

Name: _____



Expedition Training Booklet

Foreword

This booklet is meant to be a readable, concise but comprehensive training guide that can be given out to new DofE participants for them to keep as a reference manual. It can also be used to help leaders to build a structure on which to base an expedition training programme.

The emphasis is on Bronze level training, as this is the stage at which most participants enter the Award and when most expedition training is given; more advanced topics for Silver and Gold levels are mentioned, but in less detail. At all levels, the guidance given here can only be a precursor to detailed, practical training 'on the hill' by experienced leaders, never a replacement for it!

Only walking expeditions are covered; aspects of training specific to other modes of transport are excluded. The Expedition Guide and the relevant Expedition Training Framework downloadable from the DofE website should be consulted as necessary.

This booklet has been compiled from a number of sources, including the DofE Expedition Guide and various training guides written over the years by leaders from OXPED with the benefit of decades of experience of teaching DofE participants the skills necessary to undertake expeditions safely and successfully. We thank all of those contributors, and hope that you find this booklet useful. If you have any comments, please get in touch via the OXPED website: www.oxped.org.uk.

Peter and Alison Knight

OXPED

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Introduction

Of all sections of the Award the expedition section probably requires the most commitment and is usually the most challenging, although it can also be the most rewarding.

The aim of the expedition section is to develop a spirit of adventure and discovery by planning, training for and completing an adventurous journey as part of a team. Through the shared experiences you can develop initiative, teamwork, communication, leadership, problem solving and organisational skills.

You will learn all the necessary skills including navigation, camp craft, first aid and emergency procedures, plan and carry out a practice expedition, and plan and carry out a qualifying (assessed) expedition.

Your expedition must meet the 20 Conditions set out by the Duke of Edinburgh's Award. These define the criteria on which you are assessed during the qualifying expedition.

The 20 Conditions

- 1) All expeditions must be by the participants' own physical effort, without motorised or outside assistance.
- 2) All expeditions must be unaccompanied and self-sufficient.
- 3) All expeditions must be supervised by an adult who is able to accept responsibility for the safety of the team.
- 4) The expedition must have a clearly defined aim, which is developed in training and preparation.
- 5) All participants must be properly equipped.
- 6) Participants must have completed the required training and practice expeditions.
- 7) At least one practice expedition must be undertaken at each level of the programme, in the same mode of travel and in a similar environment to the qualifying expedition.
- 8) The team must plan and organise the expedition.
- 9) Assessment must be by an approved accredited Assessor.
- 10) There must be between four and seven in a team.
- 11) All participants must be within the qualifying age of the programme level.
- 12) Participants must be at the same level of assessment.
- 13) The team must not include those who have completed the same or higher level expedition.
- 14) Accommodation should be by camping.
- 15) The expedition must be of the correct duration.
- 16) The expedition should normally take place between the end of March and the end of October.
- 17) The expedition should take place in the recommended environment.
- 18) The expedition must meet the minimum hours of planned activity.
- 19) A substantial meal should be cooked and eaten by participants each day.
- 20) A presentation reviewing the expedition and relating to the aim must be prepared and delivered after the qualifying expedition.

Expedition Timescales

To complete the expedition section you must plan and train to undertake an expedition of the set duration, camping overnight, carrying all your kit and carrying out a minimum number of hours of planned daily activity. The timescales are as follows:

Bronze: 2 days, 1 night, minimum 6 hours of planned activity per day (at least 3 hours journeying), in a reasonably local environment.

Silver: 3 days, 2 nights, minimum 7 hours of planned activity per day (at least 3½ hours journeying), further afield in a less familiar environment.

Gold: 4 days, 3 nights, minimum 8 hours of planned activity per day (at least 4 hours journeying), generally in a more remote, wild country environment.

The Expedition Aim

As well as the successful completion of the journey, your expedition needs to have a clearly defined aim, which encourages you to discover and appreciate the environment through which you are passing. You will have to make observations and take notes en route of anything that may be of interest to you e.g. churches, wildlife, people you meet. During your planning you need to consider where and when the discovery element will take place, how you will record the information (written, sketches, photographs, audio, video) and how you will present your findings (see Expedition Presentations at the end of this booklet).

Suggestions for Aims

- Comparing villages – looking at the building styles and materials, comparing facilities (e.g. schools, shops, churches), accessibility.
- Types of farming and comparison of farms.
- Land use – agricultural, industrial, residential, woodland etc.
- Wildlife – surveying, identifying and recording the flora and fauna.
- Geological study – looking at rocks, erosion, quarries etc.
- Woodland study – ground cover, fungi, trees, animals, birds.
- Plant study – identifying different plants in different habitats, sketching of plants, photographing plants.
- Photography – with captions and details of the subject matter.
- Condition of footpaths – well marked, overgrown, unsightly etc.
- Litter distribution – types, amount, collecting it.
- Group dynamics – how do the team relate to each other at different points in the expedition, how do people feel – highs and lows.
- Calorific and nutritional value of the food consumed on the expedition.
- Water features – rivers, streams, ponds etc.
- People that you meet.
- Different types of gates or stiles.

Bronze Expedition Training Framework

Before you can do your expedition you need to receive training in all of the following:

Navigation and Route Planning

Most of the training will be done with the 1:25000 scale Explorer maps as they show the field boundaries, making it easier to locate precisely the footpaths, tracks and lanes used for travel in this type of country.

Preparatory Map Skills

- The nature of maps.
- The use of 1:25000 Explorer, 1:50000 Landranger maps
- Map direction.
- Scale and distance, measuring distance, distance and time.
- Conventional signs
- Marginal information.
- Grid references.
- A simple introduction to contours and gradient.
- The ability to give a verbal description of a route linking two places from the map.

