

# ASSESSMENT GUIDELINE

## Navigate in good visibility on land

**Unit Standard: 431**

**Level: 2 Credit: 3 Version: 6**  
**Published by Skills Active 2005**

### **Purpose:**

People credited with this unit standard are able to demonstrate knowledge of navigation tools and navigate in the outdoors in good visibility.

### **Special Notes:**

1. Definitions
  - *Aiming off* is deliberately aiming to one side of a point on a linear feature.
  - *Attack point* is an interim navigation goal.
  - *Back bearings* are compass bearings that are the reverse of the direction of travel.
  - *Good visibility* is where the horizon is visible.
  - *Catching features* indicate to the navigator they have gone too far.
  - *Handrails* are the linear features to follow.
  - *Horizon* is where the sky meets the terrain. Examples of this could include river, ridgeline, and cliff.
2. *NZMS 260 maps* are topographical maps published by Land Information New Zealand and available from map selling agencies throughout New Zealand.
3. All activities must comply with any relevant environmental, legislative and/or regulatory requirements set out in the *New Zealand Environmental Care Code*, Health and Safety in Employment Act 1992, Injury Prevention, Rehabilitation, and Compensation Act 2001, and their subsequent amendments. *The New Zealand Environmental Care Code* is available from the Department of Conservation, Head Office, PO Box 10420, Wellington.
4. There are minimum assessor requirements for assessment against this unit standard. The details of these requirements are available on the Skills Active website <http://www.skillsactive.org.nz/>

### **Overview of the assessment:**

The assessment has two tasks

Task 1: Written or oral knowledge based questions

Task 2: Demonstration of skills and knowledge in a practical field setting

## Resources

The following resources will be helpful in the teaching and assessing of this unit standard.

The New Zealand Mountain Safety Council:

- Bushcraft, Outdoor Skills for the NZ Bush
- Orienteering – A guide for Teachers, instructors and participants'
- [http://www.mountainsafety.org.nz/online\\_store/products/dept.asp?dept\\_id=55](http://www.mountainsafety.org.nz/online_store/products/dept.asp?dept_id=55)

Web pages (NB these are not NZ web pages !)

- [http://www.thebmc.co.uk/safety/train/skill\\_2.htm](http://www.thebmc.co.uk/safety/train/skill_2.htm)
- [http://www.planetfear.com/article\\_detail.asp?a\\_id=116](http://www.planetfear.com/article_detail.asp?a_id=116)

Set of NZMS 260 maps. (These can be colour printouts or copies from computer map programs.

Set of compasses.

### Task 1: Demonstrates knowledge of navigational tools through written or oral questioning

**Overview of Task 1:** The focus of this assessment is to:

- Identify map Features
- Demonstrate use of 6 figure grid references
- Describe the uses of a compass
- Explain navigation techniques
- Explain differences between magnetic and grid bearings
- Identify factors that effect group travel times.

#### Resources:

- 431 Assessment Questions, attached at the end of this document
- 431 Model answers (available from a Skills Active Relationship Manager)
- Sample NZMS 260 maps, flip cards or other tools could be used to assess this task

#### Instruction to candidate

Complete all questions on the question sheet

### Element 1: Demonstrate knowledge of navigation tools.

Range: map, compass.

Performance criteria	Evidence/ Judgement
1.1 Map features and their functions are identified using a variety of maps. Range: features may include but are not limited to – scales, symbols, grid lines, contours, shading; maps may include but are not limited to – park, NZMS 260, orienteering.	All questions in Task 1 are completed either in written or oral format All answers show the same level and range of knowledge and understanding as supplied
1.2 An accurate position is fixed on a topographical map using a six figure grid reference and map number.	

<p><b>1.3</b> The uses of a compass are identified and demonstrated. Range: uses must include but are not limited to – measuring distances on a map, orienting the map north, taking and following bearings.</p>	<p>in the model answers.</p>
<p><b>1.4</b> Navigation techniques are explained in terms of how and when they are most effectively used. Range: navigation techniques must include but are not limited to – aiming off, attack points, handrails, catching features, back bearings.</p>	
<p><b>1.5</b> The difference between magnetic and grid bearings are explained.</p>	
<p><b>2.6</b> Factors that impact on the time taken to get from one point to another are identified. Range: factors may include but are not limited to – bridges, river crossings, obstacles, up hill, rest stops, size of group, injury.</p>	

