

RIGGING INTERMEDIATE LEARNER WORKBOOK

TRAINER'S MARKING GUIDE WITH MODEL ANSWERS

CPCCLRG3002

Licence to perform rigging intermediate level



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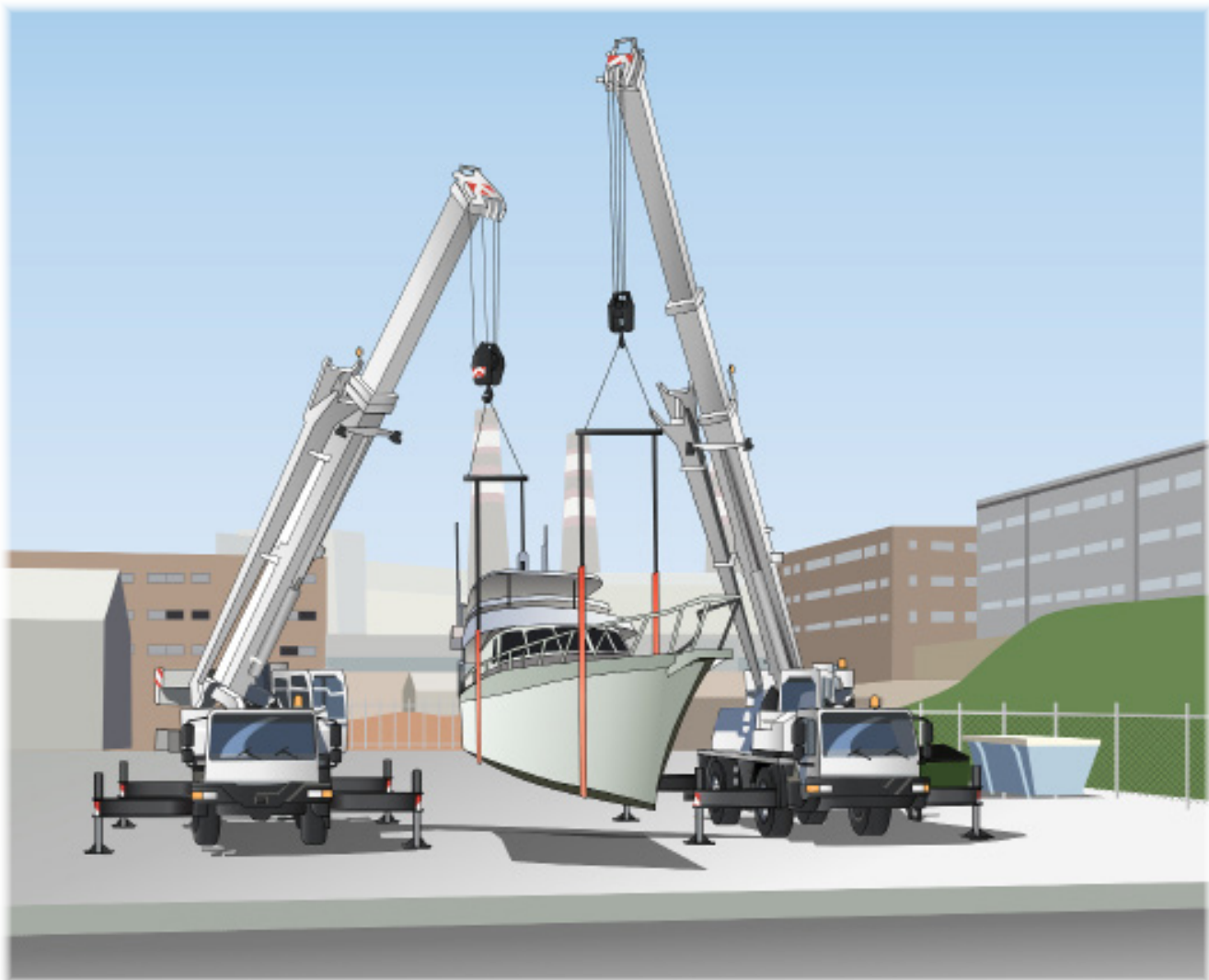
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What is intermediate rigging?

