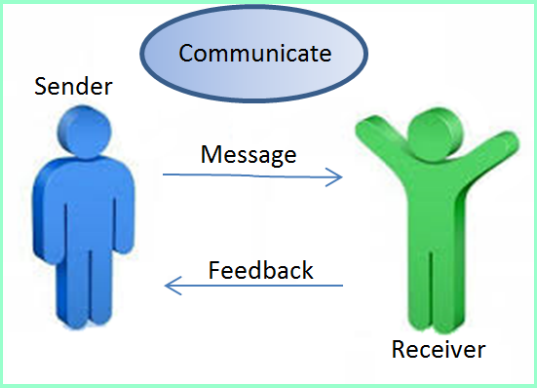
MEM16006A

Organise and communicate information



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Unit Resource Manual

Manufacturing Skills Australia Courses

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Aims of the Competency Unit:

The unit covers accessing, organising and communicating information related to processes or tasks and applies in manufacturing, engineering or related environments.

It may include information related to production, maintenance or associated processes. Information may be drawn from a variety of sources.

The unit includes the ability to communicate using common workplace terminology.

For access and recording of data requiring system knowledge and judgement, see Unit MEM16008A (Interact with computing technology).

Unit Hours:

18 Hours

Prerequisites:

None.

Assessment:

A student will be assessed as competent when all Skill Practice Exercises have been submitted and considered as suitable by the assessor.

Elements and Performance Criteria

1.	Access information and/or records	1.1	Information requirements of tasks are determined and relevant information is accessed from a range of sources
		1.2	Workplace terminology is correctly recognised
2.	Organise and analyse information	2.1	Information is interpreted and organised in accordance with enterprise and work requirements
		2.2	Information is analysed according to enterprise and work requirements
3.	Communicate organised information using established workplace methods	3.1	Information is communicated using established workplace methods.

Required Skills and Knowledge

Required skills include:

- accessing relevant information from a range of sources
- recording, where appropriate, the accessed information
- recognising and using workplace terms
- reading, interpreting and following information in workplace documentation
- checking and clarifying information
- organising, categorising and sequencing information

Required knowledge includes:

- types of information
- available sources of information
- information analysis techniques
- methods of categorising and organising information
- methods of recording and communicating information

Lesson Program:

Unit hour unit and is divided into the following program.

Topic	Skill Practice Exercise
Topic 1 – Relevant Information:	MEM16006-SP-0101 to MEM16006-SP-0102
Topic 2 – Workplace Terminology:	MEM16006-SP-201 to MEM16006-SP-0202
Topic 3 – Read & Interpret Documentation:	MEM16006-SP-301 to MEM16006-SP-030
Topic 4 – Follow Instructions:	MEM16006-SP-401 to MEM16006-SP-040
Topic 5 – Organise Information:	MEM16006-SP-501 to MEM16006-SP-050
	MEM16006–PT-01

Contents:

Topic 1 – Relevant Information:

Information:

Information is presented within a context that gives it meaning and relevance, and can lead to an increase in understanding and decrease in uncertainty. Relevant information is data which is applicable to the situation or problem at hand that can help solve a problem or contribute to a solution.

As an example, a steel tower is to be fabricated at the top of a high hill. The information provided by the client states the site is in an open position and the wind always blows. The information is good but not relevant because the engineer needs to know whether the wind is constantly from the same direction and the wind's velocity in m/sec. Other information may be relevant such as exposure to sea water spray which affects protective coatings, composition of the ground/strata which determines the bearing capacity of structural loads and the type of terrain or buildings in the close proximity which can tend to dissipate the flow of the wind.

Sources of information in an engineering environment can vary and include job instructions, specifications, standard operating procedures, charts, lists, documents, computer data, drawings, sketches, data tables, technical manuals, catalogues, and other applicable reference material.

Job Instructions:

Job instructions tell the operator how to do a task.

The ability to read and understand or comprehend written instructions is a necessary requirement in most workplaces across all industries. Reading is a skill which involves the process of "constructing meaning" from written material and requires the integration of several skills, which can be difficult for some people.

People with a cognitive impairment, such as a specific learning or intellectual disability, may have particular difficulty reading as they typically experience problems with language and communication in general. Consequently they may need support in this area and or alternative means of acquiring skills and knowledge, for example they may learn more effectively by seeing and doing; using a hands on approach or through active learning strategies.

Written instructions should be kept very brief and straight forward; simple language with bullet or numbered points should be used wherever possible. Large print and colour text could also be used for those with reading impairments. Effective instructions often include visual elements (such as pictures, diagrams, and flowcharts) that illustrate and clarify the text. Instructions intended for people from non-English speaking backgrounds may rely entirely on pictures and familiar symbols. (These are called wordless instructions.)

Large white or chalk boards could be provided for drawing symbols or pictures etcetera that enables the workers to make their own interpretation of written instructions in a meaningful way.

Basic Features:

"Instructions tend to follow a consistent step-by-step pattern, whether they are describing how to make coffee or how to assemble an automobile engine; some basic features of instructions are:

- Specific and precise title
- Introduction with background information
- List of parts, tools, and conditions required

- Sequentially ordered steps
- Graphics
- Safety information
- Conclusion that signals completion of task

Sequentially ordered steps are the centrepiece of a set of instructions, and they typically take up much of the space in the document."

(Richard Johnson-Sheehan, Technical Communication Today. Pearson, 2005)

Checklist for Writing Instructions:

1. Use short sentences and short paragraphs.
2. Arrange your points in logical order.
3. Make your statements specific.
4. Use the imperative mood.
5. Put the most important item in each sentence at the beginning.
6. Say one thing in each sentence.
7. Choose your words carefully, avoiding jargon and technical terms if you can.
8. Give an example or an analogy, if you think a statement may puzzle a reader.
9. Check your completed draft for logic of presentation.
10. Don't omit steps or take shortcuts.