**Task 2: During a tramp demonstrate navigation skills using an NZMS 260 map.**

**There are three parts to this task**

- **Part A: Navigate from Point 1 to Point 2**
- **Part B: Identify your current position**
- **Part C: Take and follow a bearing**

**Overview of Task 1:** The focus of this assessment is to:

- Use a map to navigate between two given points
- Estimate travel time between two given points
- Use a map and compass to identify your current position
- Take and follow a compass bearing

**Resources:**

- NZMS 260 maps
- Compasses
- Equipment and clothing to provide a safe day tramp experience

**Notes to the assessor**

- Different locations are defined as two areas with different features and terrain.
- This task must be assessed at a minimum of two different locations for each candidate.
- If there is a group of candidates being assessed at the same time each candidate must be solely responsible for the navigation of individual legs of a journey.

The task is divided into three parts

**Part A:** requires the assessor to provide each candidate with a grid reference. The candidate needs to estimate the time it will take and navigate from their present position to the feature at the grid reference. It is important that:

- The journey has at least one obstacle that the candidate will need to navigate around. If this is not present then you may need to simulate an obstacle
- The distance travelled has a variety of terrain
- Each leg is at least 1 km long (preferably longer)
- The feature at the grid reference is obvious
- The route should allow on-track (or route) travel or travel using a handrail for most of the time

**Part B:** When you stop the candidate to complete this activity ensure that you stop the timing for Part A, and remember to restart again once they have completed Part B

**Part C:** The feature you select for the compass bearing should be at least 500m from your present position and preferably something that can't be seen from your present position.

### **Instruction to candidate**

Assessment for this task will take place during 2 daytramps. The daytramps will be in different locations. There are three parts to this task. You will need to complete all parts of the task at each of the different locations.

#### **Part A: Navigate from Point 1 to Point 2**

- You will be given a 6 figure grid reference. You are required to
  - orient your map using natural features
  - estimate the time it will take you to reach the feature
  - navigate to the feature at the grid reference
  - navigate around hazards/obstacles on the way

#### **Part B: Identify your current position**

You will be asked to stop twice and identify where you are on the map. You will need to:

- orient the map using the compass,
- tell your assessor what your position is using a 6 figure grid reference
- show them your position on the map

Time keeping for Part A will stop while you complete Part B.

#### **Part C: Take and follow a bearing**

After you have completed Part A you will be shown a feature on the map. You need to

- take a bearing (on the map) from your present position to this feature,
- convert the bearing
- measure the distance to the feature
- follow the bearing until you reach the feature.

**Part A: Navigate from Point 1 to Point 2****Element 1: Demonstrate knowledge of navigation tools.****Element 2: Navigate in the outdoors in good visibility.**

Range: in at least two different locations using NZMS 260 maps.

<b>Performance criteria</b>	<b>Evidence/ Judgement</b>
<b>1.2</b> An accurate position is fixed on a topographical map using a six figure grid reference and map number.	<p>Before starting towards the given point the candidate</p> <ul style="list-style-type: none"> <li>▪ Identifies the feature they need to travel to.</li> <li>▪ Uses surrounding natural features to orient the map</li> <li>▪ Estimates how long it will take to reach the given point</li> </ul> <p>During the navigation leg the candidate</p> <ul style="list-style-type: none"> <li>▪ Has the map in hand and is ticking off features as they are passed</li> <li>▪ Has the map oriented correctly</li> <li>▪ Uses a compass to navigate around any hazards (either back bearing, right handed bearing or offset bearing see MSC Bushcraft Manual pg 88 – 90)</li> </ul> <p>At the end of the navigation leg</p> <ul style="list-style-type: none"> <li>▪ The candidate arrives at the given point</li> <li>▪ The estimated time is compared to the actual time</li> <li>▪ An explanation of how the estimated time was calculated is given</li> <li>▪ An explanation of any difference between the actual and estimated time is given</li> </ul>
<b>2.1</b> The map is oriented using surrounding natural features.	
<b>2.3</b> A predetermined point is reached, following a route using map to ground techniques and navigating around hazards.	
<b>2.7</b> The amount of time required to walk from one given point to another in a variety of tracked terrain is estimated and the variation to the actual time taken is justified.	

**Part B: Identify your current position****Element 1: Demonstrate knowledge of navigation tools.****Element 2: Navigate in the outdoors in good visibility.**

Range: in at least two different locations using NZMS 260 maps.

