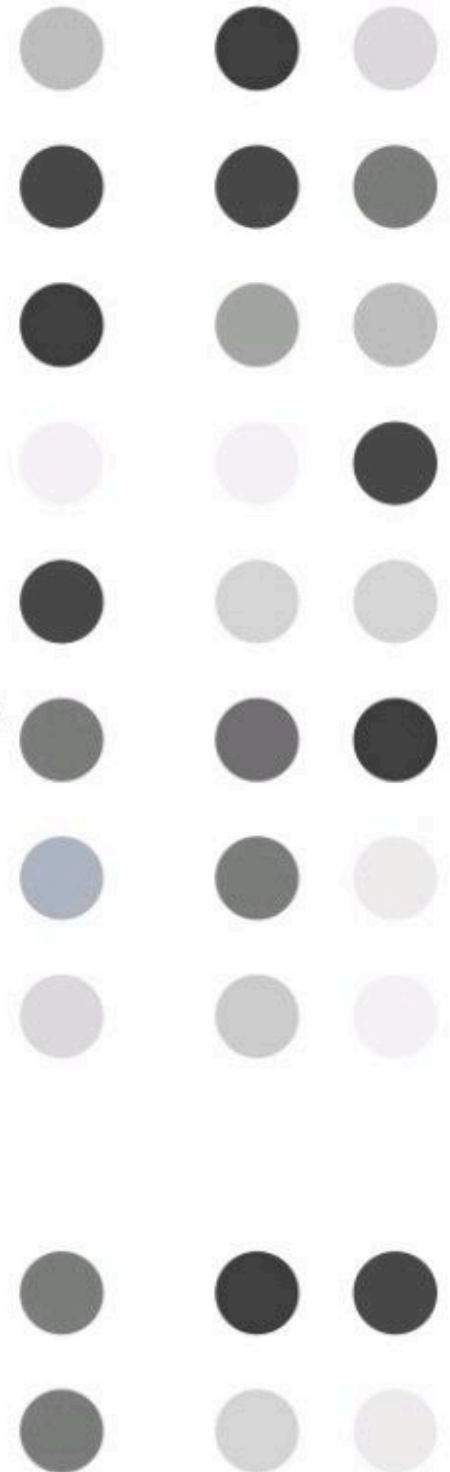
*To inform? To instruct? To propose?  
To recommend? Or to persuade?*



# Characteristics

- Writing for audience.

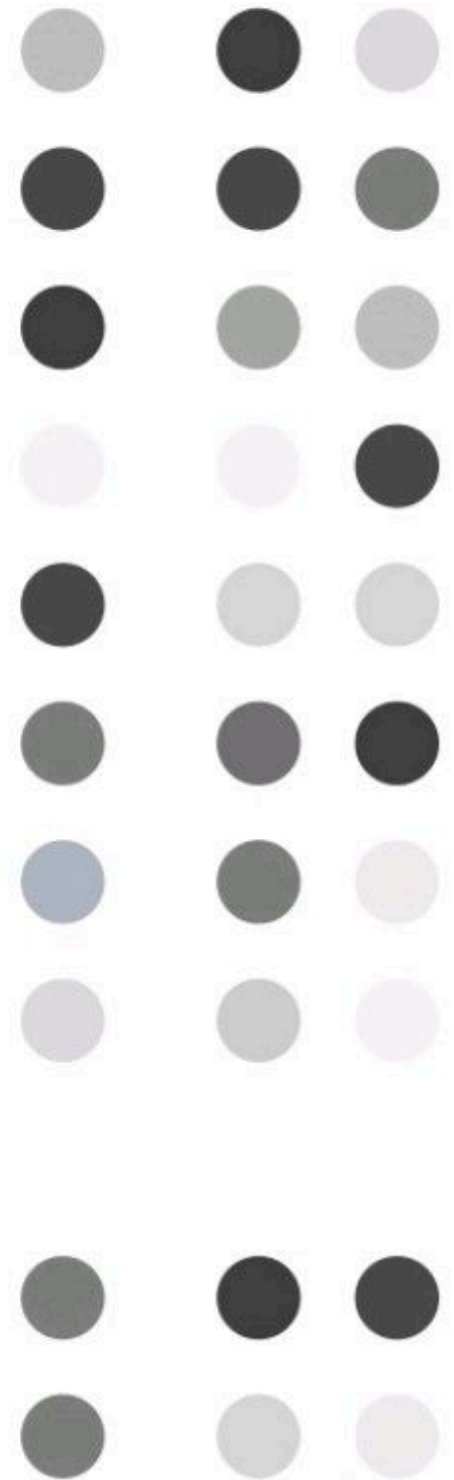
*Who is the audience? What is their background?  
What do they need?*



# Characteristics

- Satisfying document specifications  
(Appropriate genre/type of document)

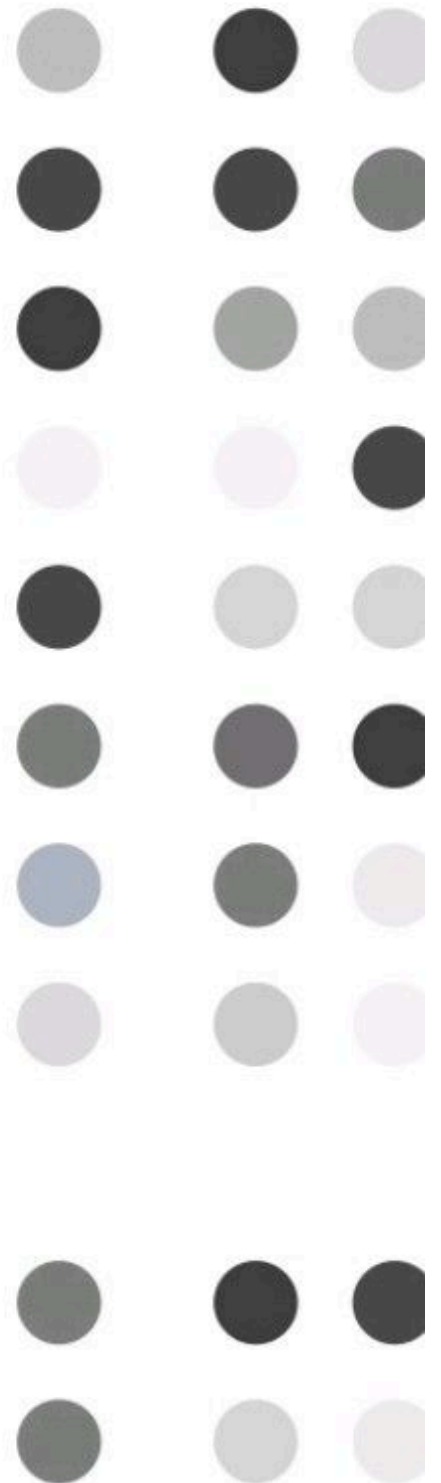
*What is the document type?*  
*How about the required format?*