Intermediate rigging covers all the work done by riggers at the basic level and also includes:

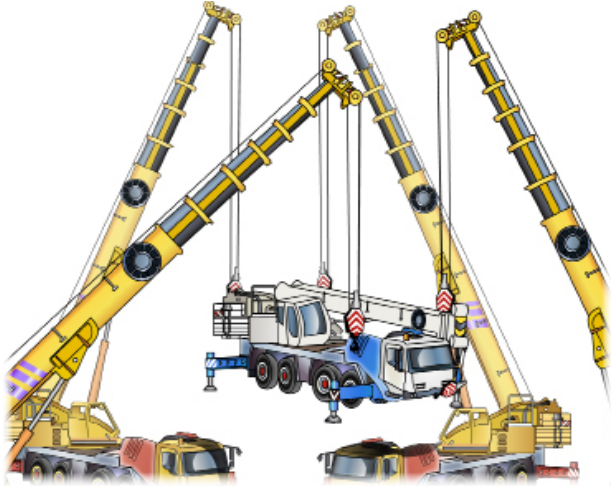
- Rigging of cranes
- Rigging of conveyors
- Rigging of dredges and excavators
- Rigging tilt slabs
- Rigging associated with demolition work
- Dual crane lifts.



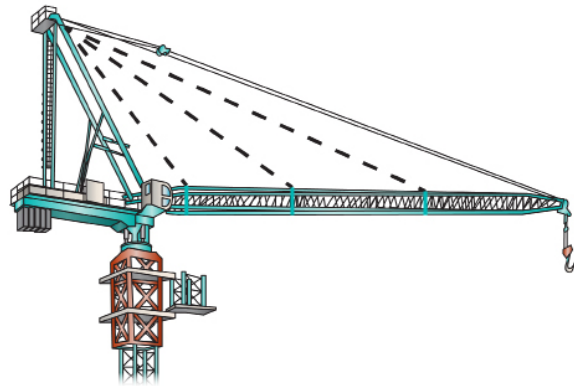
Intermediate rigging concepts

Here are some examples of work an intermediate rigger can do:

Set up and control dual and multiple crane lifts



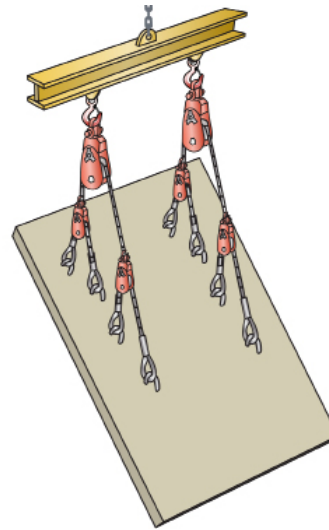
Add sections to tower cranes



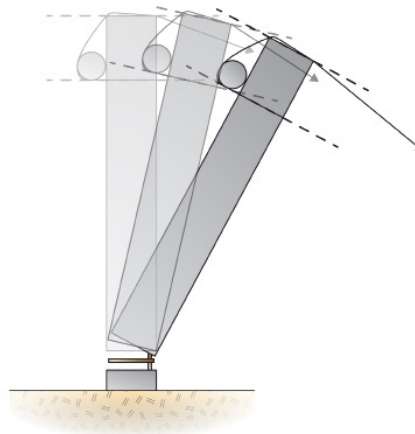
Rig mobile cranes



Set up and use load equalising gear



Conduct demolition work



Plan Task



This element covers performance criteria:

- 1.1. Review task instructions, consult with relevant persons to seek clarification as required, and obtain relevant workplace information.
- 1.2. Obtain and interpret information, including safe work method statements (SWMSs), required to ensure that activities are performed in compliance with workplace-specific and safe work requirements.
- 1.3. Obtain and interpret information required to ensure that equipment inspection, use, maintenance and storage complies with manufacturer requirements.
- 1.4. Identify workplace and task-specific hazards and determine required risk controls and safety measures and equipment, including signs and barricades, personal protective equipment (PPE), and fall prevention and fall arrest equipment.
- 1.5. Identify methods of moving and placing tools, equipment and materials to minimise the risk of falling objects, to avoid inappropriate carrying on ladders and to minimise hazardous manual tasks.
- 1.6. Identify required rigging equipment and associated gear
- 1.7. Calculate loads associated with mechanical load shifting equipment and associated gear required to erect and dismantle structures and plant
- 1.8. Establish required communication methods with relevant persons



Theory Training Task 1

Performance Criteria: 1.1, 1.2

a) Name three (3) rigging tasks you might do as an intermediate rigger.

