

Trade of Plumbing

Module 1: Thermal Process and Mild Steel Pipework

Unit 3: Workshop Related Safety

Phase 2

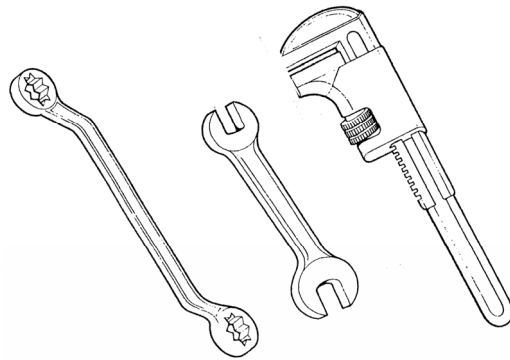


Table of Contents

| | |
|--|-----------|
| List of Figures..... | 4 |
| List of Tables | 5 |
| Document Release History | 6 |
| Module 1 –Thermal Process and Mild Steel Pipework | 7 |
| Unit 3 – Workshop Related Safety | 7 |
| Learning Outcome: | 7 |
| Key Learning Points: | 7 |
| Training Resources: | 7 |
| Key Learning Points Code: | 7 |
| Safety Signs..... | 8 |
| Fire Prevention..... | 9 |
| Safety in the Workshop | 10 |
| Hand tools | 11 |
| Ladder Work | 12 |
| Working on Platforms..... | 13 |
| Protective Clothing | 14 |
| Head Protection..... | 14 |
| Eye Protection..... | 14 |
| Self Assessment..... | 16 |
| Index..... | 18 |

List of Figures

| | | |
|-----------|--|----|
| Figure 1. | Safety signs | 8 |
| Figure 2. | Fire extinguishers examples..... | 9 |
| Figure 3. | Lifting heavy loads | 10 |
| Figure 4. | Unsafe and inappropriate use of tools..... | 11 |
| Figure 5. | Ladder at the correct angle staked and tied..... | 12 |
| Figure 6. | Protective clothing. | 15 |
| Figure 7. | Fire extinguisher question..... | 16 |
| Figure 8. | Safety signs question..... | 17 |

List of Tables

| | | |
|----------|---|----|
| Table 1. | Fire extinguisher selection chart | 9 |
| Table 2. | Fire extinguisher selection chart questions | 16 |

Document Release History

| Date | Version | Comments |
|-----------|---------|----------------|
| June 2006 | V.1.0 | |
| 04/03/14 | 2.0 | SOLAS transfer |
| | | |
| | | |

Module 1 – Thermal Process and Mild Steel Pipework

Unit 3 – Workshop Related Safety

Duration – 7 Hours

Learning Outcome:

By the end of this unit each apprentice will be able to:

- State the risks, hazards and causes of accidents in the workshop.
- Demonstrate correct use of power tools.
- Demonstrate safe use of grinding tools and pedestal drills.

Key Learning Points:

| | |
|--------------|---|
| Rk H | Risks, hazards and causes of accidents in the workshop. |
| Rk | Cleanliness and tidiness in the workshop. |
| P | Good working practice. |
| Rk Sk | Use and care of hand tools. |
| Rk Sk | Use and care of grinding tools, pedestal drills. |
| Rk | Personal protection equipment. |
| Rk | Safety signs. |

Training Resources:

Classroom facilities, workshop facilities, safety videos, information sheets.

Key Learning Points Code:

M = Maths **D** = Drawing **RK** = Related Knowledge **Sc** = Science
P = Personal Skills **Sk** = Skill **H** = Hazards

Safety Signs.

Many signs are used on a construction site and their meanings need to be considered and understood. Signs are not meant for show but are placed there for a reason. The classification of a sign will fall into one of the following categories:

- **Information** - square or rectangular, white on green background.
- **Warning** - triangular, black on yellow background.
- **Mandatory** - circular, white on blue background.
- **Prohibition** - circular, red border and cross bar on white background.