# Characteristics

- Providing accurate information.

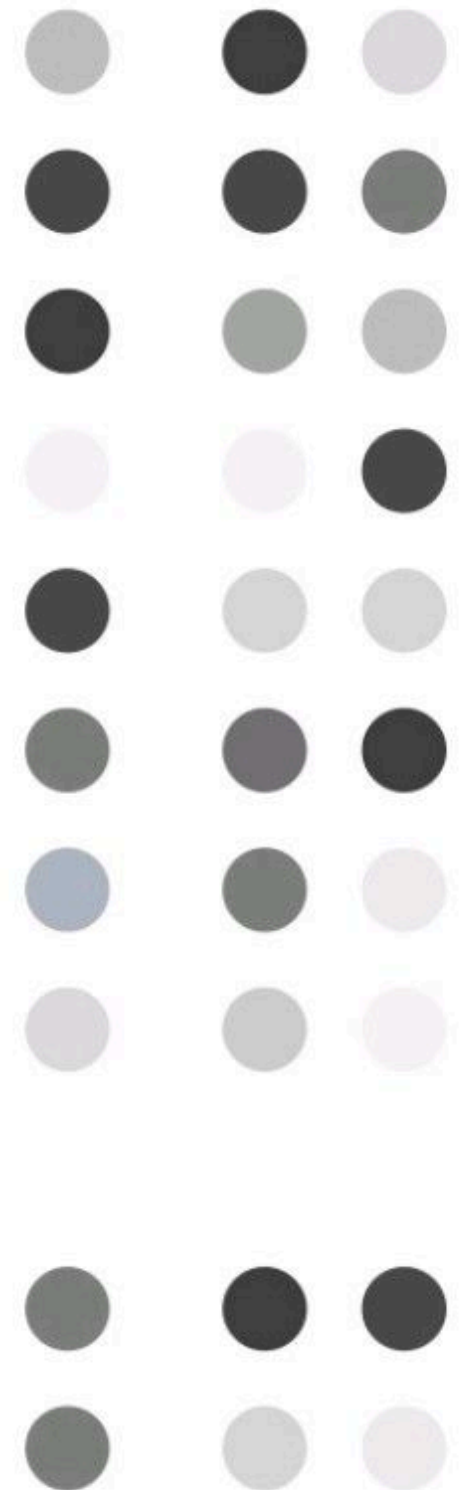
*Technical writing document is not about opinion.*



# Characteristics

- Expressing information clearly.

*No room for ambiguity!*





# Characteristics

- Using efficient words.