(adapted from Writing With Precision by Jefferson D. Bates. Penguin, 2000)

Helpful Hints:

Instructions can be either freestanding documents or part of another document. In either case, the most common error is to make them too complicated for the audience. Carefully consider the technical level of your readers. Use white space, graphics, and other design elements to make the instructions appealing. Most important, be sure to include Caution, Warning, and Danger references before the steps to which they apply.

(William Sanborn Pfeiffer, Pocket Guide to Technical Communication, 4th ed. Pearson, 2007)

Testing Instructions:

To evaluate the accuracy and clarity of a set of instructions, invite one or more individuals to follow your directions. Observe their progress to determine if all steps are completed correctly in a reasonable amount of time. Once the procedure has been completed, ask this test group to report on any problems they may have encountered and to offer recommendations for improving the instructions.

Specifications:

Specifications are detailed documents providing information about the characteristics of a project or component to set criteria the designers and drafters will need to meet. Specifications are used for everything from laying out plans for a new space ship to addressing the design concerns of a pencil holder; the document provides guidance to the design and drafting teams and also allows the client to have clear input into the design process. With expectations clearly established at the beginning, confusion on both sides can be eliminated.

One part of the specification discusses the intended use and the nature of that use. Designers working on a new stretch of highway, for example, would discuss where the road will run, how many lanes it has, and how many cars it should see in a day, based on preliminary research while the drafters would detail the necessary detail drawings to those specifications. The purpose of the project should be clear from this section of the specification to eliminate design problems like failure to prepare for an anticipated use.

The specification should also include a detailed description of the specifications, including dimensions, weight, overall cost, and so forth. It should discuss laden and empty weights as well as any other topics that may be relevant; the more detail, the easier it will be for the design team to deliver precisely what the client requires. Details can also be important in the event of a dispute; for instance, if a company orders fabricated plinths of a specific size and the finished product isn't right, it can point to the line in the design specification and ask to have the plinths made again.

The specification creates a useful rubric for evaluating performance. At the time of delivery, the client and design/drafting team can go over the document as a checklist to make sure all the criteria had been met. If the team can't address a particular specification, they need to provide information about why, and should contact the client during development to discuss the situation and talk about various options for addressing it. For example, if it is not possible to fit four shower stalls in Bathroom, moving the wall might resolve the issue.

Both sides should read a specification very carefully before authorizing the next step in the design and/or construction process. Clients need to read it to see if the characteristics they want are represented; if something is missing or it does not meet the desired criteria, they should request revisions. Design and drafting teams must read the paperwork to plan out the design and detailing process, and if something is identified that is not feasible or could create a conflict, they should discuss it with the client before accepting the contract.

Standard Operating Procedures:

Standard Operating Procedures (SOP's) are established or prescribed methods to be followed routinely for the performance of designated operations or in designated situations. SOP's are developed to control the Safety, Quality, Cost and Delivery of products and procedures as a safe, standard method of working is essential in the modern work environment.

Any process that is allowed to operate in a non-controlled manner will inevitably produce variations in the products or services it generates; these variations are a consequence of the differing methods, employed by different personnel and different shifts etc. The end result of these variations will be quality problems, equipment failures, non-achievement of performance targets and health and safety concerns etc.

Standard Operations are a way of ensuring consistency; they should be viewed as the foundation upon which any improvement can be developed.

Safety:

Safety is and should always be number 1; under no circumstances should an unsafe method of working become part of an SOP.

Quality:

Quality will ensure that we can generate the expected level of Quality in line with customer requirements.

Cost:

Cost allow a clear understanding of what resources are employed to achieve the task and costs can be controlled at a consistent level.

Delivery:

Delivery will show what resource should be employed to meet & satisfy customer demand.

Charts:

Charts are used to communicate study results to co-workers, managers, and clients in a way that is both professional and easy to understand. Clearly presented information not acted on or falls by the wayside because it may be confusing to others. In a report, charts go a long way in illustrating findings that are clear and concise.

Charts simplify data in a presentable and visually pleasing way. The main challenge with using charts is selecting the correct type from the wide variety available. Many people do not understand the strengths and weaknesses that come with each chart type, either deciding off the cuff which looks the nicest or staying in their comfort zone by overloading their report with pie or vertical bar charts. It is important to use the most effective chart to display data results.

Line Chart:

Line charts are used to illustrate trends over time; this is done most often to measure the long term progression of sales, or any other empirical statistic important to businesses or organizations. It can also be used to compare two different variables over time. Chart 1 compares the production figures of the day shift to the night shift over the span of 5 years.