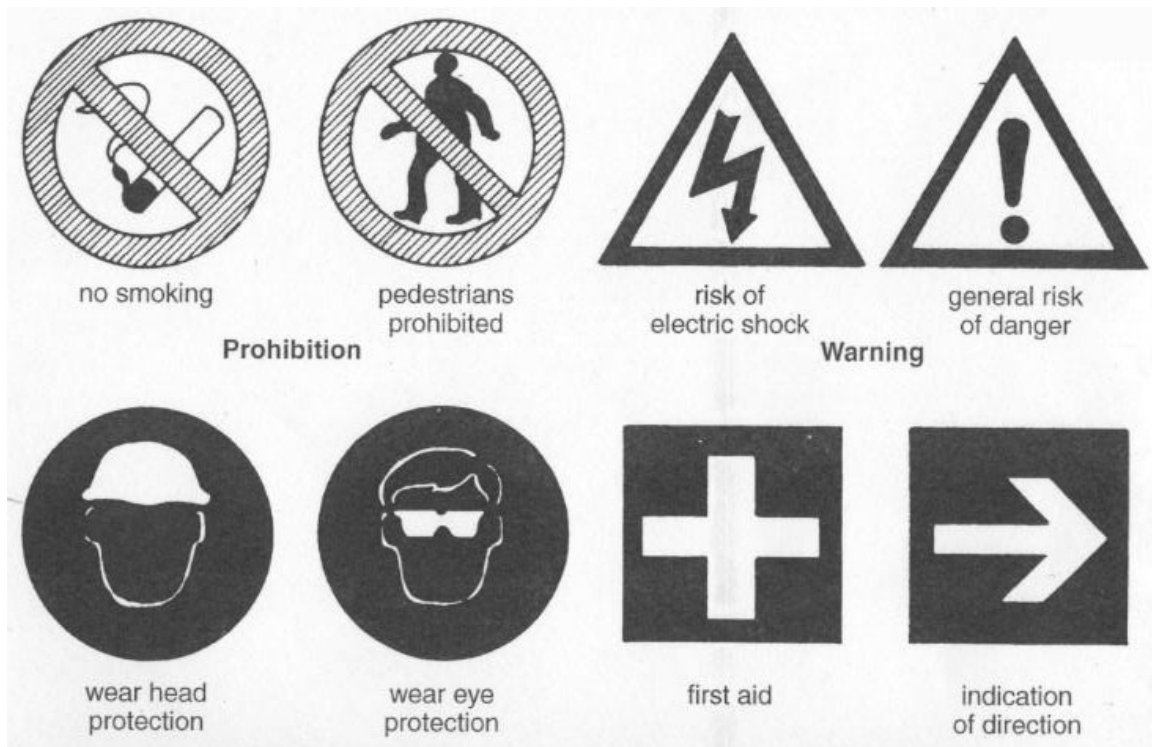


Figure 1. Safety signs

Fire Prevention

Generally, the most important point to consider is that you have made suitable provisions to deal with an outbreak of fire should one occur. In fact, it is likely your insurance cover would be invalid if you had not done so. Always check that nothing is left smouldering on completion of the work. Gas and electrical supplies should be turned off as quickly as possible and combustible materials moved out of reach of the fire.

Should a fire break out, it is essential to use the correct equipment to control its spread as using the wrong type of extinguishing agent can make things worse.

Table 1. Fire extinguisher selection chart

| Type of fire | Water | Foam | CO ₂ | BCF* | Powder | Fire blanket |
|---|-------|-------|-----------------|-------|--------|--------------|
| Wood, paper and textiles etc. | Yes | Yes | No | Yes | No | Yes |
| Flammable liquids, oils and paints etc. | No | Yes | Yes | Yes | Yes | Yes |
| Electrical equipment | No | No | Yes | Yes | Yes | No |
| Extinguisher colour | Red | Cream | Black | Green | Blue | Red |