Practical Map Skills

- Setting the map.
- Locating position from the map.
- Determining geographical direction and direction of travel from the map.
- Checking the direction of paths using the set map.
- Identifying features in the countryside by using the map.
- Locating features marked on the map in the countryside.
- Planning a route, preparing a simple route card.
- Following a planned route.

Compass Skills

- The care of the compass.
- Direction from the compass in terms of N, W, S, E, NW, NE, SW, SE
- Setting the map by the compass.
- Finding a direction.

Camp Craft – Equipment and Hygiene

- Choosing suitable clothing, footwear and emergency equipment and knowing how to use it.
- Choosing and caring for camping gear.
- Packing a rucksack, waterproofing the contents, always keeping the weight down to a minimum, and about a quarter of the body weight when walking.
- A rucksack safe lifting technique.
- Choosing a campsite, arrangements for water, cooking and sanitation, refuse disposal, fire precautions.
- Pitching and striking tents.

Food and Cooking

- Cooking and the use of stoves.
- Safety procedures and precautions which must be observed when using stoves and handling fuels.
- Cooking substantial meals under camp conditions.

First Aid and Emergency Procedures

First aid training must be given by a suitably qualified first aider, to include:

- Action in an emergency – resuscitation, airway, breathing and circulation.
- Recognition and treatment of hypothermia and heatstroke.
- The treatment of wounds and bleeding.
- Treatment for shock.
- The treatment of blisters, cuts, abrasions, minor burns and scalds, headaches, insect bites, sunburn, splinters.
- The recognition of more serious conditions such as sprains, strains, dislocations and broken limbs.
- Knowing what to do in the case of an accident or emergency.
- Summoning help - what people need to know, telephoning for help, written message.
- Getting help, self-help and waiting for help to arrive, keeping safe and warm, helping people to find you.

An Awareness of Risk and Health and Safety Issues

- Expedition fitness.
- Telling people where you are going.
- Identifying and avoiding hazards.
- Keeping together.
- Weather forecasts - knowing how, where and when to obtain weather forecasts, relating weather forecasts to observed conditions, looking for signs which will indicate changes in the weather.

Countryside and Highway Codes

- Understanding the spirit and content of the Countryside Code.
- The avoidance of noise and disturbance to rural communities.
- A thorough knowledge of the content of the Highway Code.

Observation, Recording and Presentations

- Choosing an Aim.
- Developing observation skills and different methods of recording information.
- Skills relevant to the method of presentation.
- Researching relevant information.

Team-building

The Expedition section involves participants working together as a team in order to complete the expedition. Team-building should permeate all expedition training and can be enhanced through team-building exercises and regular reviews so that when the group sets out on the qualifying expedition, participants are able to work together as an effective and cohesive unit.

Silver Expedition Training Framework

The training for Silver must cover all of the aspects given in the Bronze Expedition Training Framework above, plus the following additional topics.

Practical Map Skills

- Relating the map to the ground and estimating speed of travel and arrival times.

Compass Skills

- Measuring direction in degrees.
- Setting the map by the compass where magnetic variation may be ignored.
- Determining the direction of footpaths or direction of travel.
- Magnetic variation and the relationship between True, Magnetic and Grid Norths.
- Travelling on a bearing. Obtaining a grid bearing from the map, allowing for magnetic variation where appropriate.
- The influence of ferrous objects and electromagnetic fields.

Gold Expedition Training Framework

The training for Gold must cover all of the aspects given in the Silver Expedition Training Framework above, plus the following additional topics.

Preparatory Map Skills

- Understanding contours, recognition of major land forms such as hills, valleys, ridges, spurs.
- Interpretation of contours into mountain land forms and relief, slope and gradients and the determination of height.

Practical Map Skills

- Identifying and locating features in the country by using the map.
- Relating the map and contours to the ground. Estimating journey times in wild country.
- Navigation in restricted visibility. Action to be taken in the event of being lost.

Programme Planner: Expedition Section

When completing each section of your DofE programme, you should develop a programme which is specific and relevant to you. This sheet will help you to plan your DofE programme for the Expedition section.

For help and support either see your DofE Leader or visit www.DofE.org/expedition

Going on an expedition gives you the chance to have an adventure, work as a team, and act on your own initiative.

Programme plan for: *(your name)*

Where will you go on the expedition? Who will you go with?

What will your aim be, and how will you achieve it?

How will the Expedition Section challenge you?

What do you want to achieve? What are your specific goals?

Who is going to help you complete your activity? *E.g. Who is going to help you prepare for the expedition? Who is going to supervise you? Who is going to assess you?*

What evidence will you collect to show your progress? *E.g. How will you give your presentation?*

Equipment and Clothing

Suggested Kit List: Personal Equipment and Clothing

- Rucksack (65 litre capacity) and waterproof liner
- Sleeping bag and stuff sack, and (optional) sleeping bag liner
- Insulating sleeping mat
- Waterproof clothing: Cagoule and overtrousers
- Walking boots (and gaiters if available)
- Thick socks and spare pairs
- Shirt / T-shirt
- Trousers - *not jeans*
- Sweater or sweatshirt or fleece top
- Spare (dry) clothing, i.e. tracksuit, or sweater and trousers
- Underwear
- Hat (warm/sunhat with neck protection), scarf and gloves
- Washing gear (antiseptic handwashing gel is good), small towel, toilet paper, toothbrush, toothpaste
- Sun cream (if appropriate)
- Personal first aid kit and health form
- Plastic bags for clothes, food, sleeping bag, rubbish etc.
- Whistle, watch, string, notebook, pencil
- Torch with spare bulbs and batteries
- Matches (in a dry container)
- Food (packed according to meals)
- Emergency rations (chocolate, raisins, nuts, Kendal mint cake etc.)
- Mug, plate, bowl
- Knife, fork, spoon
- Washing-up materials and tea towel
- Water bottle (at least 2 litre capacity)
- Expedition Identity card with emergency phone numbers
- Soft shoes (for use at campsite, optional)
- Money - coins for phone and emergency money
- Compass
- Camera (optional)
- Penknife (optional)

