

Post Workshop Assignment

Vertical Rope Rescue

Course number:
Due by:
Workshop location:
Workshop dates:
Student name:
Contact: Hm phone – Cell phone – Email –

Send completed assignments to:

SARINZ,
PO Box 8827,
Riccarton,
Christchurch.

Contact for assistance:

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Post Workshop

Introduction

The purpose of this reflective practice workbook?

This assignment aims to continue the process of applying theory to practical situations, and reflect on your learning from the workshop.

How long do you get?

This assignment is due for completion 3 months after the practical workshop or as advised by SARINZ. Some of you may find the concepts here to be difficult and therefore be tempted to leave the assignment. It is therefore important that you start this assignment as soon as possible and ask for assistance early.

How long will it take?

It is expected with reading, research, inquiry and answering the questions you are likely to put in several hours of work to complete this assignment.

Access to a course instructor?

If you have any questions with regard to this post workshop assignment please make contact with one of your course instructors or alternately contact SARINZ.

Assessment

You need to answer every question and follow the instructions given in the tasks. This is an individual assignment and is to be your own work.

This assignment provides exercises for you to show that you are competent in learning outcome 23 Undertake reflective practice of the standard of SAR3 104: Demonstrate rope rescue in the vertical environment (level 5, Credit 15, version 1). Other learning outcomes are also assessed.

You will be assessed as competent (C), not yet competent (NYC) or insufficient evidence (IE). If you are assessed as competent then your pass will be forwarded to Tai Poutini Polytechnic Search and Rescue Programme; if you are assessed as not yet competent an instructor will work with you to achieve competence where possible. If not, the matter will be referred to the SARINZ Administration Officer to process. If there is insufficient evidence, for example not completing an assessment task then it will be dealt with similarly to not yet competent.



Helping others save lives



Scenario 1 Fallen climber

Situation







A climber has fallen into a gorge he was trying to ascend with another climber. The base of the gorge is around 40m down a bluff. There is no access other than on rope. Helicopter access was considered but there is not enough rotor clearance. A rough 4WD track can be used to gain access to the top. Your team of 6 people has been tasked to set up a rope rescue system to raise the climber back up the side of the gorge with a stretcher.