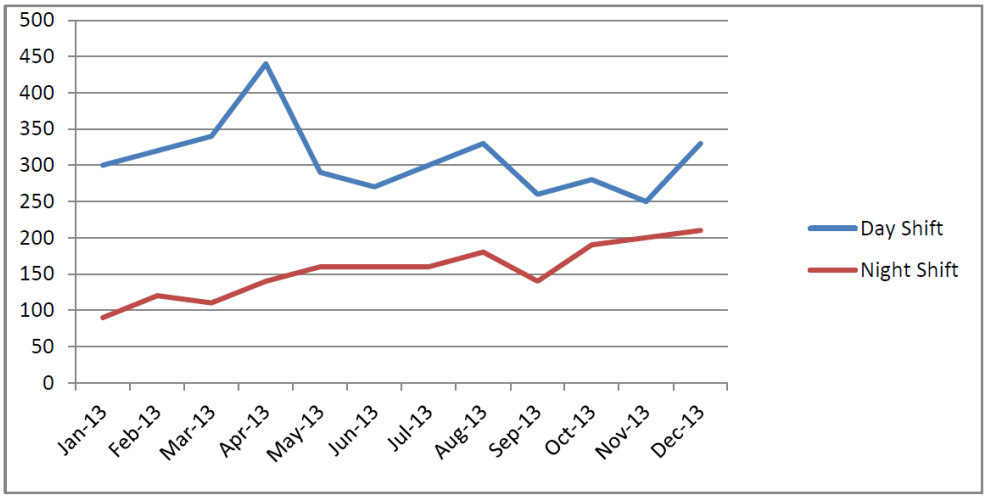


Chart 1 – Line Chart

Pie Chart:

Pie charts are best used to illustrate a sample break down in a single dimension. In other words, it is best to use pie charts when you want to show differences within groups based on one variable. In the example above, we broke down the sample group into different age groups in order to show the significance of age on cotton candy sales. It is important to remember that pie charts should only be used with a group of categories that combine to make up a whole.

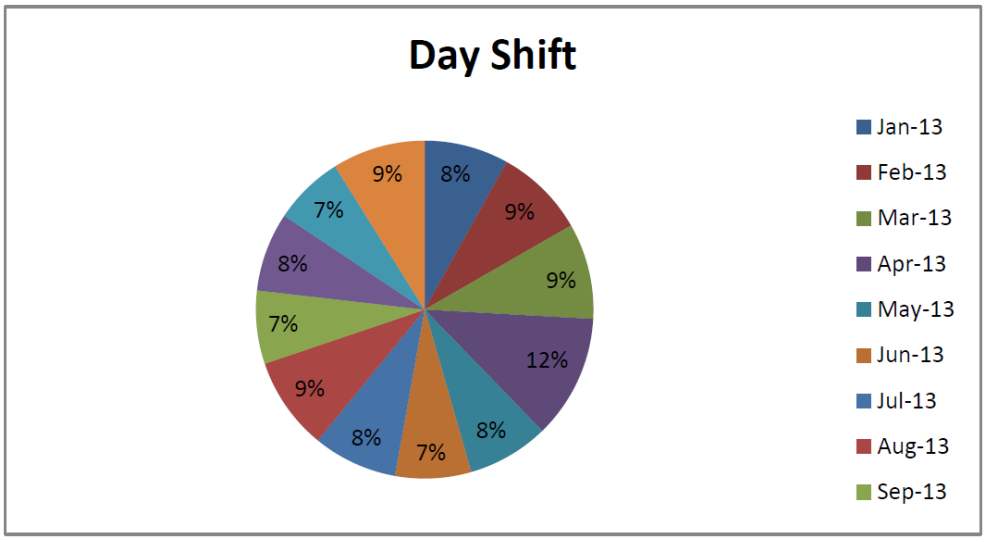


Chart 2 – Pie Chart

Vertical Bar Chart:

Vertical bar charts are best for comparing means or percentages between 2 to 7 different groups. As you can see, each bar is separated by blank space. For this reason, the x-axis should be based on a scale that has mutually exclusive categories (like multiple choice, or check box questions). Categories that are based on a continuous scale are better suited for a histogram, but we will look at those later. As for this chart, respondents were only able to select one distinct option (daily, weekly…) making its cross analysis with happiness perfect for a vertical bar chart.

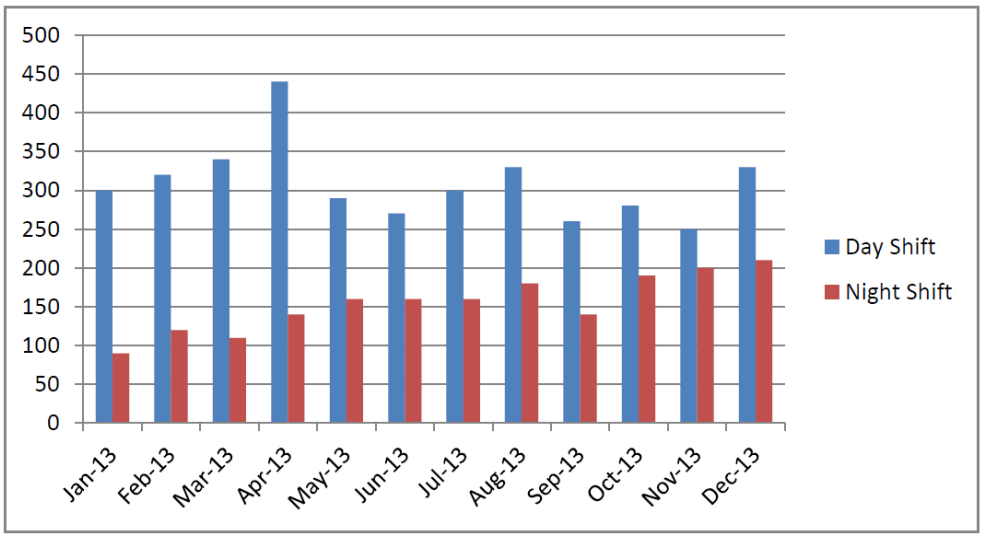


Chart 3 – Vertical Bar Chart

Horizontal Bar Chart:

The horizontal bar chart is used when comparing the mean or percentages of 8 or more different groups. As with the vertical bar chart, the horizontal bar chart should only be used when comparing categories that are mutually exclusive. In this chart, more than 7 categories of candy were measured independently and are being compared to one another.

