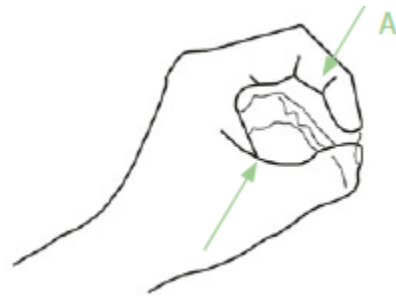
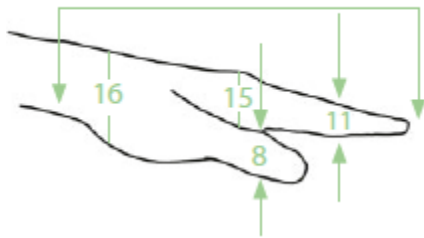


Design & Technology

Grade 8 – Worksheet 1 – Solution

Design Fundamentals:

1. Designing for comfort, easy and safe use is called ergonomics.
- 2(a). Anthropometrics is the study of human sizes and measurements and how they relate to products. It includes measurements of height, weight, hand size and so on.
- (b). Diameter of the handle is estimated from the dimension A of the hand shown below.



3. Page 13 – Number 5

(a). (i) Body height

(ii) Arm length

(iii) Waist to floor height

(b). B: Sitting eye height

C: Popliteal height

E: Forearm finger tip length

F: Knee height

Materials Technology:

5. **Refer on MIE Textbook:** Page 79: Table 2: Characteristics of hardwood and softwood.

6(a). Some common types of hardwood and their uses:

i. Teak:

- First class furniture
- Decorative cabinets
- Parquetry flooring
- Ship building

- ii. Meranti:
 - Structural framing
 - Mouldings and trim
 - Low-cost furniture
 - Plywood

- iii. Mahogany (Sapele)
 - High class furniture
 - Parquetry
 - Boat building
 - Musical instruments

6(b). Some common types of softwood and their uses:

- i. Pine:
 - Doors
 - Furniture
 - Window frames
 - Panelling
 - Floors
- ii. Douglas Fir:
 - Plywood manufacture
 - Veneer
 - Flooring
 - Joinery work
 - Houses
- iii. Red cedar:
 - Musical instrument
 - Roof Panelling

7(a). Ferrous metals contain iron and are likely to rust when not properly protected. Also, they are attracted to magnets.

7(b). Some examples of ferrous metals and their uses:

i. Mild steel:

- Bolt and nuts
- Gates
- Metal bars

ii. Cast iron:

- Kitchen utensils
- Manhole covers
- Metal workshop vice body
- Engine blocks

iii. Stainless steel:

- Kitchen utensils
- Surgical equipment
- Handrails

7(c). Non – ferrous metal does not contain iron. Therefore, it does not rust and is not attracted by magnets.

7(d). Some examples of non – ferrous metals and their uses:

i. Copper:

- Kitchen utensils
- Electric wires
- Plumbing components

ii. Aluminium:

- Window and door frames
- Ladders
- Cooking foils
- Body car parts

iii. Brass:

- Musical instruments
- Door knobs

8. **Refer on MIE Textbook:** Page 92 – Exercises: No. 7(a), (b) & (c).

(a). Material **A**: Aluminium has been used as it does not rust and is light weight.

Material **B**: Glass has been used as it is the cheapest material that light passes through readily.

(b). Material **A**: Plastic socket base has been used as electrical insulator.

Material **B**: Aluminium has been used as it is a good conductor of electricity.

(c). Material **A**: Steel has been used as it has good hardness properties.

Material **B**: Ash wood has been used as it has good strength and hardness properties.