## Verbiage

commence

endeavor

a large number of

in the majority of instances

the reason why is that

alternate choices

completely eliminate

connected together

an analysis of the data will be made

made a selection

## Efficient

start

try

many

usually

because

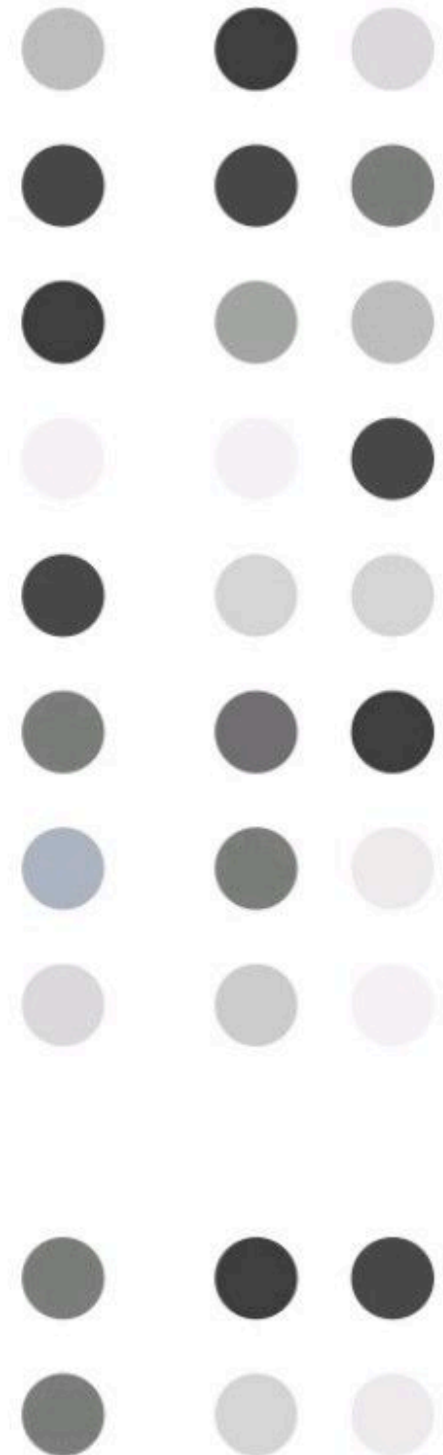
alternatives

eliminate

connected

data will be analyzed

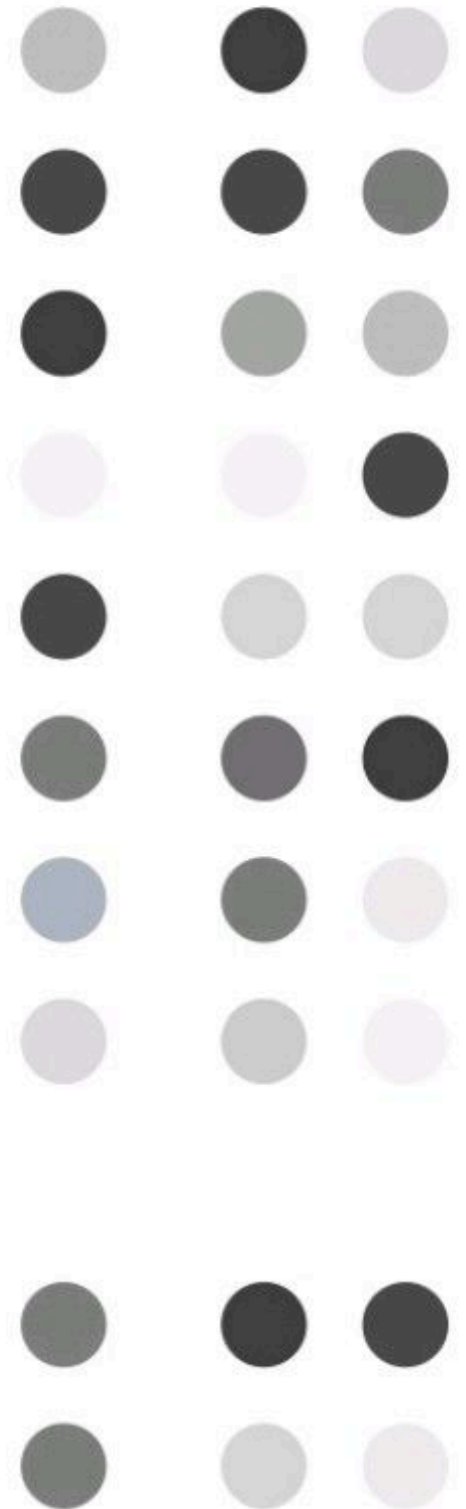
selected



# Characteristics

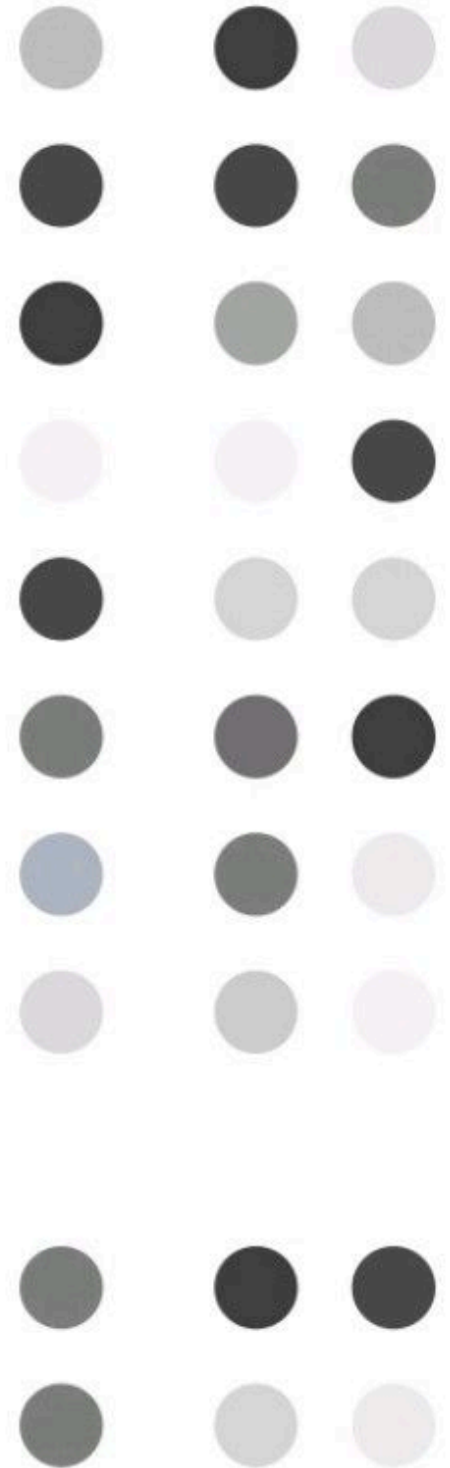
- Using appropriate writing style and the right punctuation marks.

*Be careful of typos, sentences in conversational tone, and punctuation problems!*



# Effective Technical Writing

- Clarity
- Conciseness
- Accuracy
- Organization
- Process



# Clarity

- Specify.
- Avoid obscure words.
- Limit and/or define your use of abbreviations, acronyms, and jargon.
- Use the active versus the passive voice.

- Passive voice:

*It was decided all employees will take a ten percent cut in pay.*

- **Unclear:** Who decided?

- **Active:** ***The Board of Directors decided that all employees . . .***

*Overtime is favored by hourly workers.*

- **Wordy**

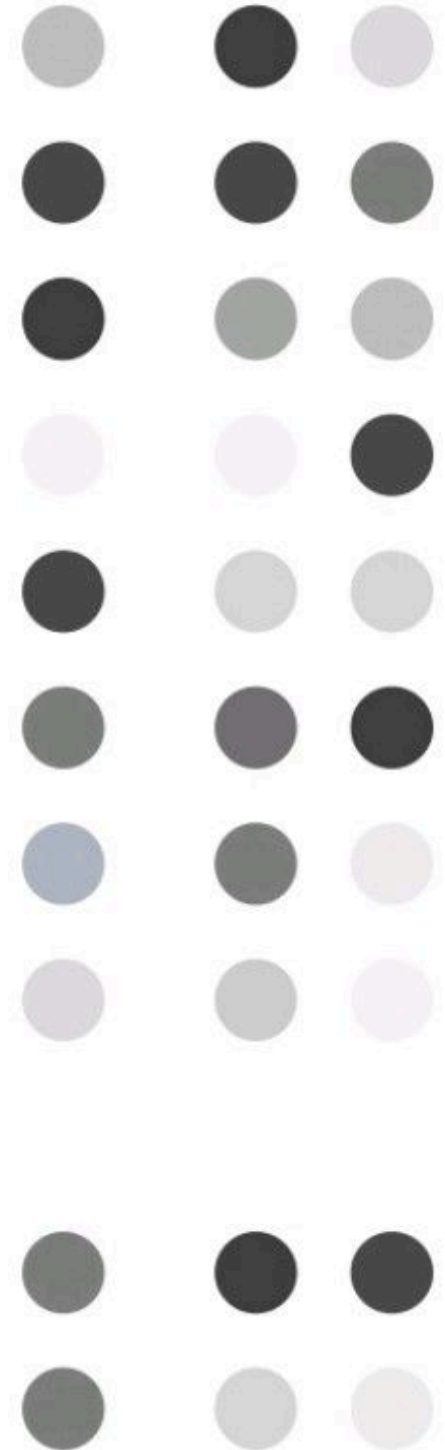
- **Active:** ***Hourly workers favor overtime.***