Group Equipment

- Trowel
- Survival bags
- Tent (one per two or three people):
 - Pegs
 - Poles
 - Inner
 - Fly sheet (outer)
- Trangia (one per two or three people), gas canister, or meths in fuel bottle
- Maps, map cases, route cards
- Water purifying tablets (where needed)
- Mobile phone – at least one per group for emergency use only.

Clothing Tips

When dressing for the outdoors it is sensible to wear layers of clothing – these are better for insulation and can easily be removed or added, to regulate your body temperature. It is always essential to keep clothing dry, so always wear waterproof clothing when necessary and if possible use breathable fabrics to prevent perspiration from building up on the inside. Generally synthetic fibres have the advantage of being lightweight, they don't absorb much water and they dry quickly.

It is sensible to wear an “inner” layer to absorb perspiration (synthetic fabrics are best), a “middle” layer to provide insulation (fleeces or long sleeved tops) and an “outer” layer to keep out the wind and the rain.

Packing the Rucksack

Correctly packing your rucksack will help to reduce discomfort and fatigue on your expedition. Try to pack everything *inside* your rucksack; nothing should dangle on the outside (the only acceptable exception being a foam sleeping mat strapped to the bottom of the rucksack). You need to keep your load to a minimum, and your pack should not be more than $\frac{1}{4}$ of your body weight. The lighter your pack is, the greater your comfort on the expedition.

Try to pack things sensibly in your rucksack, so that you can find things easily:

Top and side pockets: things that you may need on the journey e.g. waterproof clothing, hat, gloves, snacks, water, notepad and pencil.

Middle of rucksack: tent, stove and food, with heavier items close to your back and high up towards your shoulders.

Bottom of rucksack: sleeping bag and spare clothes which are bulky, but quite light.

Everything in the main compartment should be packed in plastic bags, especially your sleeping bag and spare clothes – if these get wet during the venture they become useless (and also very heavy).

Care of Rucksacks

If you are returning equipment to a school, equipment store or other provider, please ensure:

- that all straps are present and functional,
- that the rucksack is clean, dry and empty,
- all zips and buckles are done up.

Please report back on any wear and tear or other problems with the kit.

Camp Craft

This covers the skills and practices relating to camping, including the provision of shelter and of food, as well as giving consideration to the impact you will have on the environment in which you are camping.

Choosing your Pitch

Make sure that your site provides shelter from the elements, and have the door facing away from the wind. The ground needs to be as level as possible – if you have to be on a slope then sleep with your feet downhill. Camp on reasonably dry ground, avoiding stony areas, so that you will be comfortable. The ground needs to be soft enough to take the pegs. If the ground is loose or too soft, or if it is very windy, then the pegs can be secured by placing stones on top of them.

Setting up Camp

When you arrive at camp you should pitch your tent straight away, regardless of how tired you are – this ensures that you have somewhere warm and dry if it should start to rain or get cold. Teamwork is important at this stage – there should be a job for everybody; whilst some are putting up tents, others could be responsible for making a hot drink, or even starting to prepare dinner.

Tents must be at least 2 metres apart, with no guy lines overlapping. As there are many designs of tent, practise pitching your tent before you go on the expedition and ensure that you have all parts of the tent. Ensure that each peg goes in at an angle of 45° to the ground, pointing under the tent, and push it in as far as you can. It is best to start at one corner and work your way around the tent. Guy lines should follow the tent's seam lines, and be adjusted for tightness; they should touch the ground at the peg. Make sure that you don't let the tent bag or peg bag blow away.

Once the tent is pitched all belongings should immediately be put inside the tent, so that your site is tidy. Sharing a tent is much more pleasant if it is tidy and organised, so that you can find things easily – try to keep everything in your rucksacks and ensure that everything in the tent remains dry. Always remove boots and outdoor footwear before going in the tent, and keep any wet clothing and boots in the porch area.

After setting up the tents you can start cooking – only have the things that you need for your meal outside the tent, and ensure that there is no litter which can blow away. Have a suitable bag handy for all rubbish. After eating, wash up, tidy up and pack away all the equipment which you don't need overnight – endeavour to do this before it gets dark. Also, make sure that your torch is handy.

Hygiene is particularly important on expedition campsites – personal cleanliness must remain at a high level, particularly washing hands before preparing or eating food.

When striking camp, wipe clean the underside of the tent and clean any mud off the tent pegs. If the tent is wet, shake off as much water as possible before packing it away in your rucksack. Check your site for litter and tent pegs before you leave – there should be no trace of you having been there. All litter must be disposed of properly in a bin or taken with you.

Care of Tents

If you are returning equipment to a school, equipment store or other provider, please ensure:

- all parts of the tent are together,
- all doors are zipped up and guy lines neatly tied up,
- all parts are clean and dry, including the pegs,
- the pegs are straightened if any have been bent, and
- there is nothing left inside the tent, especially rubbish.

Please report any damage to or problems with the tent.