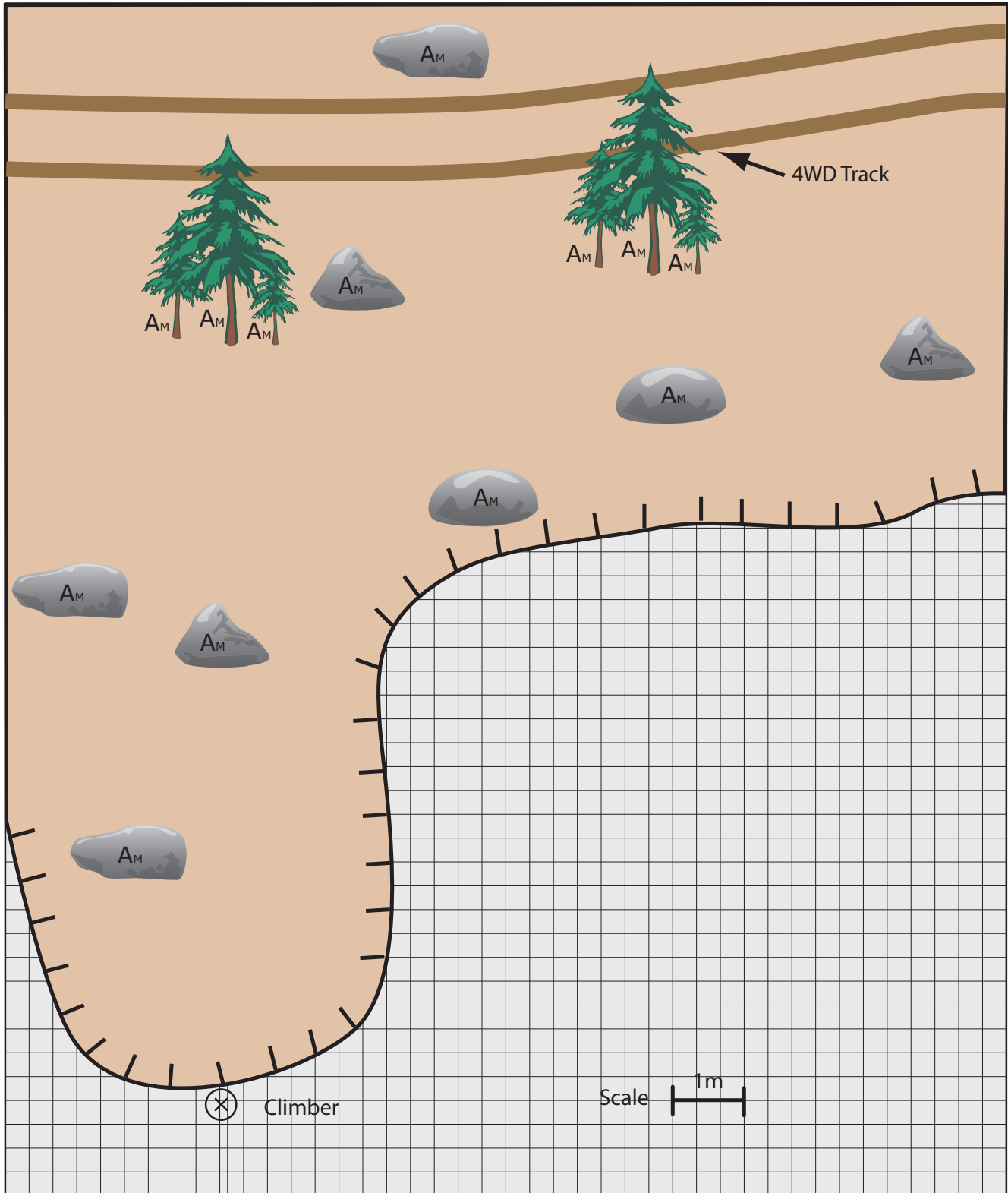
Resources for rigging

- Prusik Minding Pulley (PMP) 50mm sheave
- Rescue pulley, 50mm sheave x6
- Tandem Prusiks x6 sets 8mm
- Anchor plate x2
- 80m mainline 11mm rope
- 50m belayline 11mm rope
- High directional tripod
- Cordalette 8mm
- Webbing 25mm
- Alloy carabiners
- Jiggers x4
- 6 rescue team personnel
- 1 hard stretcher with rigging
- Anchors as marked on the rigging worksheet

Rigging worksheet 1

KEY

	MAINLINE	A	ANCHOR	P	PRUSIK		LOAD # PAX
⋯	BELAYLINE	A _M	MARGINAL ANCHOR	P _R	RATCHET PRUSIK		PMP
⊕	BELAY	A _B	BOMBPROOF ANCHOR	P _H	HAUL PRUSIK		PULLEY
	PRUSIK	A _F	FOCUSED ANCHOR	H	HAULER		EDGE
	BRAKE	A _{FT}	FRONT-TIE ANCHOR	LD	LOW DIRECTIONAL		
		FT	FRONT-TIE	HD	HIGH DIRECTIONAL		
		BT	BACK-TIE	R	REDIRECT		



Task A Pulley System

You have been tasked with setting up a pulley system for the raise back up the side of the gorge with a stretcher, attendant and patient. Set up an efficient pulley system with the haulers, equipment and space available. Set up suitable anchor rigging (back-tie, front-tie or multi-point) to get the pulley system where you want it.

1. Draw a plan view of the pulley system you intend to build on rigging worksheet 1?
2. What is the mechanical advantage of the pulley system you have built?