# Conciseness

- Limit paragraph, word, and sentence length.
- Proofread for accuracy
- Avoid redundancies

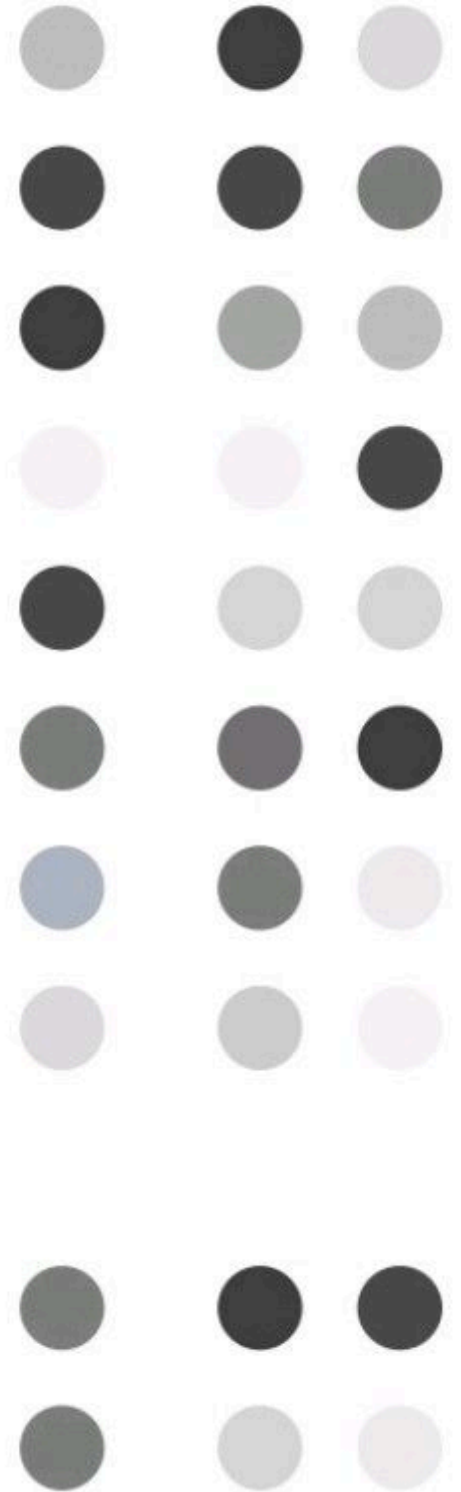
– *During the year of 1996*

➡ *During 1996*



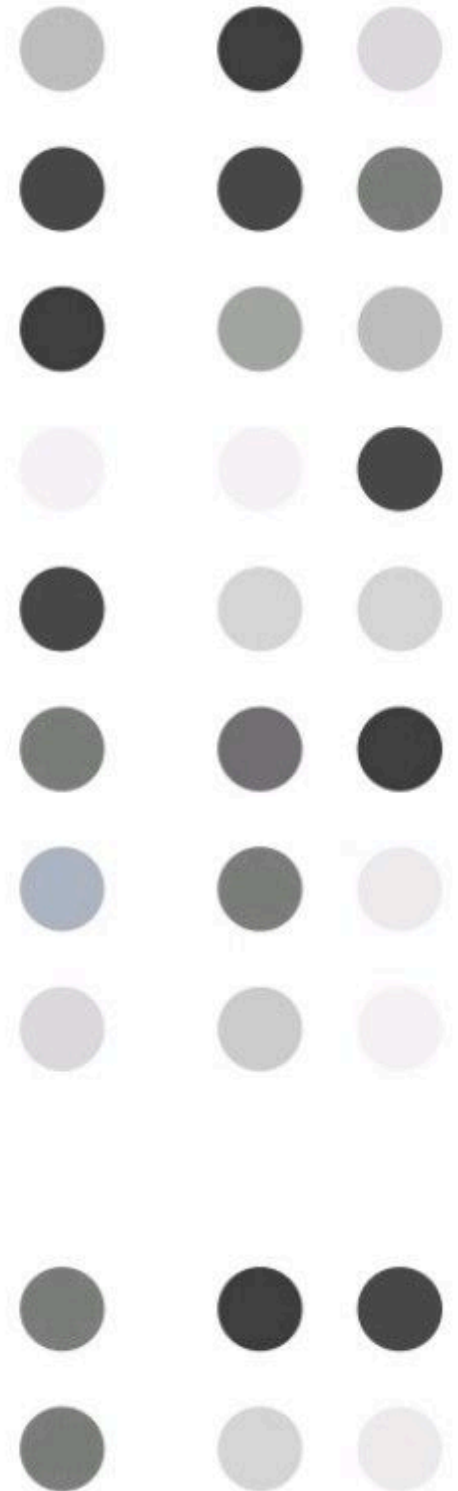
# Accuracy

- The importance of correct grammar.