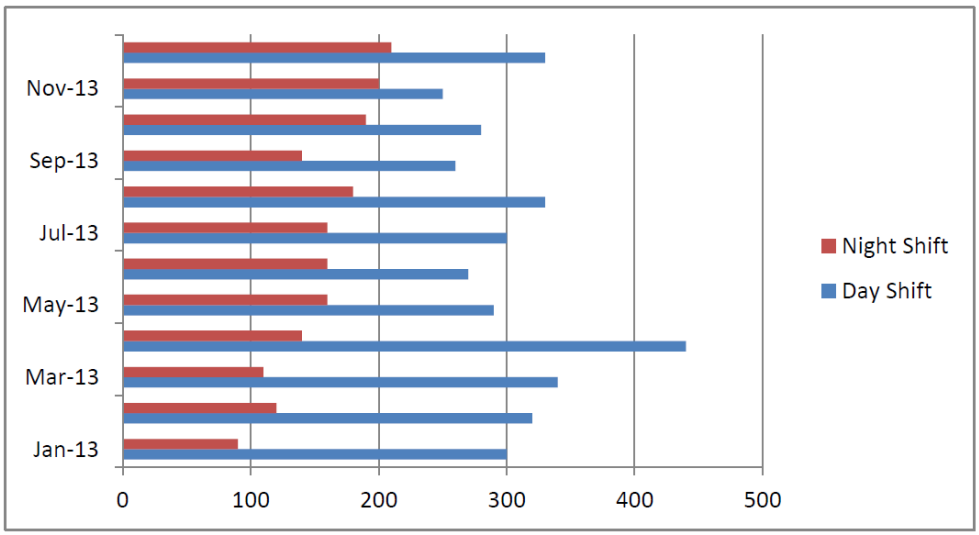


Chart 4 – Horizontal Bar Chart

Scatter Plot:

Scatter plots are used to depict how different objects settle around a mean based on 2 to 3 different dimensions. This allows for quick and easy comparisons between competing variables. In our example chart above we can see how each candy compares to one

another based on its cost to make and selling price. As a viewer, one can quickly reference the difference between two objects or its relation to the average, which is shown as the large square on the chart.

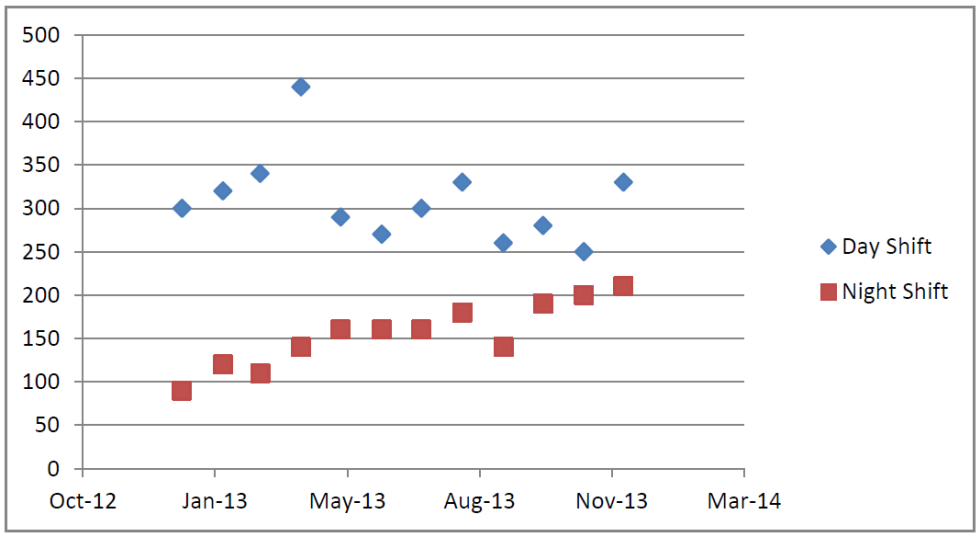


Chart 5 – Scatter Plot

Histogram:

Like pie charts, histograms break down the sample distribution in one dimension. The real difference between histograms and other forms of charts is that histograms are ideal for illustrating sample distributions on dimensions measured with discrete intervals. Unlike horizontal and vertical bar charts, the x-axis is not divided into mutually exclusive categories. In our example, the histogram indicates how many respondents fall into each range of candy consumed per week. The x-axis is a continuous scale, while each bar falls under a range of five units, or pieces of candy, on that scale.

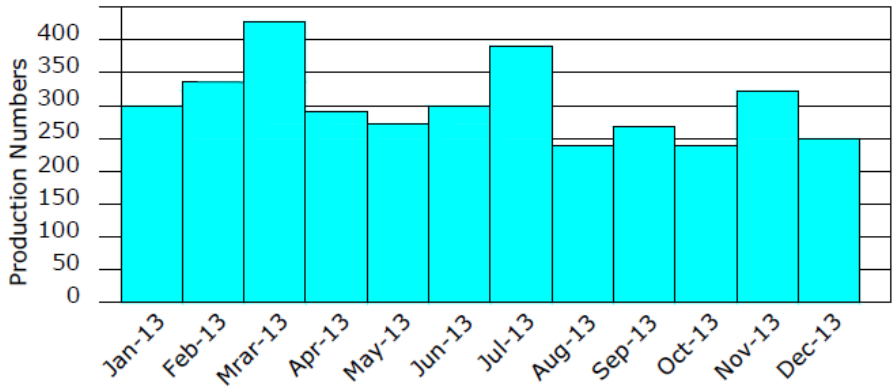


Chart 6 - Histogram

Lists:

At the centre of nearly every personal productivity system are lists. Lists in general are powerful tools, open-ended, constantly growing, and effective at extending our memories past the 7 or so things we can keep on our mind at any given time. Some of the lists that can increase productive or otherwise make life easier include Task Lists, Project Planning, Checklists, Reading Journals, References, Logs and Daily Summaries.