*Bromochlorodifluoromethane

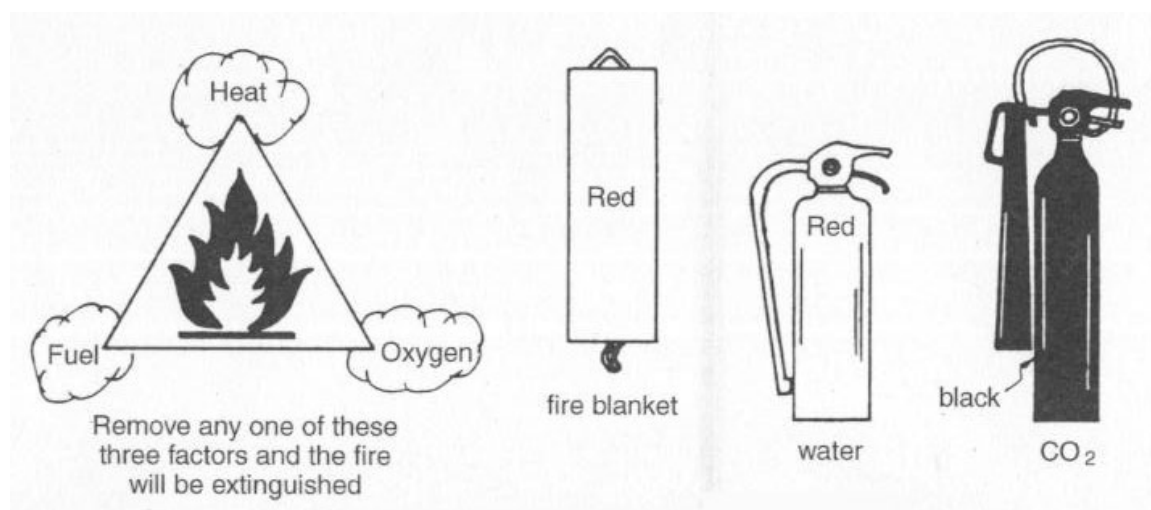


Figure 2. Fire extinguishers examples

Safety in the Workshop

The vast majority of safe working practices are common sense. For example, do not lift extremely heavy loads, and, when lifting, approach the load squarely and lift keeping a straight back, using the legs, not the back, and keeping the load close to the body. When lowering the load, simply reverse the process. Many people today suffer with bad backs due to foolish acts when they were younger.

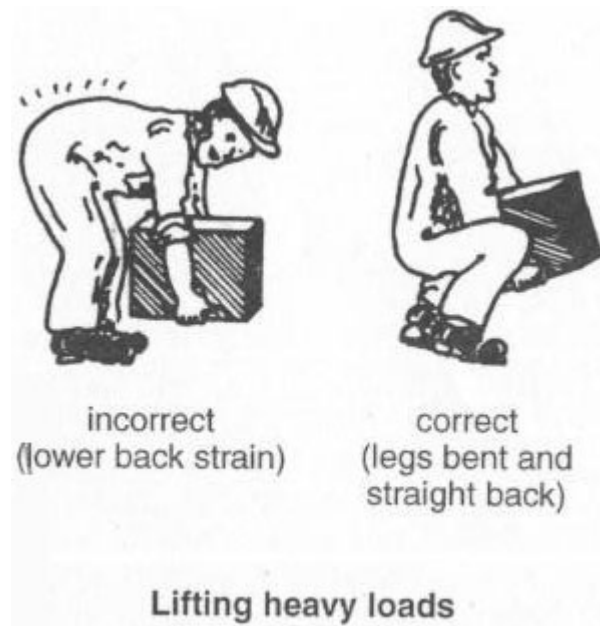


Figure 3. Lifting heavy loads

Hand tools

Hand tools should always be maintained in a safe condition and only used for their intended purpose.