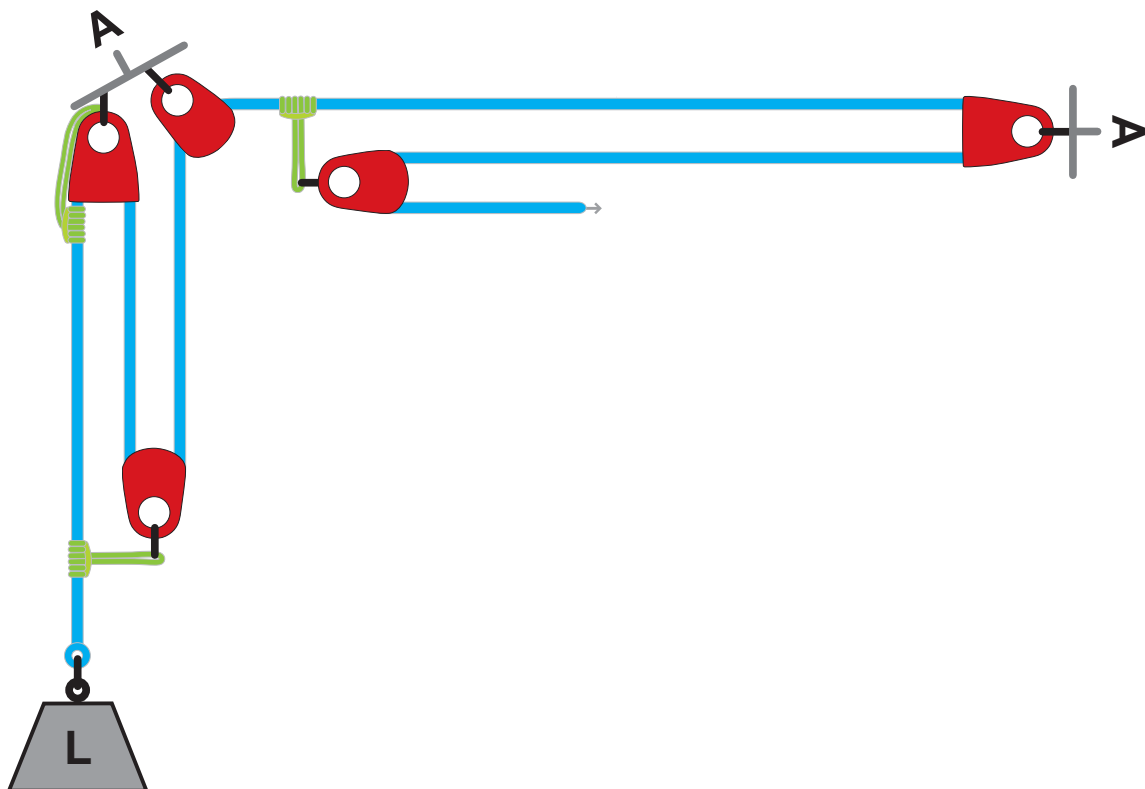
3. Why have you decided to build this mechanical advantage?

4. Why have you chosen that particular location/line for hauling?

You have built the pulley system below to raise a 2kN rescue load. You have been asked by the team leader what the mechanical advantage is to make sure its sufficient.

5. What is the Mechanical Advantage (MA) of this pulley system? Show your working?

M.A: __:__(__:__ /1:1/ __:__)c



Task B Belay System (SAR3 104 – 15.1)

You have been tasked to set up a rescue belay system for the lower and raise back up the side of the gorge with a stretcher, attendant and patient. Set up suitable anchor rigging (back-tie, front-tie or multi-point) to get the rescue belay system where you want it.

6. Draw a plan view of the rescue belay system you intend to build on rigging worksheet 1?

7. What are the components of the rescue belay system?

8. Why have you chosen that particular location/line for belaying?

Explain the following features of a tandem Prusik rescue belay

9. What is the test method for a rescue belay?

10. Why is less than 1m additional travel important?

11. Why is the maximum peak force less than 15kn force?

12. State two situations where the load release hitch is used/deployed in a rescue belay system

Task C Lowering system (SAR3 104 – 13.1)

You have been tasked to prepare a lowering system for this high angle terrain to get the stretcher and one attendant down to the patient.