<b>Performance criteria</b>	<b>Evidence/ Judgement</b>
<b>1.2</b> An accurate position is fixed on a topographical map using a six figure grid reference and map number.	<p>On two occasions during Part A the candidate can:</p> <ul style="list-style-type: none"> <li>• use the compass to orient the map</li> <li>• use the map to show the assessor where they are</li> <li>• provide a 6 figure grid reference for the position.</li> </ul>

<p><b>1.3</b> The uses of a compass are identified and demonstrated.</p> <p>Range: uses must include but are not limited to – measuring distances on a map, orienting the map north, taking and following bearings.</p>	<p>The position identified on the map is within 100m of the candidate's actual position (GPS may be helpful to establish this)</p> <p>On at least one occasion the candidate uses a resection to confirm their position.</p> <p>Three features must be used. One of the features could be a linear feature that they are standing on (e.g. ridge)</p>
<p><b>2.2</b> Position is correctly identified to within 100 metres using map and surrounding features as references.</p>	
<p><b>2.5</b> Present position is identified on the map by taking a resection using three features.</p>	

<b>Part C: Take and follow a bearing</b>	
<b>Element 1: Demonstrate knowledge of navigation tools.</b>	
<b>Element 2: Navigate in the outdoors in good visibility.</b> Range: in at least two different locations using NZMS 260 maps.	
<b>Performance criteria</b>	<b>Evidence/ Judgement</b>
<p><b>1.3</b> The uses of a compass are identified and demonstrated.</p> <p>Range: uses must include but are not limited to – measuring distances on a map, orienting the map north, taking and following bearings.</p>	<p>Before starting towards the given point the candidate</p> <ul style="list-style-type: none"> <li>• Identifies the feature they need to travel to on the map.</li> <li>• Uses the edge of the compass to measure how far it is to the given point. (Pacing and estimating of time may be helpful but are not required)</li> <li>• Takes a grid bearing, to the given point and converts it to a magnetic bearing</li> </ul>
<p><b>2.4</b> Accurate compass bearings are taken from a map and followed correctly with a compass.</p>	<p>Candidate follows the bearing successfully to the given point.</p> <ul style="list-style-type: none"> <li>• The candidate can follow the bearing using natural features and vegetation or use another person to assist i.e. Leap frog in pairs.</li> </ul>

Candidate name/NSN

<b>Unit 431 (v6) Checklist</b> <b>Navigate in good visibility on land</b>			
<b>Assessor name:</b> _____  <b>Organisation name:</b> _____		<b>C/NYC</b>	<b>Comments</b>
<b>Task 1: Complete written or oral Questioning</b>			
All questions are completed either in written or oral format			
All answers show the same level and range of knowledge and understanding as supplied in the model answers.			
<b>Task 2: During a day tramp demonstrate navigation skills.</b>			
<b>Part A: Navigate from Point 1 to Point 2</b>	Tramp 1 <b>C/NYC</b>	Tramp 2 <b>C/NYC</b>	<b>Comments</b>
Before starting towards the given point the candidate <ul style="list-style-type: none"> <li>▪ Identifies the feature they need to travel to.</li> <li>▪ Uses surrounding natural features to orient the map</li> <li>▪ Estimates how long it will take to reach the given point</li> </ul>			
During the navigation leg the candidate <ul style="list-style-type: none"> <li>▪ Has the map in hand and is ticking off features as they are passed</li> <li>▪ Has the map oriented correctly</li> <li>▪ Uses a compass to navigate around any hazards</li> </ul>			
At the end of the navigation leg <ul style="list-style-type: none"> <li>▪ The candidate arrives at the given point</li> <li>▪ The estimated time is compared to the actual time</li> <li>▪ An explanation of how the estimated time was calculated is given</li> <li>▪ An explanation of any difference between the actual and estimated time is given</li> </ul>			

<b>Part B: Identify your current position</b>			Tramp 1		Tramp 2		<b>Comments</b>
			1	2	1	2	
On two occasions on each tramp <ul style="list-style-type: none"> <li>• use the compass to orient the map</li> <li>• use the map to show where they are</li> <li>• provides a 6 figure grid reference for the position.</li> <li>• position is within 100m of actual position</li> <li>• Uses a resection to confirm their position.</li> </ul>							
<b>Part C: Take and follow a bearing</b>			Tramp 1		Tramp 2		<b>Comments</b>
Before starting towards the given point the candidate <ul style="list-style-type: none"> <li>• Identifies the feature they need to travel to on the map.</li> <li>• Uses the edge of the compass to measure how far it is to the given point</li> <li>• Takes a grid bearing and converts it to a magnetic bearing</li> <li>• Follows the bearing successfully to the given point.</li> </ul>							
		<b>DATE</b>	<b>CANDIDATE'S SIGNATURE</b>		<b>ASSESSOR'S SIGNATURE</b>		
Tramp 1							
Tramp 2							
Reassessment							
<b>COMMENTS</b>							

# ASSESSMENT QUESTIONS

## Navigate in good visibility on land

**Unit Standard: 431**

**Level: 2 Credit: 3 Version: 6  
Published by Skills Active 2005**

Candidate Name:.....