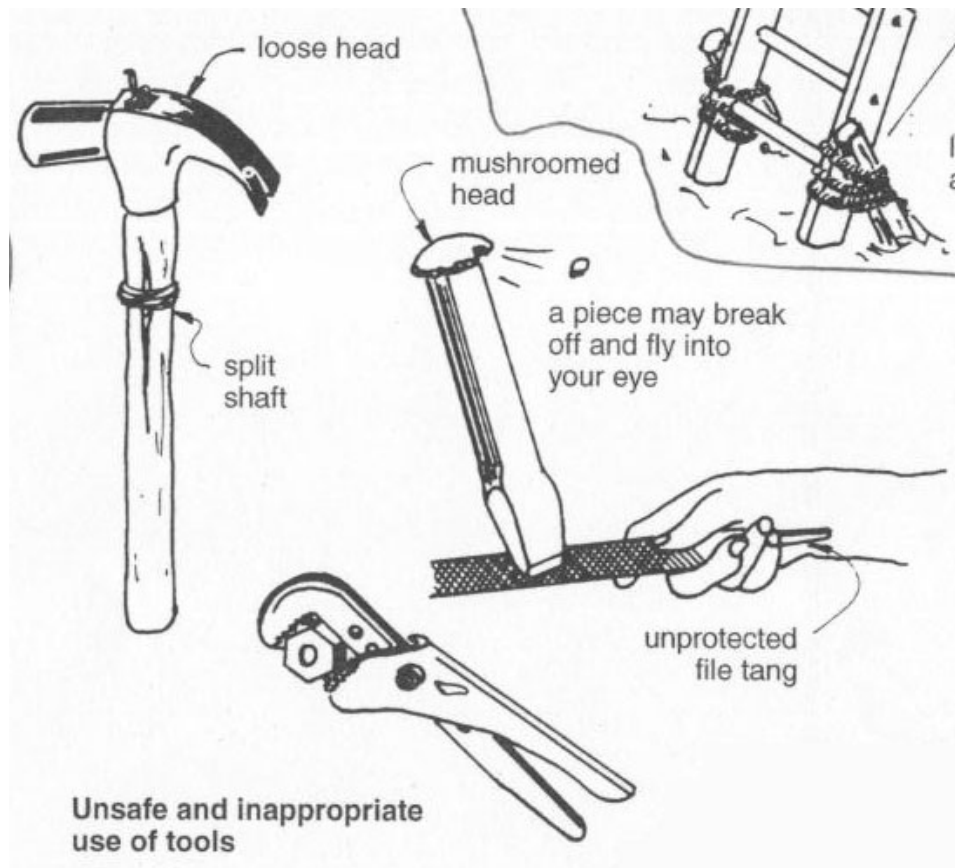


Figure 4. *Unsafe and inappropriate use of tools*

Ladder Work

When using ladders, check them over to see that they are in good condition and secure them to the stiles (not the rungs) while in use. Stand them on a firm, even base and always use them at the correct angle of approximately 75° (ratio:4 up to 1 out); above all, never over-reach when working at high levels.

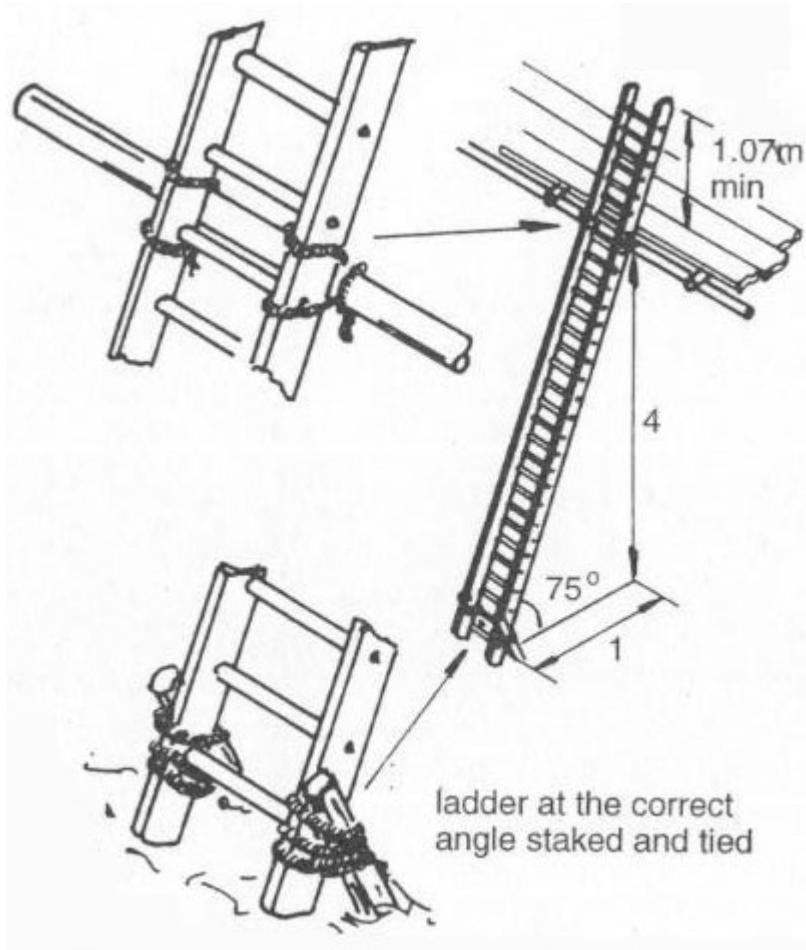


Figure 5. Ladder at the correct angle staked and tied.