# Organization

- Methods for organizing
  - Definition
  - Comparison/Contrast
  - More Important to Less Important
  - Situation-Problem-Solution-Evaluation
  - Cause-Effect

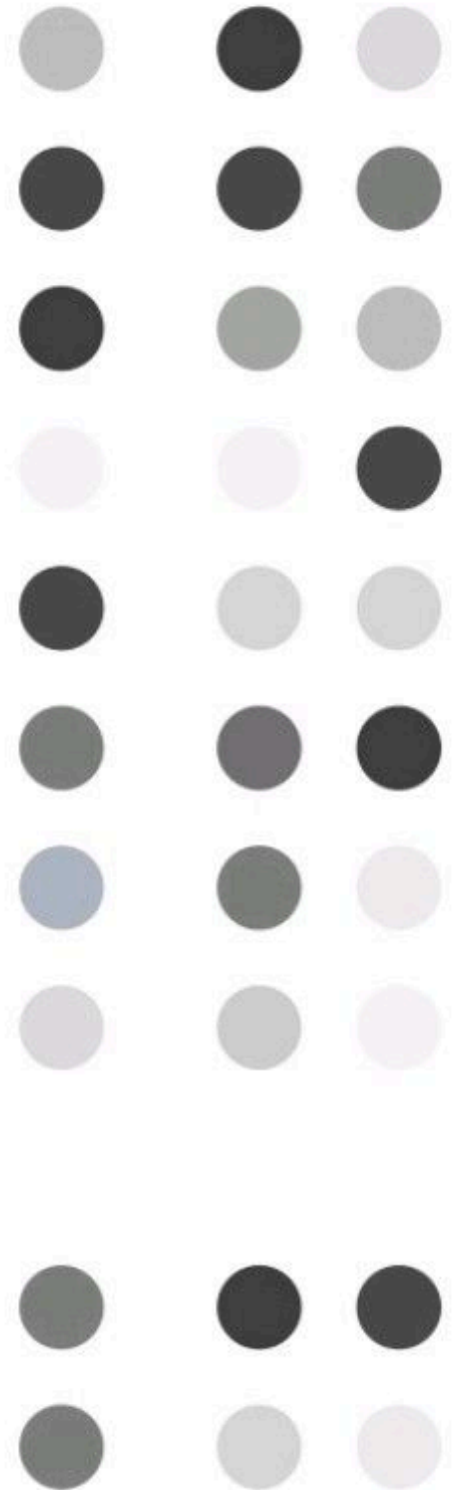




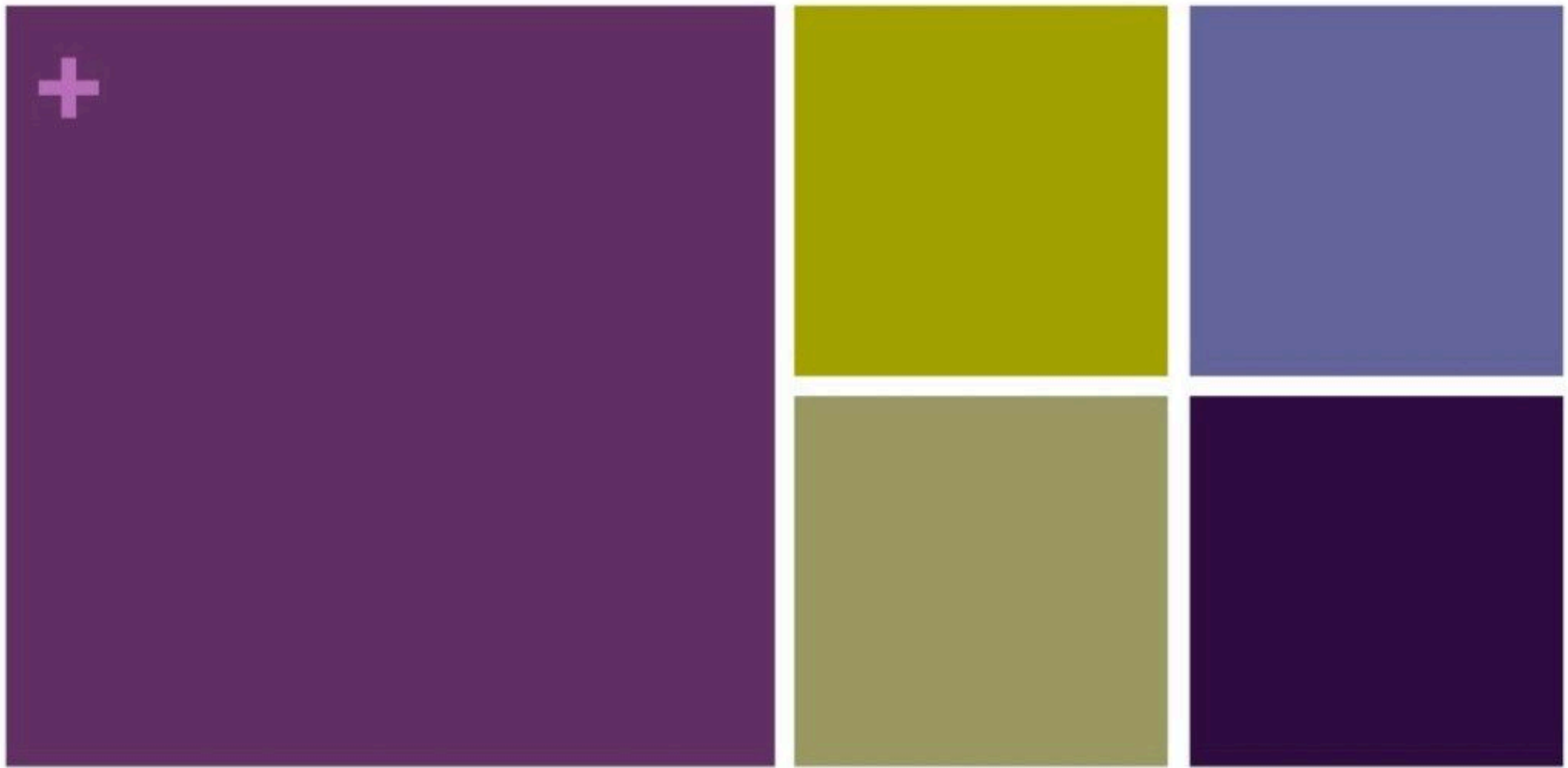
# Process

All that you need to do is three things:

- Prewrite (about 25 percent of your time)
- Write (about 25 percent of your time)
- Rewrite (about 50 percent of your time)







Technical  
Definitions and  
Descriptions

# + Technical Definitions

- Name
  - objects,
  - events,
  - processes,
  - phenomena
- Used in complex ways
- May include brief explanatory information with supporting graphics

## + Example of Descriptive Definition

- A paper micrometer is a small measuring instrument used to measure the thickness of a piece of paper. The micrometer is roughly the size of a regular stapler and has four main parts:  
1) frame, 2) dial, 3) hand lever, and 4) piston. The total weight of the instrument is 8 pounds. A micrometer has applications for the production of paper as well as printing and publishing industries.