Expedition Food

Start off the expedition weekend with a good breakfast before you leave. Remember that walking uses a lot of energy, and walking with a pack requires even more energy. Food and drink provide that vital source of energy.

The challenge of expedition food is to cram the greatest amount of energy into the lowest bulk and least weight. You may need between 3000-5000 calories per day on an expedition – this can be achieved by increasing the number of carbohydrates and fats. You need to include:

- Simple carbohydrates – sugars which provide energy quickly.
- Complex carbohydrates – rice, pasta, bread etc. which supply energy over the medium term.
- Fats – which provide energy over a longer period of time.

When the body's carbohydrates have been used up, fatigue sets in and then you need to start nibbling on other sugary foods.

What Food should you Take?

- Food which contains lots of energy but is low in weight and volume.
- Food which you and your cooking group will like and enjoy – so try it before you go.
- Food which is simple to prepare, and requires the least amount of washing up, e.g. one-pot cooking such as stews, curries and rice, pastas and sauces.
- Food which keeps well, particularly in warm weather (i.e. not perishables and fresh meat) – be aware of food safety and hygiene.
- If everybody in the group can agree to have the same then it makes the cooking simpler and quicker and you can all eat together.
- Use dehydrated food, which generally just needs water adding to it, but check the cooking times – choose things that can be cooked quickly, to save time and fuel.
- Don't take heavy tins or jars.
- Don't take full packets – weigh out the required quantities into bags or light plastic containers before you go, but remember to take the cooking instructions!
- Make measuring out easier by marking lines on your mug.
- Drink is important on an expedition. Fizzy drinks are not appropriate. Water is the best drink – it will prevent dehydration and exhaustion. Always drink as much as you can before leaving the campsite, carry at least 2 litres of water and drink lots when you arrive at the campsite.

Ideas may include:

Breakfast

- Begin with a substantial breakfast – cereals, muesli, porridge.
- Muffins or scotch pancakes with jam, honey or marmalade.
- Dried fruit.
- You should have a hot drink in the morning.

Lunch

- Sandwiches are appropriate on day 1.
- Pitta bread or tortilla wraps with squeezey cheese, packet tuna, peanut butter or other fish or meat spreads are ideal for other days.
- Nuts, dried fruit, biscuits, snack bars or chocolate bars.
- Drink.

Evening Meal

You must cook and eat one substantial meal per day – a three course meal is expected in the evening. This is something to look forward to at the end of a hard day and may include:

- Soup.
- Curry and rice, stew or a pasta dish.
- Cake and custard, or whips and mousses to which you simply add water or milk (using dried milk powder).

Snacks for Eating on the Journey

- Biscuits, cereal bars, chocolate, nuts, dried fruit, sweets – but think of the consequences for accidental littering.

Emergency Rations

You should also carry some high energy food which is only to be used in an emergency – Kendal Mint Cake, chocolate bars, nuts and dried fruit.

Cooking Stoves – The Trangia

The Trangia stove is well designed, light and compact, with the stove and pans packed together in a single unit. They are easy to assemble and their broad base makes it very stable. They are easy to use and generally methylated spirit (meths) or gas is the fuel which is used.

Directions for Use

The air holes in the lower windshield should face into the wind and the stove should be used in a sheltered position for minimum fuel consumption. The hooks on the upper part of the windshield should be turned down when using the pans, but turned up when using the frying pan. The frying pan can also be used as a lid to speed up the boiling of water.

Capacity: A single 250ml gas canister should easily last for a whole Bronze expedition. When using meths, filling the burner ($\frac{2}{3}$ of its height) will burn for approximately 25 minutes. You can use the simmering ring to control the heat, and in the closed position this should be used to extinguish the flame.

Safe Use of the Trangia

The stove must be placed on a firm level surface, at least one metre away from the tent, in a place where it cannot be knocked over, and somebody must keep an eye on it whilst it is burning. Do not cook too close to another Trangia. Always use the handle to lift heated pans and lids.

Gas: Using gas canisters is safer and cleaner than using meths as the fuel. Make sure you do not cross-thread the canister when screwing it onto the burner hose, and do not overtighten. Unless it is very windy, do not light a gas Trangia with the windshield attached, as this might trap a large volume of unburnt gas before you manage to light it, causing a sudden large flame to be ignited. Use the gas tap to control the height of the flame, and therefore the rate of cooking. Always ensure that the gas tap is closed before connecting or disconnecting the gas canister. When not in use turn the gas tap off for safety and to conserve fuel.

Meths: Methylated spirit is highly volatile, has a low flash point and in sunlight can burn with a virtually invisible flame – hence great care must be taken and the fuel bottle should be kept away from the Trangia.

Burners must only be filled with meths from a fuel bottle with a safety valve top, specifically designed for the purpose. Always ensure that the bottle top is properly closed.

Do not refill a meths burner until you are sure that the flame is completely extinguished and that it has cooled. The burner should be taken to the fuel, away from the tents and naked flames. If the burner is too hot to carry, then it is too hot to be refuelled. To check, remove the pan and carefully place a hand over the burner to feel if it is still lit.

When using meths always burn off the fuel that you haven't used – never carry a partially-filled burner in a rucksack, as it will leak over food, clothes, etc.

Care of the Trangia

If you are returning equipment to a school, equipment store or other provider, please ensure:

- all parts are cleaned and dried thoroughly – the base should not be black, and
- all the correct parts are there.

Please report if there are any problems with the kit.

Navigation and Map Reading Skills

Good navigation skills based on the use of a map and compass are crucial to the success of your expedition.