Working on Platforms

Take particular care when working from a platform such as the provided by scaffolding; always consider those below. The scaffold should be erected only by certified operatives, and should it be checked weekly or after adverse weather conditions: thus it's condition should be sound, but always have a visual inspection to identify obvious defects. Above all, never alter or work from ineffective scaffolding platforms. Defects to look for include:

- Missing components, e.g. toe boards or guard rails.
- Poor assembly, e.g. loose, overlapping or protruding boards.
- Damaged scaffolding, e.g. split boards and bent or rusty poles.
- Unstable scaffolding, e.g. no bracing, no tie-ins and no base plates.
- Obstructed or overloaded scaffolding.

Protective Clothing

Sooner or later you will need to use protective clothing and equipment. Overalls and safety footwear may be provided by the employer, or you may have to buy these items yourself. Employers have a legal duty to provide all other protective equipment free of charge and the employee must use it correctly and report any defect to damage. Visitors to the site or other workers are also entitled to the same protection.

Head Protection

The law requires that the use of suitable head protection on all building site unless there is no risk of head injury other than by the person falling. Safety hats should be adjusted to fit correctly; your failure to make the correct adjustment may mean that you are not providing the necessary level safety.

Eye Protection

Safety glasses, goggles or eye shields must be worn where there is any foreseeable risk of eye injury. Eye injury can result from:

- The use of power tools - drilling, grinding and threading.
- Hammering and driving tools - cutting, chipping and chiselling.
- Flying particles - dust and chemical splashes.
- Welding processes - sparks and molten splashes.
- Glare from light - electric arc welding.