## + Technical Definitions are used to:

- Name a new development or a new technology in a technical field.
- A Protected Membrane Roof (PMR) system using styrofoam insulation shields and protects a roof's waterproof membrane unlike a traditional roof system that does not cover the membrane.

## + Technical Definitions are also used

- To help specialists communicate with less knowledgeable readers.
- For example, a manual explaining how to tune up a car includes definitions of parts and tools.

# + Technical Definitions are also used

- By specialists when communicating with readers who have a high level of technical expertise to:
  - Clarify the context
  - Reduce ambiguity



+ We often think of dictionaries when using the word “definition”

- **Phenylephrine.** *n.* An adrenergic drug,  $C_9H_{13}NO_2$ , that is a powerful vasoconstrictor and is used to relieve nasal congestion, dilate the pupils, and maintain blood pressure during anesthesia.
- Definition is from *American Heritage High School Dictionary*

## + Context where technical term is sufficient

- Medical article describing methodology:

- *Participants in the study were given 3 mg. of Phenylephrine prior to anesthetic.*



## + Parenthetical

- Although blight resistance has been identified in both Kabuli (large, white seeded) and Desi (small, dark seeded) chickpeas, resistance is usually associated with small seed size.
- Winter dormancy in black bears (*Ursus americanus*) is likely an adaptation to predictable seasonal food shortages.
- The required gravel equivalent (GE) for the estimated traffic loading and sub grade conditions is 575 millimeters. Our recommendations are to provide a minimum GE of 660 millimeters because . . .

# + Sentence Definition

- ▶ Formula:

Term + Class/Category + Features/Details

- ▶ *Aschoyta rabiei* (term)

is a fungus (*class or category*)

that causes severe chickpea blight. (details)

## + Sentence Definition in a Paragraph

- In 1983, *Aschoyta rabiei*, a fungus that causes severe chickpea blight, was discovered near Pullman, Washington. Because this fungus has a very limited capacity to survive on other hosts, it was most likely introduced on chickpea seed imported from outside the region.

## + Sentence Definition in a Paragraph

- Whirling disease is a parasitic infection responsible for dramatic declines in wild trout populations in several Western rivers. Infected fish often exhibit darkened tails (blacktail), skeletal deformities in the head and spine, and swim in a tail-chasing or whirling type motion from which the disease gets its name.

## + Sentence Definition in a Paragraph

- The California condor (*Gymnogyps californianus*) is a member of the Ciconiidae family commonly known as the American vultures. At one time condors were included in the Cathartidae family in the order Falconiformes. Recently, however, taxonomists have concluded that vultures are more closely related to storks and have thus placed condors in a new taxonomic structure including them with the order Ciconiiformes (ITIS 2006).



# + Technical Descriptions Explain

- ▶ How something works
  - design
  - mechanism
- ▶ Methodology
  - processes
  - procedures
- ▶ Physical aspects
  - location
  - organism

## + Questions that technical descriptions answer for an audience

- What does it do?
- What does it look like?
- What is it made of?
- How does it work?
- How has it been put together?

## + Describing a Method (Process)

- Five exploratory borings will be drilled in or around the perimeter of the proposed development area during Phase I of geotechnical exploration. The borings will be located relative to the existing site features and our understanding of the preliminary design plans.



## + Describing a Method (Procedure)

- Hair was cut in five to ten locations (20-50 strands of hair per location in the occipital region of the scalp) with stainless steel surgical scissors. Only the 5-cm segment of hair next to the skin was used. The hair sample was placed in a seal-able plastic bag and labeled. Sample sizes of sufficient quantity were divided into duplicate pairs.

## + Describing a Location

- The project site is located on the University of Idaho campus in Moscow, Idaho. Specifically, the property is located in the Southwest Quarter of the Northeast Quarter of Section 18, Township 39 North, Range 5 West of the Boise Meridian in Latah County, Idaho.

## + Weak Descriptions: Example from an Engineering Review

The proposal fails to clearly define the list of radionuclides or toxic waste materials that are to be incinerated. While tables 3, 5, and 6 list the radionuclide and toxic materials contained in the stored wastes, Appendix 2 shows a different inventory. In addition, selection criteria for types of materials that qualify for incineration are not described. As a result, we advise against the proposed project.

# + Technical Specifications

- Similar to technical descriptions but differ in format.
- Specifications often rely heavily on visual representation such as an exploded drawing and do not use complete sentences but short phrases or terms to label the various parts.
- Sometimes specifications are listed in a table format.
- Used by audiences with varying levels of technical expertise.