A map is simply an aerial picture of the ground to a given scale (1:25000 scale maps are generally best used for expeditions as they give greater detail). All important landmarks and features from the ground are shown using signs and symbols. You will need to be able to relate the map to the countryside, which will only come from practice in the outdoors. However you also need to learn about the following in training sessions prior to the practice expedition:

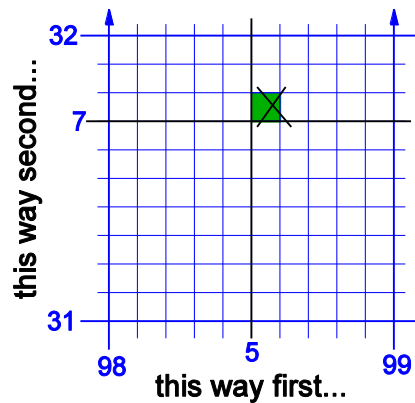
- Map direction – the ‘top’ of a map (with the writing up the right way) always points north.
- Map scale – the difference between 1:50000 and 1:25000.
- Map distance – measure using string or the edge of a piece of paper, and use the scale to convert to the real distance.
- Map symbols – use the key of symbols on the map to recognise spot features, linear and area features.
- Grid references – use grid references to locate places on a map (see below).
- Basic use of the compass – setting the map and knowing direction of travel (see below).
- True North, Magnetic North, Grid North – know the difference between these (see below).
- Finding your way – locate your position, set the map using the visible features (or a compass – see below), choose your route.
- Describing the route – describe direction, distance and features you will pass.
- Estimated time of arrival – consider how long each part of the journey will take, using the assumption of an average group speed of 3 km/hour (equivalent to 20 minutes per kilometre), which should provide enough time for breaks and decision-making.
- Speed of travel – this can be affected by different terrains, for instance whether the ground is firm or boggy, smooth or rough, and how much height you will gain.
- Relief on maps – understanding contours, recognising spurs and valleys, finding height.

The following pages provide reminders and examples for quick reference of some of the above topics.

Grid References

To give the correct grid reference for the X in the portion of the map depicted below:

1. The correct 1 km square is given by the numbers in its bottom left hand corner: **98... 31...**
2. Estimate which 100m imaginary square the object is in:**5****7**
3. Always round DOWN! The full grid reference is: **985 317**

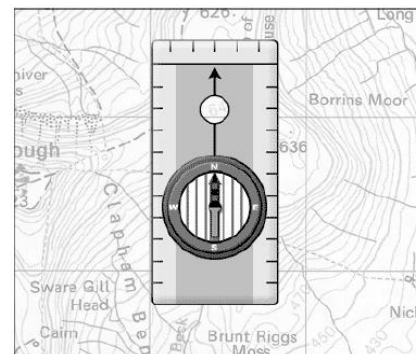


Basic Compass Skills

You should be able to do most of your navigation using just a map, but using a compass can help to confirm that you are travelling in the right direction.

Setting a map by compass:

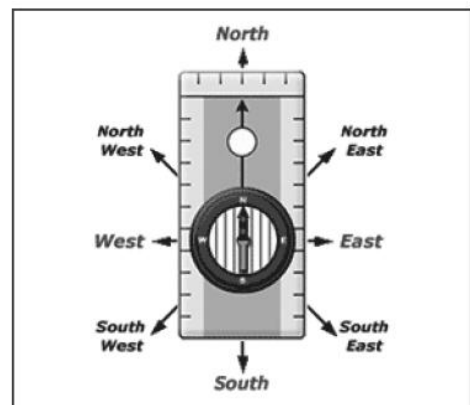
A map can be 'set' using a compass –
i.e. rotated so that it is aligned with the ground.
Place the compass on the map and turn the map round
until the red part of the needle points towards the top,
or North, of the map.
The map will then be aligned to the ground.



Finding a direction:

It is very simple to find the principal directions of North, East, South and West, as well as North East, South East, South West and North West.

Hold the compass flat and turn the housing until the 'N' is aligned with the 'direction of travel' arrow.
Then turn yourself around until the red part of the needle is also pointing to the 'N' on the housing.
The principal directions can then be read off the compass.



Taking Bearings and Travelling on a Bearing

You can also use a compass to determine the right path to choose at a junction, by taking a bearing:

To walk from A to B along the footpath shown:

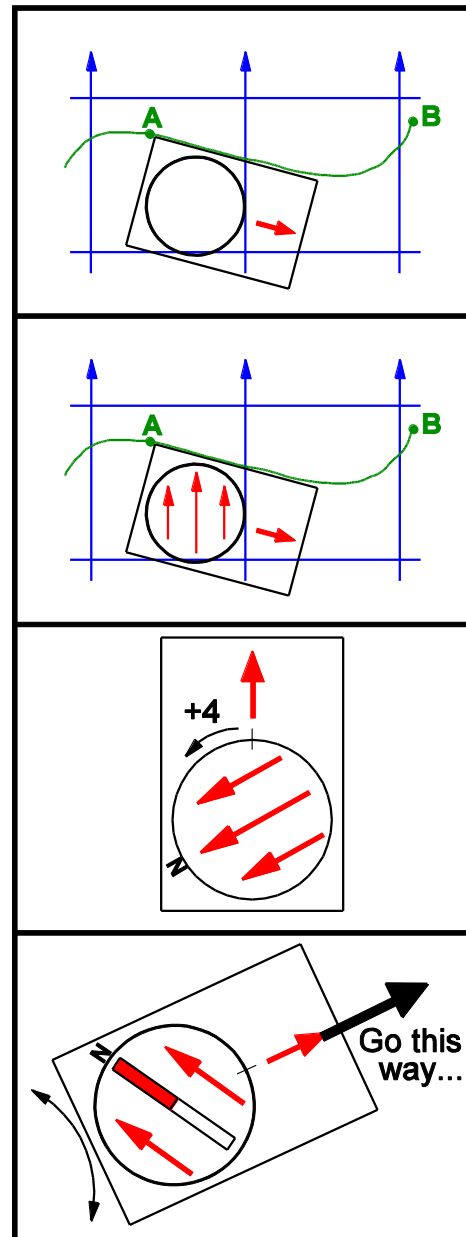
Lie the compass on the map so that its edge lies along the intended route – the direction of travel arrow must be in the right direction!