Task Lists:

The most common list is the task list, a simple list of things that have to be accomplished. A running list of the tasks that have to get done can make the workers life significantly easier, provided it is used consistently.

Project Planning:
Creating a list of tasks associated with a project can be a great way to understand the project, as well as a prompt for what to do next when a task is finished. A list of projects will help make sure that all commitments for the project are covered.

Checklists:
Any recurrent multi-step tasks like planning the views required on a drawing, packing for a business/holiday trip, arranging a presentation, or preparing for the Bush Fire season can be done more easily and with fewer errors if a simple checklist of all the steps involved and equipment needed is prepared.

Reading Journals;
A list of reference books and catalogues required in designing the project and detailing the separate components.

References:
Any information being often referred to can make a useful list; examples are metric conversions, drill and tap sizes, file types, software registration keys, etc.

Logs:
Broadly speaking, a log is a list of events tied to specific dates/times. Keeping a list of previous projects and/or drawings a draftsperson has prepared including time, and drawing numbers, general notes used on drawings, etc., will help in measuring an individual's progress as well as identify problems such as time required to prepare a certain type of drawing or component.

Daily Summaries:
A one or two line summary of the day's events can help to remind a person in filling out a billing sheet; a daily summary can also record the problems that arose as well as how they were dealt with.

Documents:
A document is a written or drawn representation of thoughts. In the computer age, a document is usually used to describe a primarily textual file, along with its structure and design, such as fonts, colours and additional images.

Documents can be categorised in the following groups, which are elaborated below:

Management:
Management documents include scheduling and planning documents, organisational documents, and minutes of meetings from the Project Committees under the Project Engineer's Office.

Quality Assurance:
Quality assurance documents include the Quality Assurance Policy and the procedures, definitions, standards, templates and instructions defined to support the handling of all documents, to ensure that the documents are prepared consistently and the project baseline can be maintained to support the development optimally.

Engineering:
Engineering documents include the engineering specifications, engineering drawings, technical illustrations etc. prepared to establish the design of the project; these documents form the basis for the project development, carried out by the Manufacturer, Contractors and Suppliers.

Contracting:
Contracting documents include the documents which form the contractual interface with the contractors developing, manufacturing and installing equipment for the project.

Fabrication, Assembly, Test and Installation:
Fabrication, Assembly, Test and Installation documents are prepared to support and document the development and validation of the equipment, in particular that developed

by contractors, and form the interface between the owner and the contractors for the contract completion activities.

Operations and Maintenance:

Operations and Maintenance documents are used to support the operation and maintenance of project equipment after delivery to the site of company warehouse and/or stores.

Computer Data:

Data can be defined as a representation of facts, concepts or instructions in a formalized manner which should be suitable for communication, interpretation, or processing by human or electronic machine. Data is represented with the help of characters like alphabets (A-Z, a-z), digits (0-9) or special characters(+,-,/,*,<,>,= etc.). All software is divided into two general categories: data and programs. Programs are collections of instructions for manipulating data. Data can exist in a variety of forms as numbers or text on pieces of paper, as bits and bytes stored in electronic memory, or as facts stored in a person's mind.

Data Processing Cycle:

Data processing is the re-structuring or re-ordering of data by people or machine to increase their usefulness and add values for particular purpose. Data processing consists of basic steps input, processing and output; these three steps constitute the data processing cycle shown in Figure 1.1.

Figure 1.1 – Data Processing Cycle

Input – In this step the input data is prepared in some convenient form for processing. The form will depend on the processing machine. For example, when electronic computers are used, the input data could be recorded on any one of several types of input medium, such as magnetic disks, tapes and so on.

Processing – In this step input data is changed to produce data in a more useful form. For example, pay-checks may be calculated from the time cards, or a summary of sales for the month may be calculated from the sales orders.

Output – Here the result of the proceeding processing step are collected. The particular form of the output data depends on the use of the data. For example, output data may be pay-checks for employees.

Computer Data Types:

For computer geeks, computer systems work with different types of digital data. In the early days of computing, data consisted primarily of text and numbers, but in modern-day computing, there are lots of different multimedia data types, such as audio, images, graphics and video. Ultimately, however, all data types are stored as binary digits. For each data type, there are very specific techniques to convert between the binary language of computers and how we interpret data using our senses, such as sight and sound.

In the workplace, computer data could be interpreted as data (or information) that is stored on the hard drive of a computer using a variety of software programs such as word processors, spreadsheets, databases, drawings and sketches. Modern computers work using Apple-Mac software, or Microsoft software.

Word Processors:

A word processor is a software application that enables a personal computer user to create, format, edit, save and retrieve documents. The documents may contain text,

numbers, graphics, photographs or a combination of two or more of these formats. The processor may be installed on a desktop or laptop computer or be part of both operating system software programs.

The introduction of personal computers quickly replaced typewriters and other devices. Instead of one machine, people who desired to electronically create documents had to purchase a video monitor, keyboard, mouse and operating system, which was enclosed in a metal cabinet; this cabinet also contained a disk drive into which small cards called floppy disks were inserted for data storage.

Word processor software was initially available from several manufacturing companies. While all these software programs had similar features, each had unique names for the word processing tools included in the software. As technology advanced, these software companies introduced increasingly sophisticated versions that had more features and easier accessibility to attract more novice users.