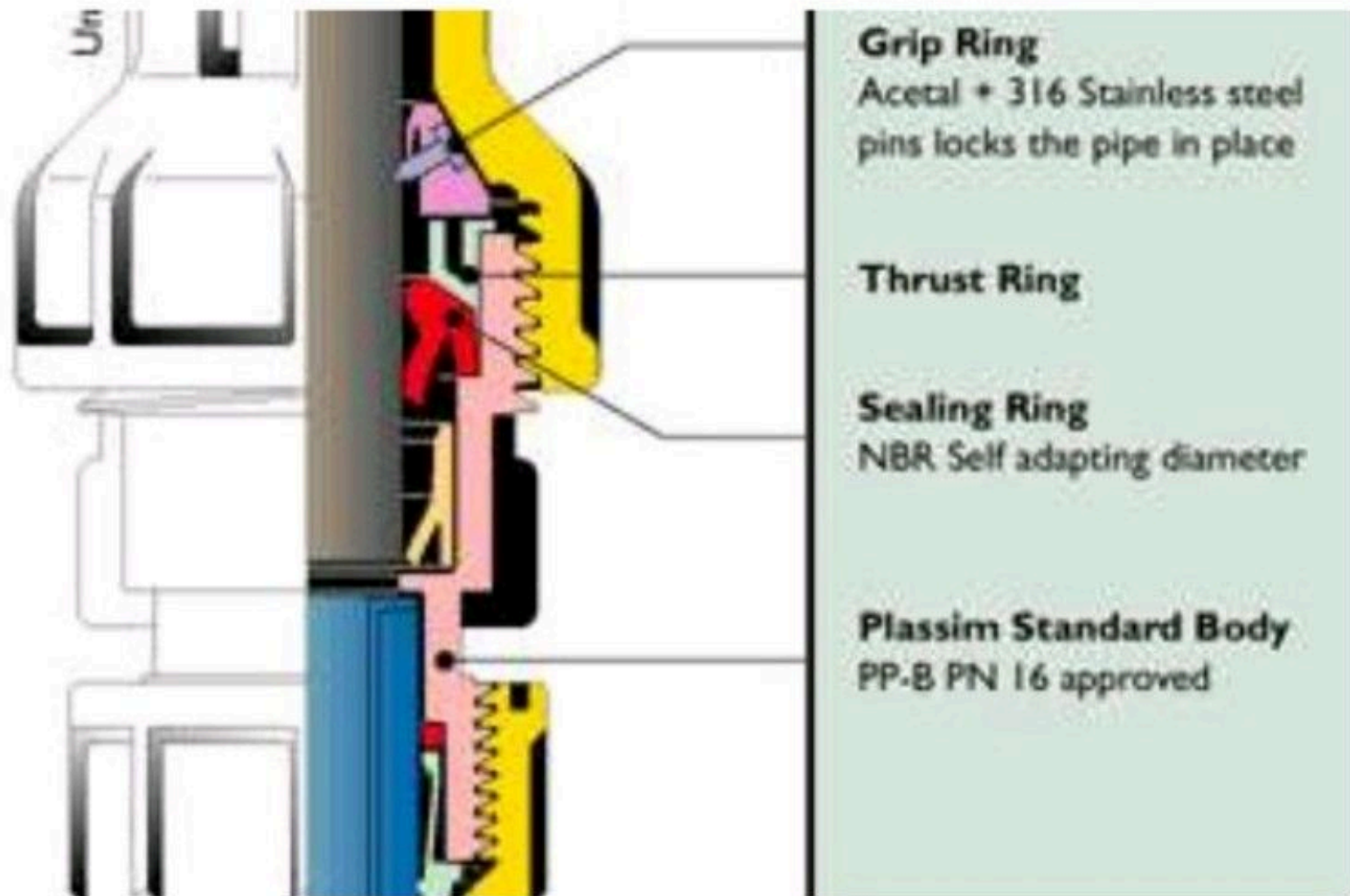


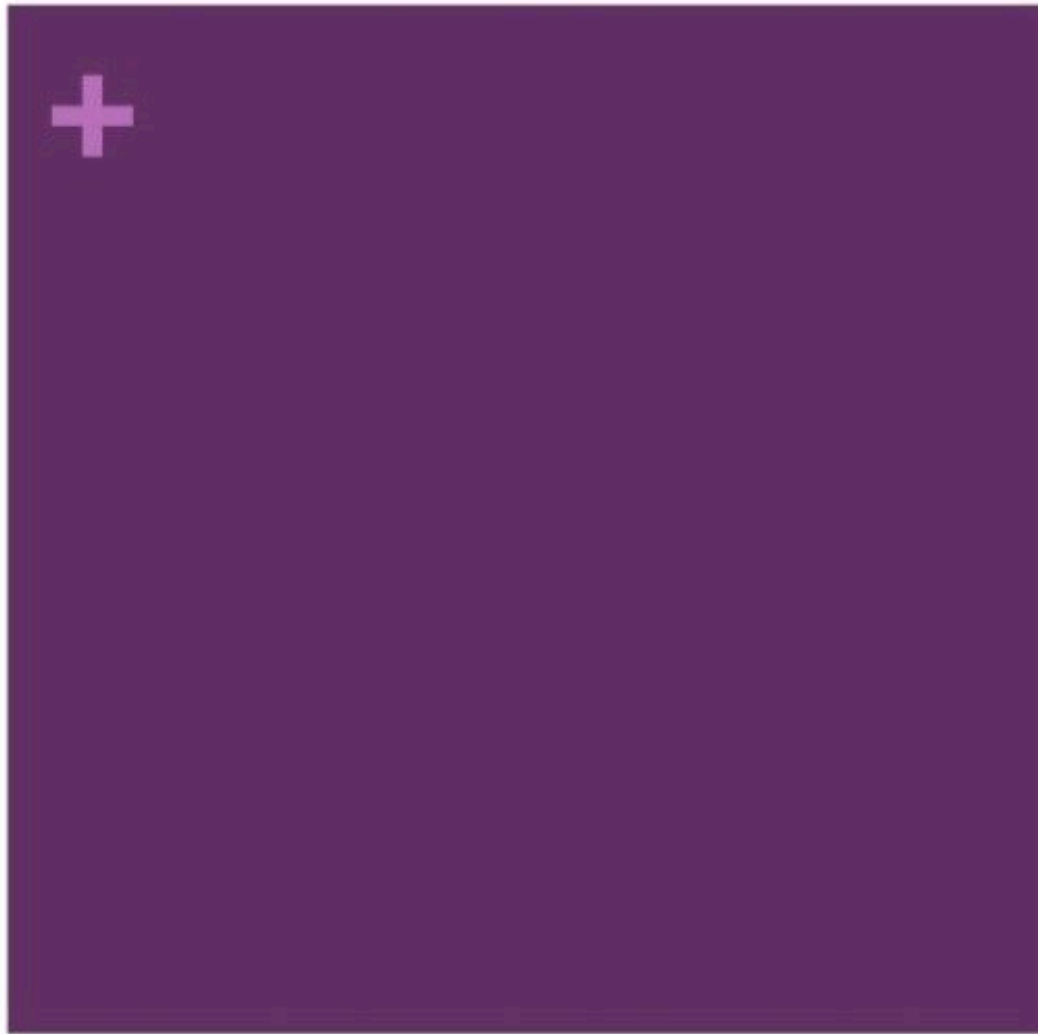
# Technical Specs in Table Format

| TECHNICAL SPECIFICATION |   |  |  |
|-------------------------|---|--|--|
| Brick Type              | HANDMADE  | TRADITIONAL WIRECUT  | RECLAIM  |
| Appearance              | Lightly crossed<br>genuine handmade   | Extruded wirecut smooth,<br>rustic, plain or surfaced  | Prominently 'aged' during<br>the production process  |
| Specification           | Bricks are manufactured to BS EN 771-1 (BS 3921/1985 now withdrawn)<br>Specials are manufactured to the proposed BS 4729:2005   |  |  |
| Sizes                   | Metric: 215mm x 102.5mm x 50mm, 45mm, 73mm, 85mm<br>Imperial: 8 1/2" x 4 5/16" x 2", 2 1/4", 2 3/8", 2 1/2", 2 5/8", 2 7/8", 3", 3 1/8"<br>Note: Most sizes can be accommodated in our production process   |  |  |
| Specials                | A full range of standard BS & purpose made Specials is available  |  |  |
| Compressive Strength    | 24.5 N/mm <sup>2</sup>  | 71.6 N/mm <sup>2</sup>   | 71.6 N/mm <sup>2</sup>   |
| Durability              | F2  | F2   | F2   |
| Ability to Effloresce   | NB to slight  | NB to slight   | NB to slight   |
| Soluble Salt Content    | S2  | S2   | S2   |
| Water Absorption        | 14 - 16 %   | 8 - 10 %   | 8 - 10 %   |
| Average Bulk Density    | 1650 kg/m <sup>3</sup>  | 1650 kg/m <sup>3</sup>   | 1650 kg/m <sup>3</sup>   |
| Packaging               | Shrinkwrapped and wire banded<br>with holes for forklift use  | Shrinkwrapped and wire banded<br>with holes for forklift use                                     | Shrinkwrapped and wire banded<br>with holes for forklift use                                     |
| Pack Sizes & Weights    | Size Qty/pack Weight (t)<br>50mm 450 1.229<br>45mm 500 1.229<br>73mm 500 1.280<br>85mm 400 1.213  | Size Qty/pack Weight (t)<br>50mm 450 1.070<br>45mm 500 1.071<br>73mm 500 1.195<br>85mm 400 1.100 | Size Qty/pack Weight (t)<br>50mm 450 0.927<br>45mm 435 0.929<br>73mm 400 1.009<br>85mm 400 1.051 |
| Workmanship             | The recommendations of good practice made in the relevant British or European Standards regarding design and workmanship must be fully observed. Always mix from four packs, working vertically down the blades, not horizontally across the tops of packs. Bricks & brickwork should be covered to prevent saturation. |  |  |
| Performance             | Guidance on the use of these bricks in specific situations is readily available from us. Liability cannot be accepted for the performance of the product if used outside our recommendations in areas of high exposure/saturation the use of Sulphate Resisting Cement is recommended.                                  |  |  |
| Samples                 | Available on 24-hour despatch   |  |  |