Answers may include:

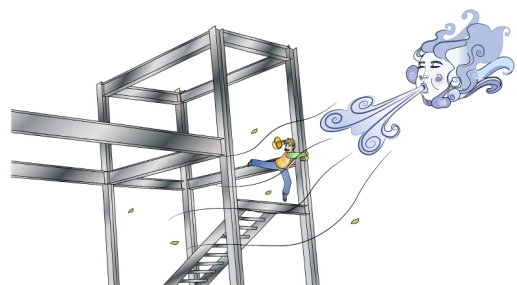
- Set up hoists with jibs and self climbing hoists.
- Erection of cranes, conveyors, dredges and excavators.
- Erection of tilt slabs.
- Demolition of structures or plant.
- Lifts using load equalising gear.
- Dual lifts (lifts using more than 1 crane or a crane and another lifting device such as a winch).
- The application of slinging techniques.
- Selection and inspection of lifting gear, to safely sling a load.
- The directing of a plant operator in the movement of a load when the load is out of the operator’s view.
- Exercising judgement in relation to the suitability and condition of lifting gear the method of slinging, including consideration of the nature of the load, its mass and its centre of gravity or rigging work involving any of the following:
 - structural steel erection
 - hoists
 - pre-cast concrete members of a structure
 - safety nets and static lines
 - mast climbing work platforms
 - perimeter safety screens and shutters
 - cantilevered crane loading platforms.



b) Name three (3) things you might consider when planning the rigging task you are to perform.

Answers may include but not limited to:

- Task plans
- Hazards
- Access to work area including height
- Plant and equipment required
- Site issues
- Weather conditions
- Any load sharing





Theory Training Task 3

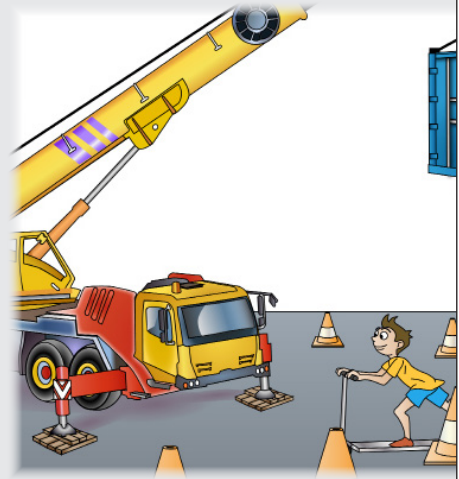
Performance Criteria: 1.4

Performance Criteria: 1.4

Identify workplace hazards

What is a hazard? A hazard is anything that can hurt you or others while you work. The government classes rigging as high risk. By law, only a licensed person can do rigging work. The licence includes knowing what workplace hazards to look for and the causes of these hazards..

Before starting any job on a worksite, it is important you talk to appropriate people to find out about any site rules, procedures or policies that may affect the way you carry out your work.

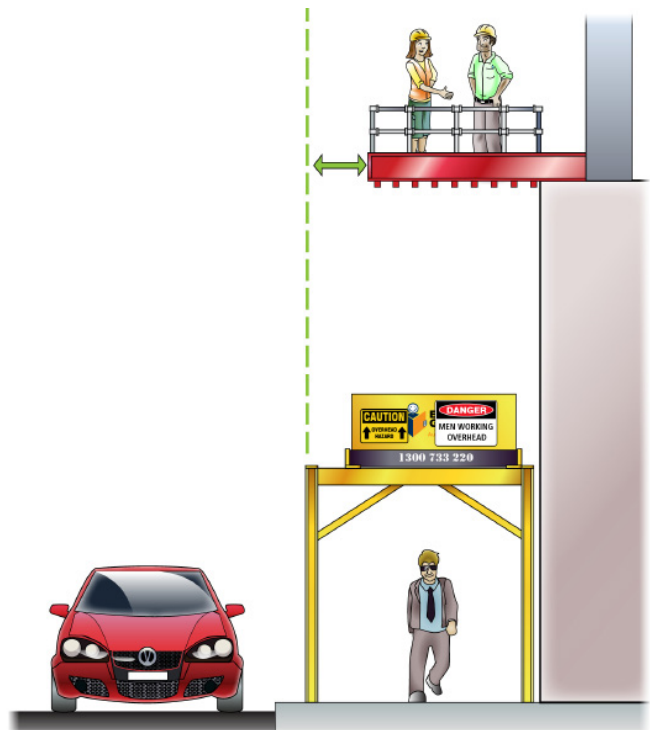


a) List three (3) people you may need to check with about site hazards and issues related to working on a site.