Today's word processor options include programs suitable for children as well as people with physical disabilities. Some word processor programs are voice activated and others can be operated through joystick manipulation instead of keyboards. Nearly every language in the world is accessible through various word processing programs.

Spreadsheets:

A spreadsheet, also known as a worksheet, contains rows and columns and is used to record and compare numerical data although most people use them for financial data. Spreadsheets can be used in any area or field that works with numbers and are commonly found in the engineering, construction, accounting, budgeting, sales forecasting, financial analysis, and scientific fields.

The advantage of using computer programs is their ability to update data and perform automatic calculations extremely quickly. In the software, the intersection of a row and a column is called a cell. Rows are generally identified by numbers 1, 2, 3, etc., while columns are identified by letters, such as A, B, C, and so on. The cell is a combination of a letter and a number to identify a particular location within the sheet, such as A3.

To manoeuvre around the cells, the user uses the mouse or the tab key. When the contents of one cell are changed, any other affected cell is automatically recalculated according to the formulas in use. Formulas are the calculations to be performed on the data; the formulae can be simple, such as sum or average, or they can be very complex using tragicomical or Pythagorean Theorems. Spreadsheets are also popular for testing hypothetical scenarios.

Setting up a worksheet can be fairly time consuming, although templates and samples are available with most software packages. Software programs can be formatted with titles, colours, bold text, and italics for a professional look. Users can also create graphs and charts based on the data. Many packages have the ability to print mailing lists or labels as well.

Individuals, in addition to businesses, use this software for a variety of tasks that involve numerical data. Engineers can use spreadsheets to determine the forces involved in roof and floor trusses, select sizes of structural beams and determining surface area and volumes of regular and irregular shapes. Teachers can use them to store and average grades, while other individuals can use them to track a personal budget or store sports team statistics. Spreadsheets are one of the most popular uses for personal computers.

Databases:

A web database is a system for storing information that can then be accessed via a website. For example, an company may have a database that stores the username, password, qualifications, and other details of all its employees. The data for a particular employee can be easily accessed by authorised personnel to carry out their duties. The same company may have other databases storing client's particulars, tendered projects, material suppliers and contractors.

At its most simple level, a web database is a set of one or more tables that contain data. Each table has different fields for storing information of various types. These tables can then be linked together in order to manipulate data in useful or interesting ways. In many cases, a table will use a primary key, which must be unique for each entry and allows for unambiguous selection of data.

A web database can be used for a range of different purposes. Each field in a table has to have a defined data type. For example, numbers, strings, and dates can all be inserted into a web database. Proper database design involves choosing the correct data type for each field in order to reduce memory consumption and increase the speed of access. Although for small databases this often isn't so important, big web databases can grow to millions of entries and need to be well designed to work effectively.

Drawings and Sketches:
Specific programs are available for the preparation of computerised drawings and sketches. The cost of programs start at about $19 for 3D House design that will design houses in 3D however, many may not be able to produce accurate architectural prints for submission to local councils. At the other end of the spectrum, programs can cost many $100,000's, even going into the $1,000,000's for specialised stand-alone programs that are developed/written for specific tasks and industries such as space programs.

Drawings:
Drawings and sketches can be prepared using a CAD program and stored on a computer until ready for printing or manually produced on drawing boards. Computer Aided Design (CAD) is a form of design in which people work with computers to create ideas, models, and prototypes. CAD was originally developed to assist people with technical drawing and drafting, but it has expanded to include numerous other potential uses. A variety of software products designed for CAD using either 2D or 3D models can be found on the market, with many being targeted to a specific application or industry.

Drafting and technical drawing can be very painstaking, and they require some special skills. Using CAD for drafting still requires many of the same skills, but by working with a computer instead of on paper, people can be much more efficient; designers and draftspersons can play around with ideas much more easily, moving design elements around and running the design through software programs which can determine whether or not the design is structurally viable. For example, an architect working on a bridge can test the design in simulations to see if it will withstand the load it will need to carry.

CAD can be used to design structures, mechanical components, and molecules, among other things. One advantage of using CAD is that people don't have to make prototypes to demonstrate a project and its potential, as they can use a three dimensional modelling program to show people how something might look. CAD also allows for endless variations and experiments to show how the look and feel of something can be altered, and these can be done at the click of a button, rather than with painstaking drafting work.

Casual users sometimes like to play with CAD for things like deciding how to organize their furniture, or lay out a garden. They can drag and drop elements and play with the space in a variety of ways, and generate a configuration which will be suitable and aesthetically pleasing. CAD is used by professionals in a number of industries across the manufacturing sector, and it can also appear in some surprising places, like forensics labs, where researchers recreate crime scenes on a computer to explore scenarios.

Advanced CAD programs usually require extensive training from their users, as they can be very complex and challenging to work with. More casual programs can be learned in shorter periods of time, with some designed to allow people to work within the program immediately, learning as they go. Simple programs can also sometimes have their functionality increased with expansion packs which are designed to provide additional features, so that people can work within a program they are familiar with when they want to develop more complex designs.

Sketches:

Freehand drawing and sketching is a means of quickly putting thoughts down on paper and differs from instrumental drawing and CAD primarily in the amount of time and accuracy required. In appearance, the completed freehand drawing is entirely different from the clean-cut precision of a mechanically ruled or computer generated working drawing; it has a rough and natural appeal, while being clear, concise and suitable for the intended purpose. A poorly presented freehand drawing is unlikely to be appreciated, understood, or accepted.