| Important Advice        | Colours and textures reproduced here are as accurate as the printing process allows and final choices should not be made from this brochure in isolation. For the latest updates on technical information, please visit our website on <a href="http://www.northcotbrick.co.uk">www.northcotbrick.co.uk</a>             |  |  |

Northcot's staff are committed to providing a flexible, prompt and courteous service. The Sales Office has more than 30 years experience and knows all there is to know about Northcot bricks. We also have experienced representatives available to advise and offer guidance when required. Our 24-hour sample despatch service is available, providing either 3 or 5 brick packs or slip-panels. Sixty brick site panels can be produced for local planning and/or conservation departments on your behalf.

## + Technical Specs in an Exploded Drawing





## Common Writing Problems

Technical Definitions and Technical Descriptions



# + Confusing Methods with Instructions

- Instructions are intended for the user to carry out a task.
- Method descriptions provide explanation of what will be or what has been done.
- Both instructions and method descriptions use a chronological pattern but for different purposes
- Although the description of a method may be chronological, it is not intended to be used by readers to carry out a task.

+ Example 1:  
**What Not to Do** in a Methods Section

To measure the cone angle:

- Step 1:      Take pictures of the flame cone using a digital camera.
- Step 2:      Download the pictures to a computer.
- Step 3:      Open the pictures in SolidWorks.
- Step 3:      Use the dimensioning tool to measure cone angle.

## + Example 1 Revised

- A digital camera was used to take pictures of the flame cone. The pictures were downloaded to a computer and opened in SolidWorks where the dimensioning tool was used to measure the cone angle.

## + Example 2: **What Not to Do** in a Methods Section

- ▶ In order to understand the methodology you must first understand the elements of a storm we are concerned with:
  1. Sea Surface Temperature (SST). As mentioned water at or above  $26.5^{\circ}\text{C}$  is required for a storm to form. Also they tend to weaken over cooler water.
  2. Sea Surface Rain Fall (SSR). This will allow for prediction of flooding and related events.
  3. Sea Surface Wind Direction and Velocity (SSW). This will allow for predictions of structural damage and other wind related damage.
- ▶ Next you must understand the satellites used to monitor these variables as well as the buoys. In terms of the satellites each requires a totally different sensor and at present at totally different satellite. Currently there no single satellite platform that contains all the sensors required for monitoring these storm elements. As such three different satellite missions were used.

## + Example 2 Revised

- Three different satellite missions were used to determine Sea Surface Temperature (SST), Sea Surface Rain Fall (SSR), and Sea Surface Wind Direction and Velocity (SSW).