13. What device could you use for lowering the rescue load?

14. What are the advantages of this device? (at least 2)

Scenario 2 Hypothermic canyoner

Situation

A canyoner has become hypothermic deep down in a narrow slot canyon only a few metres wide but 60m deep. Your team has been tasked to set up a rope rescue system from the surface while another team descends into the canyon to render first aid.

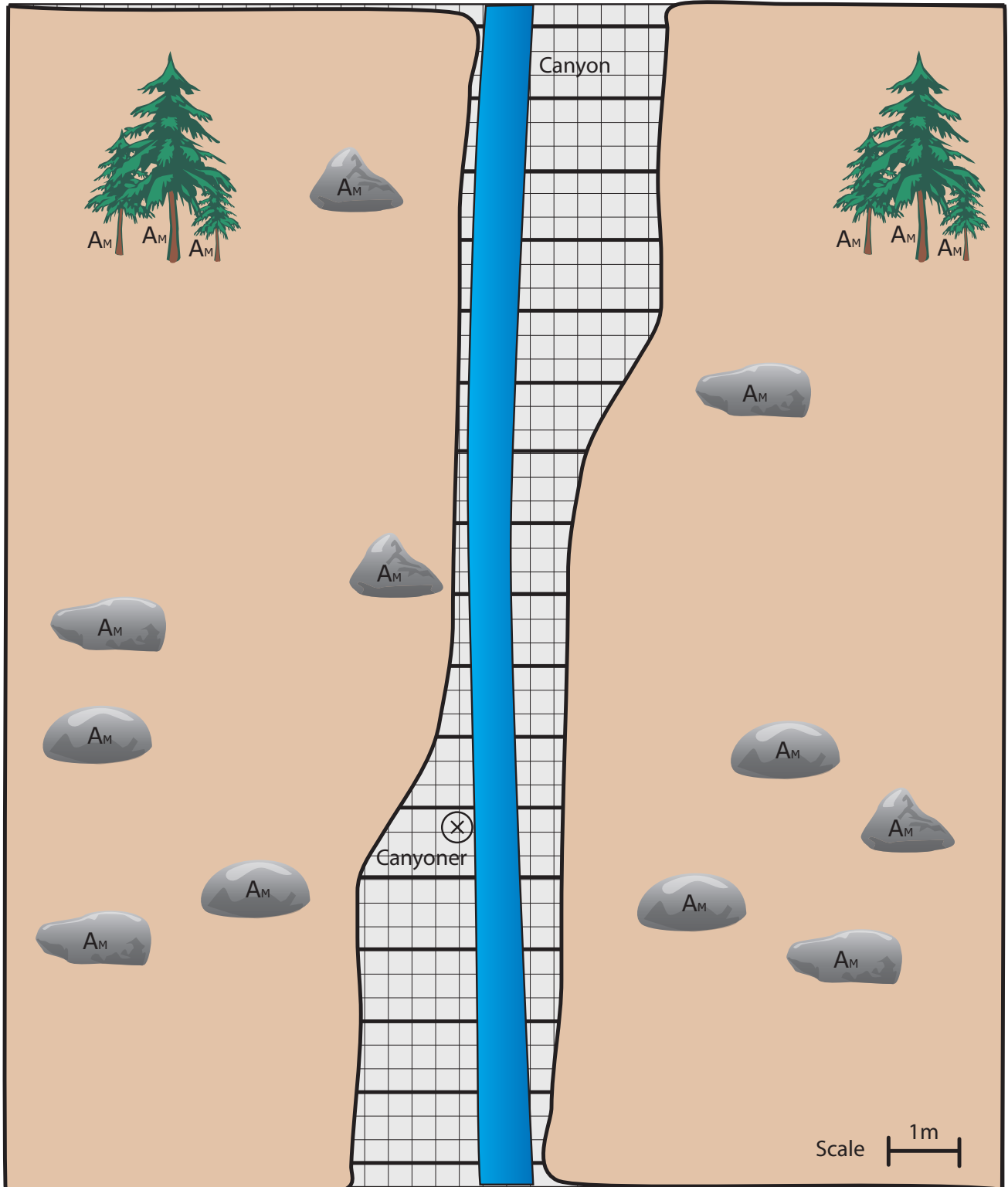
Resources for rigging

- Prusik Minding Pulley (PMP) 50mm sheave
- Rescue pulley, 50mm sheave x8
- Tandem Prusiks x6 sets 8mm
- Anchor plate x2
- 100m mainline 11mm rope
- 80m belayline 11mm rope
- Low directional edge protection
- Cordalette 8mm
- Webbing 25mm
- Alloy carabiners
- Jigger x4
- 6 rescue team personnel
- 1 hard stretcher with rigging

Rigging worksheet 2

KEY

	MAINLINE	A	ANCHOR	P	PRUSIK		LOAD # PAX
⋯	BELAYLINE	A _M	MARGINAL ANCHOR	P _R	RATCHET PRUSIK		PMP
⊙	BELAY	A _B	BOMBPROOF ANCHOR	P _H	HAUL PRUSIK		PULLEY
	PRUSIK	A _F	FOCUSED ANCHOR	H	HAULER		EDGE
	BRAKE	A _{FT}	FRONT-TIE ANCHOR	LD	LOW DIRECTIONAL		
		FT	FRONT-TIE	HD	HIGH DIRECTIONAL		
		BT	BACK-TIE	R	REDIRECT		



Task A Pulley System

You have been tasked to set up a pulley system for the raise back up the canyon with a stretcher, attendants and a patient. Set up an efficient pulley system with the rescuers, equipment and space available (different to the pulley system in Scenario 1). Set up suitable anchor rigging (back-tie, front-tie or multi-point) to get the pulley system where you want it.

15. Draw a plan view of the redirects and pulley system you intend to build on rigging worksheet 2?