Any of the types of working drawing used in the various Industry-specific content areas may be used in freehand drawing. Freehand sketches and drawings are quickly drawn to communicate ideas fast and freely. The secret is to sketch while thinking of ideas. Freehand sketches and drawings are sometimes called concept sketches: they are often very basic drawings, which are far from finished but they nevertheless convey a lot of information about a project.

Sketches of ideas should attempt to provide answers to the problem and meet as many of the operational requirements of specification as near as possible. The sketches need not be completely different ideas for the project, but ideas related to the central concept. To build on the ideas, add notes to indicate key design features (good and bad), construction skills and measurements. The combination of quick sketches and notes are beneficial in providing evidence of the evolution of the project's design from initial concept to completion.

Freehand sketches can be produced rapidly and require no specialised equipment. The idea of freehand sketching is to produce an image of the project or component quickly using only a sketch pad or blank paper, pencils and eraser.

Sketches can be prepared by clients, tradespersons, supervisors, engineers and drafters to convey ideas by picture – as the saying goes, "A picture can save a thousand words!"

Data Tables:

A data table is a visual instrument comprised of labelled columns and rows and is used to arrange information contained in a computer's database. It may serve to organize disparate data, as well as to permit data to be easily manipulated and analysed. Data tables are commonly used in the process of financial analysis or as tools for traditional web design.

Data tables generally present numerical data inside of a grid format. However, they can also be used to present text, Internet hyperlinks, or even images. Due to their orderly style of presentation, data tables are beneficial as information retrieval devices. Popular tax preparation software commonly relies on data tables to analyse liabilities and deductions. CEOs and financial managers frequently may often refer to a data table when performing a cost-benefit analysis, since it permits them to digest an array of data a quick glance. More importantly, data tables are used in engineer, allowing input values and formulae to be easily modified. Once changed, all affected data in the table will be instantly recalculated in order to reflect the change.

Two types of tables that are commonly used as tools for data analysis are one-variable data tables and two-variable data tables. Simple modifications in a data table can be accomplished by using a one-variable data table. By using this type of table, a user is able to modify a single variable within a formula, in order to understand how such a modification will affect the formula as a whole. For example, if an engineer is attempting to understand how bending moment increases the size of a structural member, they may use a one-variable table to alter the input value for the member's span.

Comparably more complex modifications can be accomplished by using a two-variable data table; this type of table allows users to modify two input values within a formula. For example, if a Project Manager desires to compare the performance of two teams of

workers on the basis of their production rates, as well as their rejection percentages, the two-variable table is capable of altering both of these input values at once.

Since data tables are created with the aid of computer technology, they often produce results that are more accurate than those produced via manual calculation. While they are similar to graphs employed in statistical analysis, data tables require little training to use. Similarly, they are relatively simple to read and to modify; thus, they are popular tools.

Technical Manuals:

Technical manuals are documents containing instructions for the installation, operation, use, maintenance, parts list, support, and training requirements for the effective deployment of an equipment, machine, process, or system. Types of manuals include:

Policy manuals – document the rules governing an organization. Policies can be set out at the board, organization, department, work group, or other levels. They can be short and general, or long and detailed. Most organizations have, or would benefit from, an organization-wide policy manual. It's usually the highest manual in the document hierarchy, since other manuals, such as department procedure manuals, typically must comply with those policies. In smaller organizations, policies and procedures are often found in the same manual. Policy manuals are usually organized by business function or department.

Procedure Manuals:

Procedure manuals document how things are done, such as processing an invoice, and often serve to implement policies. Step-by-step procedures and flow diagrams are frequently used. The reader is usually assumed to be familiar with the topic, but has not performed the procedure often enough to have memorized it. Procedure manuals are usually organized by work task, with procedures grouped according to business function or by department.

Standards Manuals:

Standards manuals set standards for products, services, or other work activities; they are common in engineering, manufacturing, and construction where they are used to specify materials or manufacturing standards. Standards are also found in procedure manuals to set out how frequently, how fast, or how accurately things will be done; for example, they may state that "all reinforced concrete members are to be left for 7 days." Standards manuals can be organized in various ways, such as by material type, system, or job task.

Guidebooks:

Guidebooks give readers more latitude than policy and procedure manuals; they contain guidelines for dealing with different situations. Guidelines are usually non-mandatory suggestions rather than strict rules or clearly defined procedures. Sometimes they simply establish the bounds within which employees may act at their own discretion. Guidebooks are usually organized by work task, business function, or department.

User Manuals:

User manuals contain instructions for installing and using software or hardware and should be organized around user tasks. User manuals don't describe the software in the detailed way that a reference manual might; they describe how the software is used, usually with lots of step-by-step procedures. The user manual is the primary manual for all users, but particularly for novices.

Reference Manuals:

Reference manuals usually provide detailed information on hardware or software organized for quick reference and may also include other types of information, such as code lists or lists of names and contact information. For software, they often systematically describe each field, in each dialogue box, in each menu. Unlike user

manuals, they are not organized around user tasks, but may be alphabetized by keyword or sequenced according to the spatial arrangement of the software interface. Readers are assumed to be familiar with the software but need quick information on some aspect of the system. Reference manuals are normally not given to novices.

Training Manuals:
Training manuals are designed to teach readers something new and may be self-paced (readers do the tutorials at their own rate) or designed for use within a training course. Training manuals seldom try to teach everything, but just try to provide a basic foundation upon which readers can build. Training manuals usually start with basic skills and progress to more advanced skills as readers gain experience and confidence. Once the software or procedures are learned, the user manual or reference manual is typically used.