Keeping the compass steady on the map, rotate the housing so that the arrows on the housing become parallel with the N-S grid lines, and point towards the top of the map.

(This step, which converts the ‘grid’ bearing to the ‘magnetic’ bearing, is not necessary unless you need great accuracy.)

Take the compass off the map. Rotate the housing anticlockwise to add 4 degrees to the bearing indicated (but see Magnetic Variation below).

Hold the compass to your chest, and rotate *yourself* until the red end of the compass needle points to the North point on the dial. You are now facing the right way!



Magnetic Variation: True North, Grid North and Magnetic North

The vertical grid lines on the map define the direction of ‘Grid North’ (which is aligned only roughly with the direction of ‘True North’ – the direction towards the north pole, which is of little relevance when walking in the UK). However, the red end of the compass needle points towards ‘Magnetic North’, which in the UK lies a few degrees (about 4°) to the west of grid north. For very accurate compass work, this difference between grid north and magnetic north (the ‘magnetic variation’) needs to be taken into account, hence the adjustment shown in the diagram above. Note that the magnetic variation for a particular place is written on all 1:25000 and 1:50000 maps.

Advanced Map and Compass Skills

The following topics need to be covered as part of advanced navigation training for expeditions in Wild Country (usually upland areas of mountain and moorland), where your planned routes are not necessarily over obvious tracks. The topics should be introduced at Silver level, and the training reinforced at Gold level.

- Estimating distance covered:
 - Pacing – if you know how many double-paces you take to cover 100 metres, counting your paces will help you estimate how far you have walked.
 - Timing – distance = speed × time.
- Walking on a bearing in low visibility:
 - Transit points – look for two identifiable features exactly in line along the bearing; keeping them lined up as you walk towards them ensures you remain on the bearing.
 - Leap-frogging – send somebody out in front along the bearing, then walk to them.
 - Back-bearing – take a bearing back along the route you have just taken to check that you're still on the correct line.
 - Dog-leg and box detouring – to get round obstacles and remain on the correct bearing.
- Wayfinding in open country:
 - Handrails – following a series of easily identifiable features from the map makes it easier to cross open country.
 - Tick features – look for unmistakable features en route on the map which, when you reach them, you can tick off.
 - Overshoot features – if you reach them 'before' you arrive at your target point, you know you've gone too far and missed the target.
 - Attack points – big, obvious features near to a more challenging target point, that you can use to help you get close.
 - Aiming off – deliberately aiming slightly left or right of a target close to a linear feature such as a river, so that when you reach the river you know which way to turn.
- Using the compass to find your position:
 - Re-section – take bearings on two or more known features in different directions in the distance, then tracing the bearings back from the known points on the map should converge on your approximate location.
- Using the map to find your position:
 - Relating the map and the land to each other – similar to re-section above, but without the use of the compass.
 - Practise visualising the shape of hillsides, the steepness of slopes, and features such as ridges, spurs and valleys from the shape of the contour lines on the map.
 - Slope aspect – take a bearing straight downhill (down the 'fall-line'), then place the compass on the map roughly in the right area, with north correctly aligned. Move the compass around the map (keeping north aligned) and look for a place where the direction of travel arrow on the compass points downhill, perpendicular to the contour lines. This should narrow down your exact location.

Planning your Route

Planning a suitable route cannot be hurried – it needs to be in the appropriate environment for your level, and it needs to be challenging, but within your capabilities. You must ensure that you remain on access land, generally on rights of way at Bronze level, and not go onto private land. You need to try to avoid walking on roads but not cover too much distance on long distance footpaths.

If you are doing any uphill bits then it is advisable to do this early in the day.

Prior to your expedition you will have to plan your route and complete a route card for each day. A route card:

- Helps you plan your timings
- Allows your supervisor and assessor to keep track of where you should be
- Saves a lot of work and thinking en route
- Is an important part of the venture's safety measures.

How to Fill in a Route Card

1. Choose your route on the map (mark the direction along the route with > > , **not** a thick pencil line which would obliterate the route details under it)
2. Break up the route into 1 – 3 km long *legs*, with *checkpoints* at the end of each leg
 - Each checkpoint should be at an easily recognised feature
 - Plan the checkpoints around your project
 - Aim for about 8 legs per day
 - Don't forget to put in a lunch stop at a sensible place and time.
3. Fill in the top row of the route card
 - Group name
 - Date (of the walking day, not today!)
 - Day of venture (1, 2, ...)
 - Walking rate: 3 km/hour
 - Climbing rate: 10 minutes per 100 metres
 - Total distance in day: leave blank for now
4. Fill in the bottom row of the route card
5. Fill in the checkpoints (place and grid reference) in the WHITE boxes in the first column
6. If you know what time you will start walking in the morning, write this in the white box under 'Clock Time' on the same row as the start location
7. For each leg of the route in turn, consult the map and fill in the following details on the row between the two checkpoints (remember, NEVER write in any of the grey boxes):
 - a) Under 'Magnetic Bearing', write the general direction (N, NE, E, SE, S, SW, W, NW) and the magnetic bearing of the STARTING direction of the route away from the checkpoint (along the path you want to take)
 - b) Measure the distance of the leg on the map, in km. Write this in the top-left part under 'Distance/Time'