16. What is the mechanical advantage of the pulley system you have built?

17. Why have you decided to build this mechanical advantage?

18. Why have you chosen that particular location/line for hauling?

Task B Belay System

You have been tasked to set up a rescue belay system for the lower and raise back up the canyon with a stretcher, attendant and patient. Draw suitable anchor rigging (back-tie, front-tie or multi-point) to get the rescue belay system where you want it.

19. Draw a plan view of the rescue belay system you intend to build on rigging worksheet 2?

20. Why have you chosen that particular location/line for belaying?

Task C Anchor System

You have been given the task of building an anchor system. You want to extend the focal point forward. All the materials you have left is a 2m long 6mm cord sling. (SAR3 104 – 6.3)

- 21. Assess the strength (in kN) of this four strand 6mm cord sling tied with a double fisherman's bend? The 6mm cord has a 7.5kN minimum breaking strength without a knot. Show your working.**



- 22. What is the safety factor of this 4 strand 6mm cord if the load is 2kN?**

- 23. Would you use the 6mm cord in this position in the anchor system and why or why not?**

- 24. What could you change in the rope rescue system to increase the safety factor of this component of the anchor system? (at least 2 options)**

Describe what is meant by the following terms for anchor systems. (SAR3 104 – 9.2)

25. Multi-point focused anchor?

26. Floating focus back-tie anchor?

27. Fixed focus back-tie anchor?

Task D Team roles (SAR3 104 – 22.3)