Operator Manuals:
Operator manuals provide detailed instructions for operating instruments or equipment and may include installation and troubleshooting instructions. If the equipment is complex, separate installation and maintenance manuals may be produced; the reader is often an engineer, draftsperson or a technician. Similar to software user manuals, operator manuals are usually organized around work tasks.

Service Manuals:
Service manuals are used by service technicians or engineers to perform routine maintenance or to troubleshoot and fix problems or breakdowns. Service manuals often describe the theory of how the equipment works and operating principles, and instructions on how to disassemble and reassemble components and are often organized by system, such as "electrical system," or by component.

Field Guides:
Field guides are designed for use away from a desk, often outdoors and are commonly used to help identify plants or animals, or to describe field tests. Field guides are often small enough to fit into a pocket, and are sometimes printed on waterproof paper: they are often organized alphabetically by keyword for quick reference, or by work task (such as a sampling procedure).

Catalogues:
A catalogue (also spelled catalogue) can be a list of anything, arranged in some order, and when things are listed, they are catalogued. If a worker is particularly peeved at another worker, they might be catalogued as very annoying with the thing they had recently been doing. Working in the offices technical library, an employee may have been assigned to catalogue new technical resources, or, in the office, the drafter might catalogue all the printers and plotters, listing the make and model of each one.

Nearly all manufacturing firms make catalogues available of the various products for sale. The catalogues may include technical information concerning the construction of the products, or detail the method of assembly etc. The dimensions of the critical features together with important data on loads, stresses, part numbers etc. are also included in the catalogue.

Relevant Information:
Relevant information can be described as any data that applies to the situation or problem that can help towards finding a solution. There are three types of relevant information, Primary Information, Secondary Information, and Tertiary Information.

The types of information that can be considered primary may vary depending on the subject discipline, and also on how the material is being used. For example:

- An article reporting on recent studies linking the increase of wind pressure on a structure would be a secondary source.
- A research article or study proving this would be a primary source.

- However, if investigating how wind effect on the structure is presented in the electronic media, the article could be considered a primary source.

Primary Information:

Primary information is the original or raw data and is often referred to as the 'source', and is from the time period involved and have not been filtered through interpretation or evaluation. Primary sources are original materials on which other research is based. They are usually the first formal appearance of results in physical, print or electronic format. They present original thinking, report a discovery, or share new information. Examples of primary sources include: artefacts, audio recordings, diaries, internet communications, interviews, letters, photographs, statistics, standards, legislation, company data and video recordings.

Secondary Information:

Secondary information usually takes raw data and analyses it and presents it in a format that is easier to read and understand. Secondary information, or sources, is less easily defined than primary sources. Generally, they are accounts written after the fact with the benefit of hindsight and are interpretations and evaluations of primary sources. Secondary sources are not evidence, but rather commentary on and discussion of evidence. However, what some define as a secondary source, others define as a tertiary source. Context is everything.

Typical examples of secondary information include, reports, newspaper articles, textbooks, dictionaries and encyclopaedias (also considered tertiary), histories, textbooks (also considered tertiary) and web sites (also considered primary).

Tertiary Information:

Tertiary information consists of information which is a distillation and collection of primary and secondary sources. Tertiary information includes books, directories, fact books, manuals, textbooks (also considered secondary), dictionaries and encyclopaedias (also considered secondary) and articles based on the research of others; they aim to explain research for a general audience. The information may be useful as a starting point but are quickly out of date.

Skill Practice Exercises:

Skill Practice Exercise MEM16006-SP-0101.

Using the internet, local/educational/work library, cite three technical manuals for the installation for one of following:

- Garage panel lift door.
- Marine fish finder.
- Concrete stormwater pits.
- Timber casement windows.
- Electric arc welding machine.
- CNC lathe.

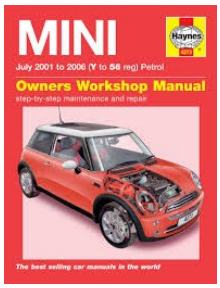
Skill Practice Exercise MEM16006-SP-0102.

Find three pieces of relevant information (primary, secondary and tertiary) for one of the following studies:

- A new end mill to be purchased for the Machine Shop.
- A new automatic welding machine is to be purchased for the Fabrication Shop.
- The importance of wind generated electric power in Greenhouse Warming.
- GPS navigational aids for marine craft.
- Structural fatigue in Comet aeroplane in the 1950's

Answers

1.



A.

B.

C.

D.

2. Underline the electric grinder.

A.

B.

C.

D.

3. Put a cross through all the images that are not showing a tape measure.

A.

B.

C.

D.

4. Circle the image that shows a motor car.

A.

B.

C.

D.

5. Put a cross through the image showing a fire extinguisher.


A.


B.

C.


D.

6. Underline the image of a mug.


A.

B.


C.

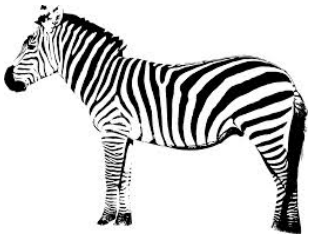

D.

7. Draw a large dot above the image showing a zebra.


A.


B.


C.


D.

8. Circle the letter of the image that shows equipment used in a water sport.


A.


B.


C.


D.

9. Put a cross through all the images that are not showing a fruit.

A.

B.

C.

D.

10. Draw a large dot below the image showing a lathe.

A.

B.

C.

D.

11. Underline the image of drawing compass.

A.

B.

C.

D.

12. Circle the letter of the image that shows a drift punch.

A.

B.

C.

D.

13. Do not answer any of the questions; just write you name on the line below.

Name: _____