- **Site manager**
- **Safety officer**
- **Work colleagues**
- **Supervisors**
- **Site engineers**

A rigger should know what hazards to look for in the workplace and the kinds of situations that may cause them.

You should be aware of possible hazards above head height, between ground and eye level and below ground level.





Theory Training Task 11

Performance Criteria: 1.4

The **Hierarchy of Hazard Control** is a list of control measures that can be used to eliminate or minimise exposure to a hazard in the workplace.

1. Elimination:

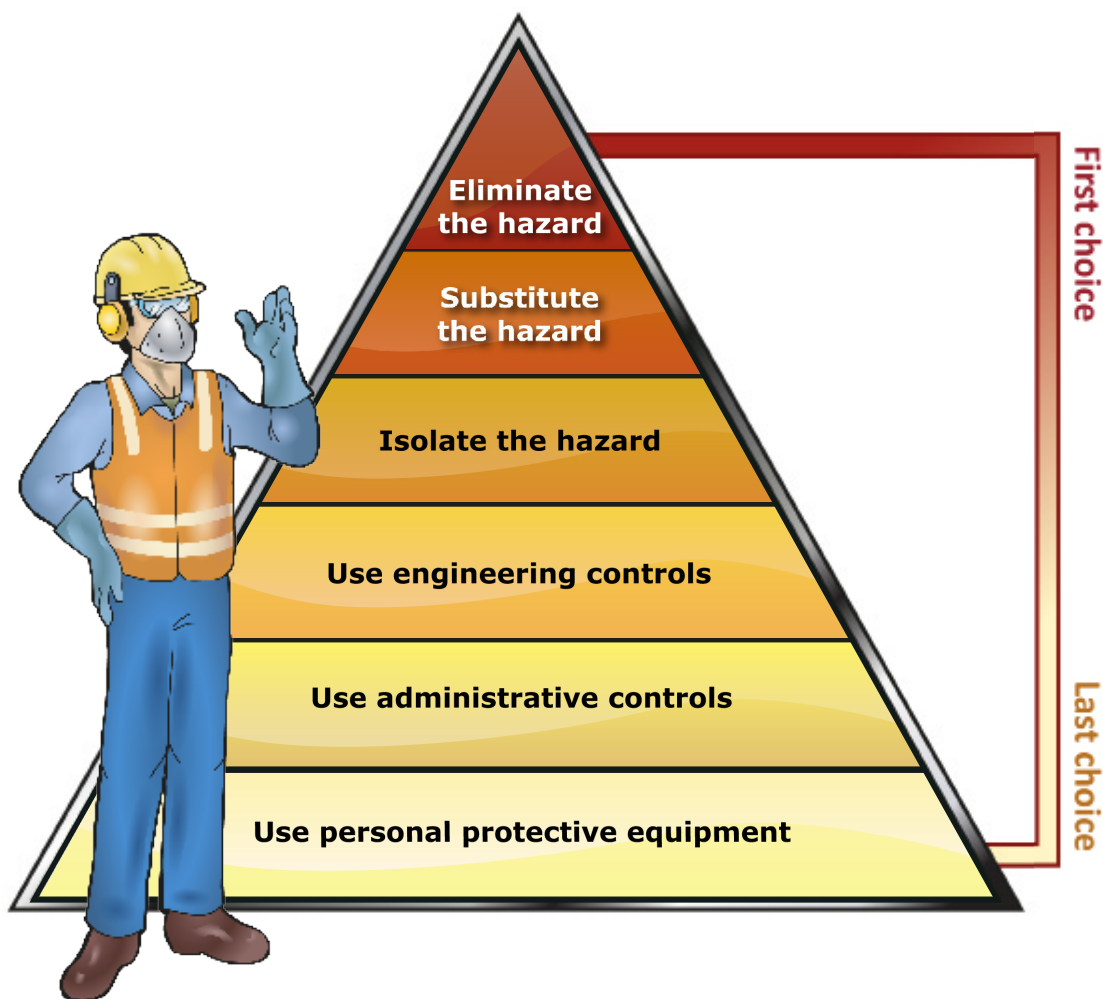
If possible, remove (take away) the hazard.