Explain the roles of the following team members have taken on the rescue

28. Team leader

29. Main

30. Belay

31. Attendant

32. Edge

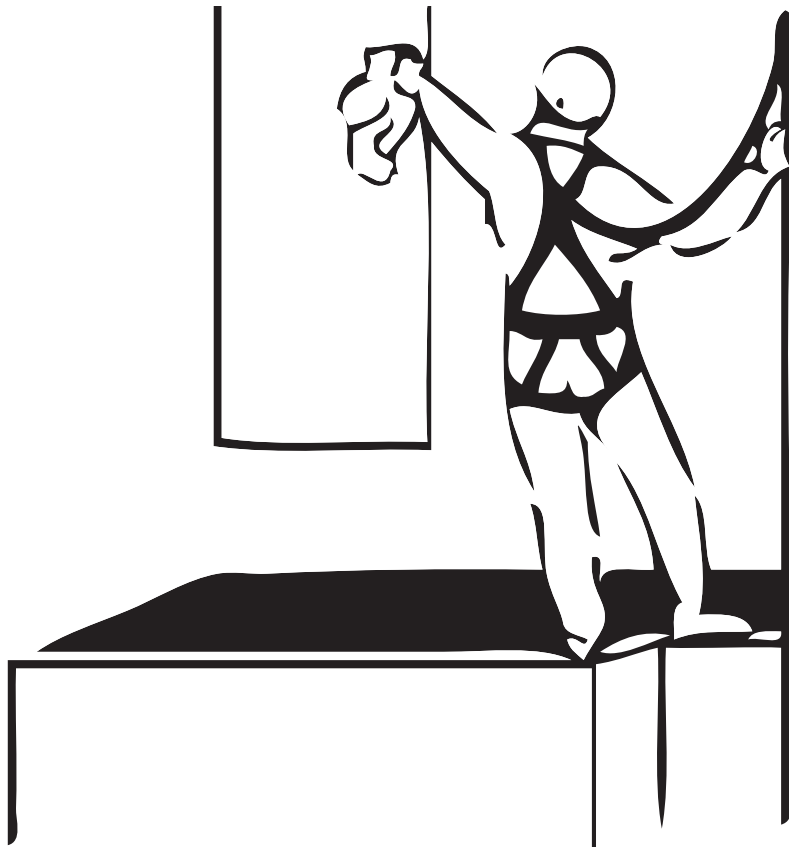
Task E Two point philosophy (SAR3 104 – 2.3)

The team leader asks you to keep two points at all times. They describe a window cleaner standing on an edge of a building clipped into an eye bolt with a fall arrest lanyard.

33. Is this single point or two points of contact? (circle one)

(single point / two point)