### INFORMATION:

**The assessment tasks for this unit standard are in two parts.**

#### **Task 1: Written assignment**

This task meets the assessment requirements for:

**Element 1:** Demonstrate knowledge of navigation tools.

PCs 1.1, 1.2, 1.3, 1.4, 1.5

**Element 2:** Navigate in the outdoors in good visibility.

PC 2.6

#### **Task 2: Practical demonstration of skills in the field During a day tramp demonstrate navigation skills**

This task meets the assessment requirements for:

**Element 1:** Demonstrate knowledge of navigation tools.

PCs 1.2, 1.3,

**Element 2:** Navigate in the outdoors in good visibility.

PC's 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7

#### **Equipment required:**

- Assessment booklet
- NZMS 260 Map

# TASK 1: Written Assignment

## MAP FEATURES

- Identify 4 different types of maps.
  - 1.
  - 2.
  - 3.
  - 4.
- What is the most common type of map used in outdoor navigation e.g. tramping?
- What is the scale of a 260 series map?
- What does this mean?
- On a 260 series map what is the distance between grid lines?
- What is the function of contour lines on a map?
- What is the function of shading on a map?

- The student can identify at least 10 symbols on a map.

Assessor verification: \_\_\_\_\_ (Signature)

- The student can identify at least 10 symbols on at least one of the following maps.  
Orienteering map, Park map, Track map, Terrain map

Assessor verification: \_\_\_\_\_ (Signature)

## **FINDING YOUR POSITION ON A MAP**

You will need the NZMS 260 map provided for this section.

On the table below you have been given 6 grid references.  
For each use the map to identify the feature at the grid reference.  
Write the name of the feature in the space provided

Grid reference	Feature

On the table below you have been given 6 features.  
Find each feature on the map.  
Write the 6 figure grid reference of the feature in the space provided

Grid reference	Feature

## **USES OF COMPASSES**

- Identify **3** navigational uses for a compass.
  - 1.
  - 2.
  - 3.

## **EXPLANATION OF NAVIGATION TECHNIQUES**

Explain the following navigation techniques. You may use pictures or diagrams to help your explanation.

1. Aiming off.
2. Attack points.
3. Catching features.
4. Handrails.

5. Back bearings.

## **EXPLANATION OF GRID AND MAGNETIC BEARINGS**

- Explain the difference between a grid bearing and a magnetic bearing.

## **ESTIMATION OF TIME**

- List at least seven factors that may impact on a group's travelling speed and therefore the time it may take them to travel from one point to another.

1.

2.

3.

4.

5.

6.

7.

# Task 2: PRACTICAL TASK

**During a day tramp demonstrate navigation skills.**

**There are three parts to this task**

- **Part A: Navigate from Point 1 to Point 2**
- **Part B: Identify your current position**
- **Part C: Take and follow a bearing**

Assessment for this task will take place during two day tramps.

The day tramps will be in different locations.

You will need to complete all parts of the task at each of the different locations.

During practical sessions in the field you will need to demonstrate the following:

## **Key Skill / Knowledge to demonstrate**

### **Part A: Navigate from Point 1 to Point 2**

You will be given a 6 figure grid reference. You are required to

- orient your map using natural features
- estimate the time it will take you to reach the feature
- navigate to the feature at the grid reference
- navigate around hazards/obstacles on the way

### **Part B: Identify your current position**

You will be asked to stop twice and identify where you are on the map. You will need to

- orient the map using the compass,
- tell your assessor what your position is using a 6 figure grid reference
- show them your position on the map.

Time keeping for Part A will stop while you complete Part B.

### **Part C: Take and follow a bearing**

After you have completed Part A you will be shown a feature on the map. You need to

- Take a bearing (on the map) from your present position to this feature,
- Convert the bearing
- Measure the distance to the feature
- Follow the bearing until you reach the feature.