2. Substitution:

Use a safer method if you can't remove the hazard.

3. Isolation:

Stop access to the hazardous (dangerous) area.



4. Engineering Control Measures:

Change the tools, equipment or environment to make it safer.

5. Administrative Practices:

Reduce the time the worker is exposed to the hazards by using training, job rotation, the timing of jobs, etc.

6. Personal Protective Equipment (PPE):

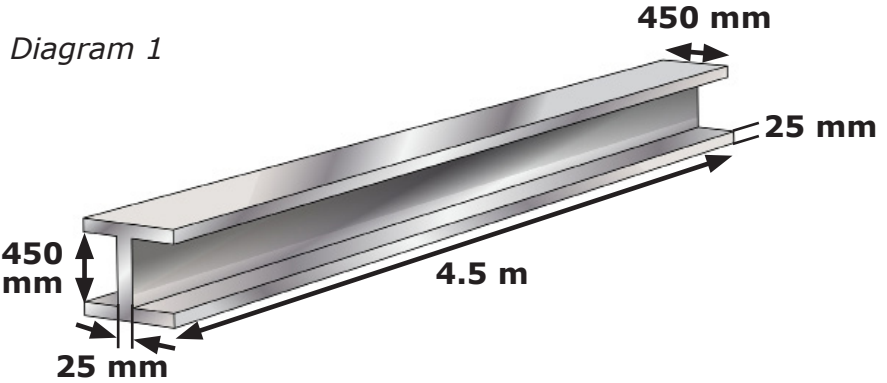
Use PPE as your last line of defence.

Memory aid: **Every Saturday I Eat A Pie**

Calculate the following. Show all your workings.

1. Using Method 1:

Find the weight of a column or beam in Diagram 1 - **4.5 metres long**, where each flange is 450 mm wide and 25 mm thick with a web 450 mm high and 25 mm thick.

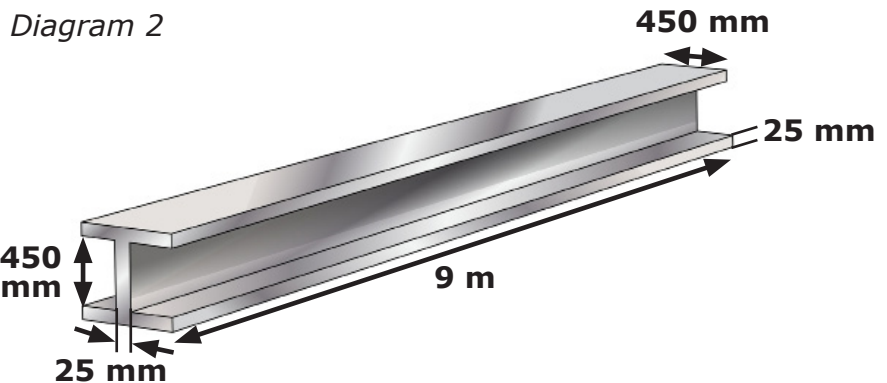


Answer:
 1.215 tonnes
 or 1215 kg

$$\begin{aligned} \text{Length} \times \text{Width} \times \text{Thickness} &= \text{m}^3 \\ 4.5 \times 0.45 \times 0.025 &= 0.050625 \text{ m}^3 \\ &\times 3 \\ &= 0.050625 \text{ m}^3 \\ &\times 8 \\ &= 1.215 \text{ tonnes} \end{aligned}$$

2. Using Method 2:

Find the weight of a column or beam in Diagram 2 - **9 metres long**, where each flange is 450 mm wide and 25 mm thick with a web 450 mm high and 25 mm thick.