34. What is/are the point/s of contact?



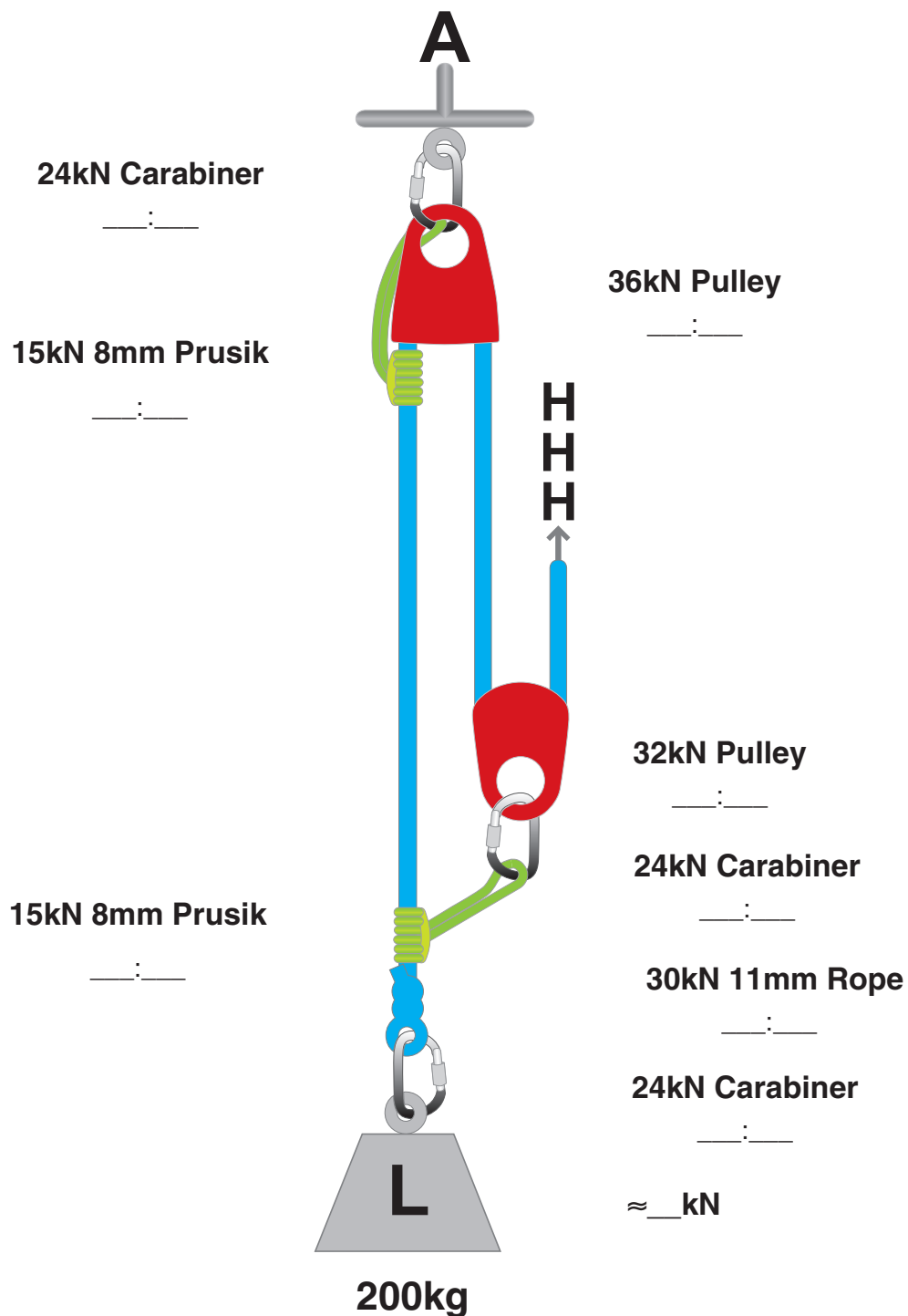
Task F Systems analysis (SAR3 104 – 16.3)

You have been given the task of analysing this pulley system to make sure it has sufficient safety factor.

35. What is the system safety factor (lowest) for this pulley system where the load is being held by the haulers (HHH) and the rope has a knot at the load end?

System safety factor is:

Location of the weakest point:



Vertical Rope Rescue – Assessment – Student Results

<p>This column lists the performance criteria that the student will have to demonstrate to the assessor to be deemed competent.</p> <p>A student must be assessed as competent in all aspects to be awarded the standard.</p>	<p>This column records your results. If you wish to challenge the findings of the assessor you can either make a statement on this page or attach it to this record. This will go to the Tai Poutini Polytechnic SAR Programme Coordinator.</p>
Competency Demonstrated	Results of Exercises
Scenario 1 Fallen climber	
Task A Pulley system	C / NYC
Task B Belay system	C / NYC
Task C Lowering system	C / NYC
Scenario 2 Hypothermic canyoner	
Task A Pulley system	C / NYC
Task B Belay system	C / NYC
Task C Anchor system	C / NYC
Task D Team roles	C / NYC
Task E Two point philosophy	C / NYC
Task F Systems analysis	C / NYC
Assessor comments	
Assessor name:	
Assessor signature:	
Date:	

The following can be used when the student wishes to challenge the findings of the assessor:

Student: I have sighted my assessment result above and wish to challenge the findings of the assessor. I have made a statement, which is attached.	
Signed Student:	Date:
Student statement	