- c) Multiply the distance in km by 20 (because at 3 km/hour, 1 km will take 20 minutes). Write this in the bottom-right part of the 'Distance/Time' box
- d) Carefully count the number of contour lines you will cross going UPHILL along the route. (Downhill ones don't matter.)
- e) Multiply the number of 'up' contours by the contour interval (usually 5m or 10m – check on your map!), and write this in the top-left part of the 'Climb/Time' box
- f) Divide this number by 10, round up to the nearest whole number, and write this in the bottom-right part of the 'Climb/Time' box
- g) Decide how much time you will need to set aside to perform any project tasks during the leg or at the end checkpoint, and write the number in minutes in the 'Project Time' box. Don't forget to add (no more than) 30 minutes for lunch at the appropriate place.
- h) Add up the three times you have written down in the row, and write the total in the 'Time for leg' box
- i) Add this time to the Clock Time in the row above, and write the new clock time in the row below (the same row as the end checkpoint is written in). This should be regarded as the DEPARTURE time from this next checkpoint
- j) Fill in as much detail as possible about the leg navigation – things you will expect to pass en route, hazardous parts (main roads, etc.). Write down what you hope to do on your project

Things to remember on the venture itself:

- NEVER leave a checkpoint before the time written on the route card, unless you have agreed it with your supervisor. (Suppose that your supervisor gets to the checkpoint to meet you exactly at the time written down, but you have already left. They will wait for you to arrive, and will eventually start walking backwards along your route. Of course, they will never find you...)
- NEVER miss out a checkpoint.
- Always try to stick to the times on the route card. If time starts slipping, it is very difficult to get it back, and you will finish very late, possibly even in the dark...

Route cards are VERY IMPORTANT. If you write one very carefully and accurately before you start you will save yourself a lot of hard work during the walk. Keep referring to it throughout the day.

Group		Date	Day of venture	Walking rate (km per hour)		Climbing rate (mins per 10m)		Total distance in day (km)
Place and grid reference	Magnetic bearing	Distance Time	Climb Time	Project Time	Time for leg	Clock Time	Detailed route description, project plan, escape routes (wild country)	
Group Purpose:				Supervisor contact:				Page number:

Safety and Emergency Procedures

By their nature, all expeditions have an element of risk, but this can be reduced through appropriate training and practice and taking suitable safety precautions. If you get into difficulties, then you and your team needs to get yourself out of the situation, using the kit and knowledge that you have – although in some cases of accident or illness outside assistance may be needed.

One of the main rules is to always stick together as a team – never split up – except in an emergency situation.

If an accident occurs, provide first aid and assess the situation. If possible get the whole team to somewhere where you can get help or if the casualty can't move, then split up to fetch help. Possibly use an international distress signal (Six blasts on the whistle / flashes on a torch /shouts or waves in quick succession, wait a minute and then repeat. The answering signal is three long blasts / flashes with a torch / shouts or waves, followed by a minute pause). Keep using the signal if there is a reply so that helpers can locate you.

Before anyone goes for help follow these important steps:

- Decide who goes for help – two people, usually the best navigator and the fittest person. At least two others to remain at the scene of the incident.
- Redistribute equipment – ensure that those going off have their emergency equipment and make sure those left behind have tent, stove, fuel, food etc.
- Plan the route – know the exact location of the incident, write down the grid reference, plan where you are going to get help and the route and make sure everybody knows – plan to head for a house or farm or a road where help may be found.
- Prepare a written message – assess the injuries and the situation, write it down – so the rescuers know what they are coming to.
- The message must contain: Location, time of incident, names of injured, nature of injury, names and numbers of the rest of the team.
- Use a mobile phone if you can to text information to the emergency services or your supervisor.
- Go for help – you may have to lead the rescuers back to the injured so you need to recognise the route back – Contact your supervisor/assessor and if appropriate phone 999 or 112, and ask for the appropriate service – if you need Mountain Rescue then ask for police, who will contact mountain rescue services.
- Remember to thank all those who have helped you.