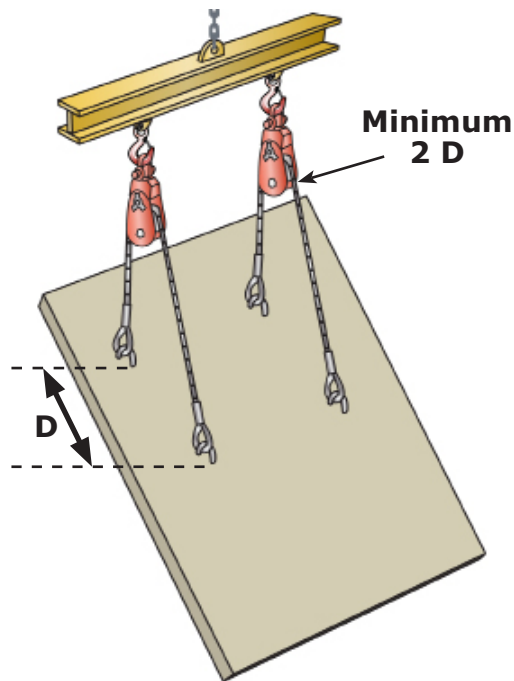
Answer:
 2.43 tonnes
 or 2430 kg

$$\begin{aligned} \text{Area of end} & \\ \text{Weight/Height} \times \text{Thickness} &= \text{m}^2 \\ \text{Top flange } 0.45 \times 0.025 &= 0.01125 \text{ m}^2 \\ \text{Bottom flange } 0.45 \times 0.025 &= 0.01125 \text{ m}^2 \\ \text{Web } 0.45 \times 0.025 &= 0.01125 \text{ m}^2 \\ \text{Area} &= 0.03375 \text{ m}^2 \\ &\times \text{Length} = 9 \text{ m} \\ \text{Volume} &= 0.03375 \\ &\times \text{t/m}^3 = 8 \\ \text{Weight} &= 2.43 \text{ tonnes} \end{aligned}$$

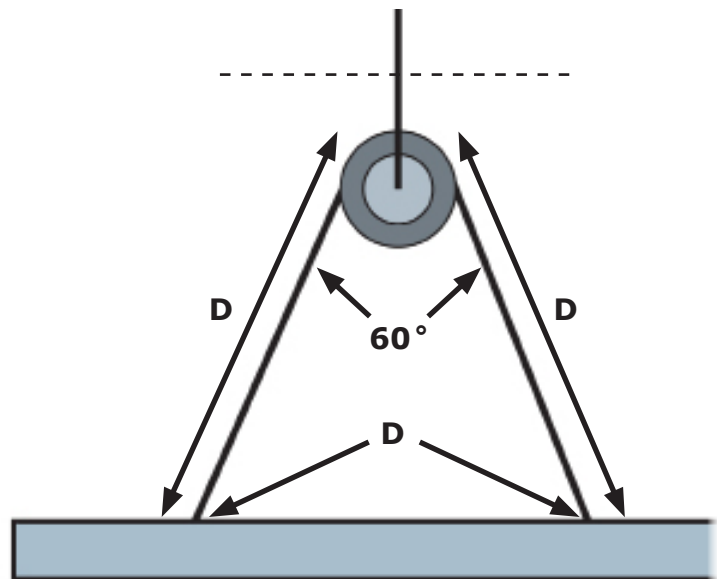
Forces and loads in tilt panels

To select the correct sling you must calculate the length of the slings to maintain the included angles of the slings as increasing the angle will decrease the SWL of the slings.

In a 2 × 2 lift as shown the sling length must be twice the distance between the attachment points this will maintain an angle of no more than 60° during the lift from horizontal.



2 × 2 lift configuration



To calculate the total minimum length of each, sling multiply the distance at D by 2
 If D is 2 metres
 Sling length = $D \times 2$
 $2 \times 2 = 4$ metres minimum length sling.