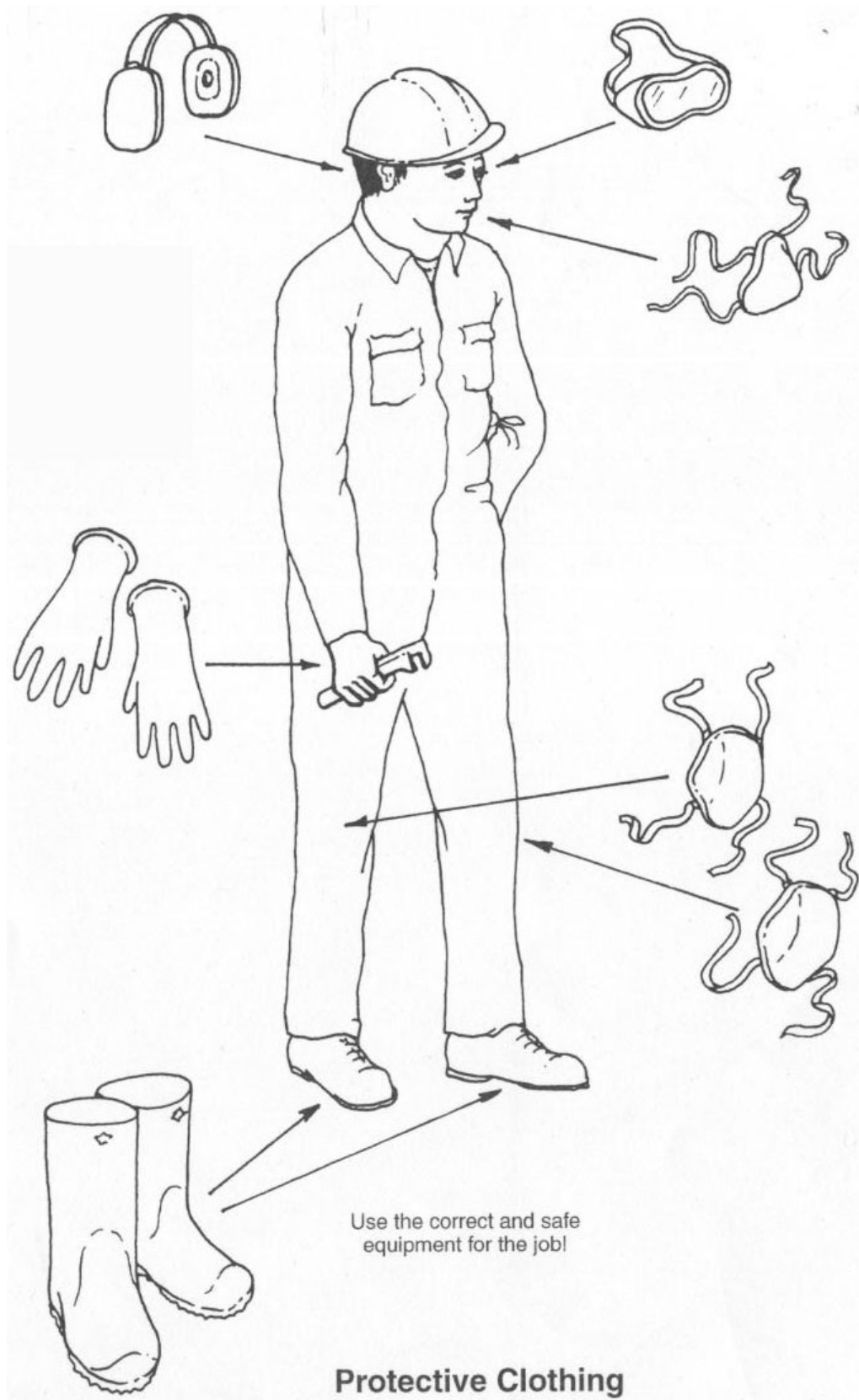


Figure 6. Protective clothing.

Self Assessment

Apprentice to answer sample questions:

1. List five common causes of accident in the workshop and state how they could be prevented.
2. State the safety precautions to be taken when using:
 - a) Bench grinder and,
 - b) Pedestal drill.
3. Identify the contents of each of the fire extinguishers shown below and give examples of their preventive uses.

Table 2. Fire extinguisher selection chart questions

| Colour | Contents | Use (i.e. types of fire) |
|--------|----------|--------------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

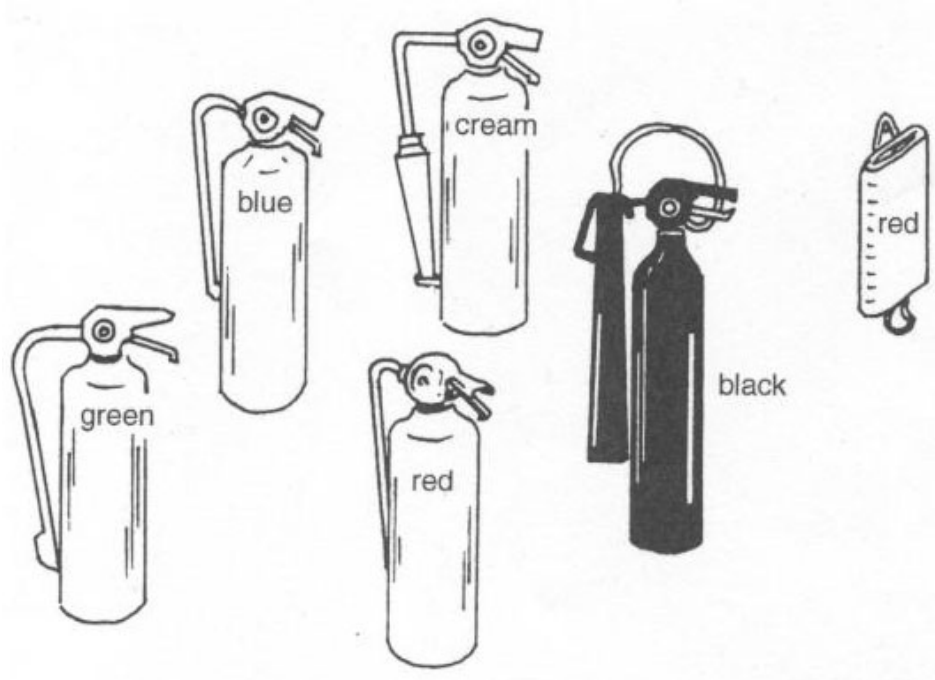


Figure 7. Fire extinguisher question

1. The safety signs illustrated below indicated things the operative must or must not do. Identify the meaning of each sign.

| | |
|----------|--|
| A | |
| B | |
| C | |



Figure 8. Safety signs question

2. State how warning signs differ from prohibition and mandatory signs.
3. Identify the statutory document which must be observed on site at all times to ensure safety.

Index

E

Eye Protection..... 14

F

Fire Prevention9

H

Hand tools..... 11

Head Protection 14

L

Ladder Work..... 12

P

Protective Clothing 14

 Eye protection..... 14

 Head protection..... 14

S

Safety in the Workshop 10

 Hand tools..... 11

 Ladder work..... 12

 Platforms..... 13

Safety Signs 8

W

Working on Platforms 13