1. Calculate the minimum sling length if $D = 1.3$ metres

$$D = 1.3$$

$$= 1.3 \times 2 = 2.6 \text{ metres}$$



2. Calculate the minimum sling length if $D = 2.6$

$$D = 2.6$$

$$= 2.6 \times 2 = 5.2 \text{ metres}$$



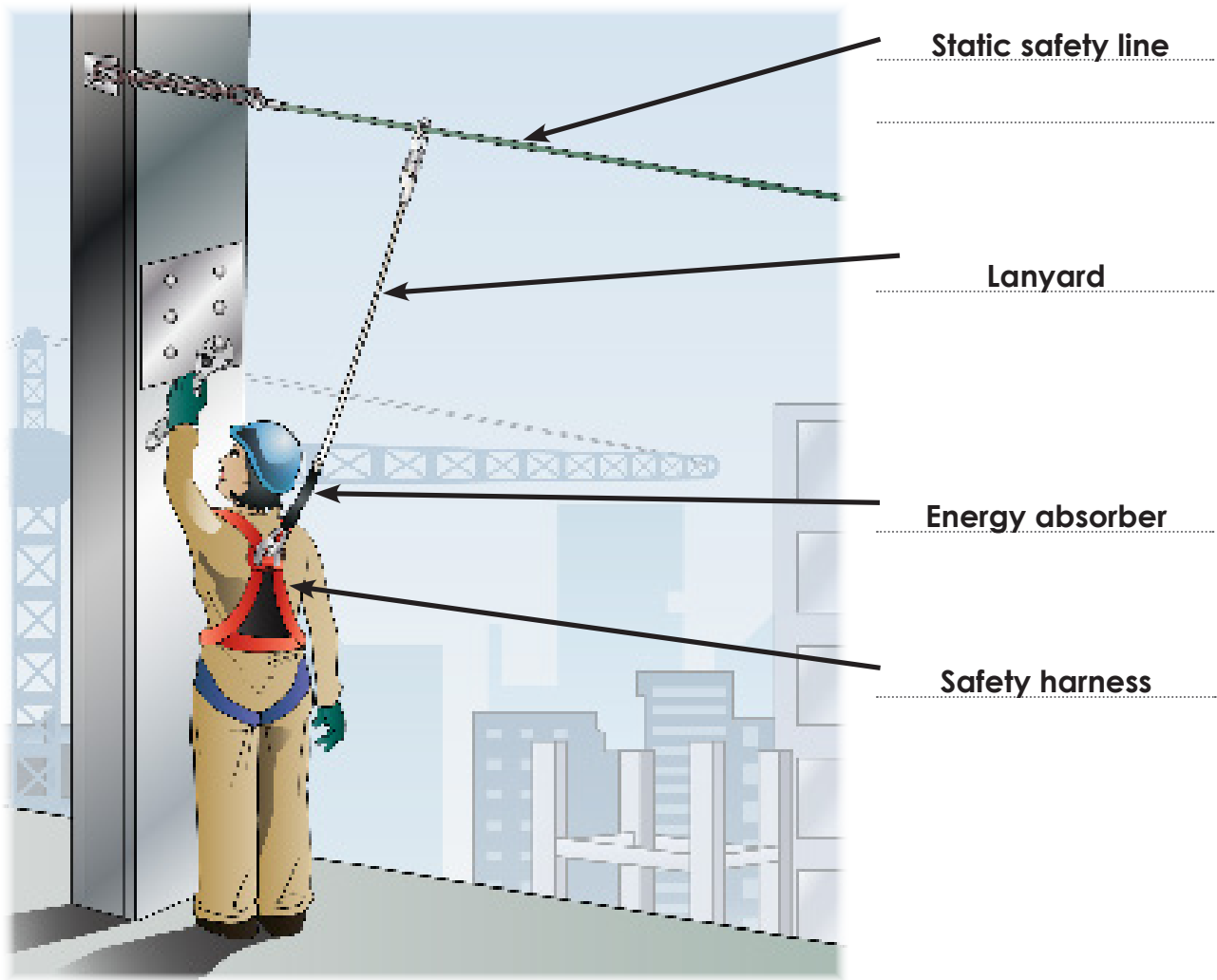
Theory Training Task 24

Performance Criteria: 1.6

It is important that you are familiar with the correct safety equipment used when performing rigging work, especially when working at heights.



a) Label the safety equipment in the following picture.



b) What other safety equipment might a rigger need to do their work?

Answer may include:

- Inertia reel
- Safety nets
- PPE

Performance Criteria: 1.8

Communication methods

When planning a job you need to think about how you and other workers such as the crane operator will communicate with each other. There are a number of ways that you can communicate directions or instructions to other workers.



Theory Training Task 25

Performance Criteria: 1.8

List four (4) methods you could use to communicate with a crane operator or other site personnel.

Answer may include but is not limited to:

- 1) • Hand signals
- Whistles
- Signage
- 2) • Horns and hooters
- Fixed frequency radio
- 3) • Tool box meetings
- Hardwire speaker system
- 4) • Electric bells in lift/hoists



Theory Training Task 26

Performance Criteria: 1.8

Which of the following communication methods **CANNOT** be used when the rigger and crane operator are out of sight of each other? Tick the correct answer.

- Hand Signals
- Whistles
- Fixed frequency radios
- Air horns