Waiting for Help

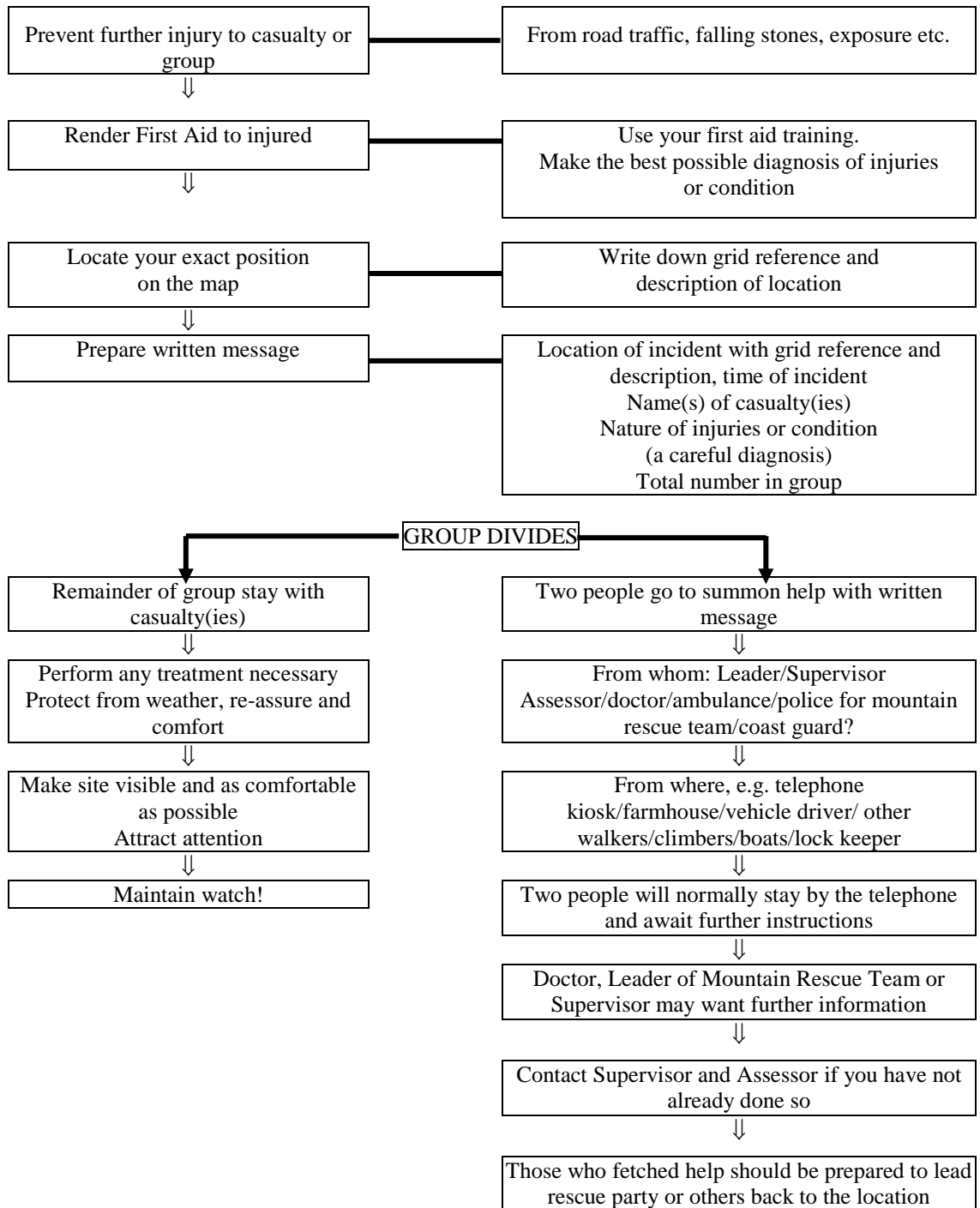
If you are left behind you need to look after the casualty – provide shelter by putting up a tent, keep the casualty warm and comfortable, provide warm drinks as appropriate and reassure them that help is on its way. Increase the visibility of the group – e.g. make a flag from a triangular bandage or bright clothing and remain alert, watching for helpers arriving, then help to direct rescuers to the injured.

Remember that it may take hours for help to arrive.

Emergency Camp

In an emergency situation you may need to set up camp before reaching your campsite. This could be due to severe weather, darkness, exhaustion, hypothermia or injury – if this is the case then find a sheltered spot, put up your tent and have your food and drink. However you also need to be aware that people will be out searching for you so you do need to be visible and alert.

Accident and Emergency Procedures for Participants: Flowchart



First Aid

Each participant must carry their own personal first aid kit.

Personal First Aid Kit List

A personal first aid kit should include:

- A large individually wrapped sterile un-medicated wound dressing
- A medium-sized individually wrapped sterile un-medicated wound dressing
- An individually wrapped triangular bandage
- An assortment of individually wrapped sterile adhesive dressings
- Two or three individually wrapped antiseptic wipes
- Melolin squares (or similar) 10x10cm or 5x5cm
- Crêpe bandage
- Adhesive dressing strip 30cm x 6cm for blisters and cuts
- Treatment for blisters: Compeed plasters, chiropody felt or moleskin
- Sun block or high factor sunscreen
- Zinc oxide plaster / micropore tape
- Large safety pins
- Small pair of scissors
- A pair of tweezers
- Individual medication – inhaler, paracetamol
- Antihistamine – for sting relief
- Disposable gloves
- Insect repellent
- DofE health form

Basic First Aid

Keep calm and use your common sense.

Blisters: Avoid these by breaking in your footwear before the expedition, but at the first sign of discomfort stop and cover with a blister plaster or moleskin to prevent further rubbing.

Minor cuts and grazes: Clean the wound with water and apply an adhesive dressing. For heavier bleeding apply a pad and firm bandage, and raise the limb. Get help for very severe bleeding.

Nose bleeds: Lean forwards, pinch the end of the nose, and breathe through the mouth. Get help if it continues for half an hour.

Sunburn: Avoid by covering the skin with loose clothing, use a high factor sun block and especially protect your neck and head with a brimmed hat.

Burns and scalds: Immerse in cold water for at least 10 minutes. Do not prick blisters, do not apply creams and get help if serious.

Stings: Apply cold water or use sting relief.

Hypothermia: If the core body temperature falls below 35 degrees Celsius, this will lead to unconsciousness, slow breathing, heart failure and ultimately death. Exhaustion can lead to hypothermia – this can be prevented by watching for symptoms in the team members e.g. complaints of feeling cold, miserable, tired, pale skin, shivering, lack of interest, failure to answer simple questions. If symptoms do occur you have all the equipment to prevent it – including food, shelter, spare dry clothing, sleeping bags, sleeping mats etc.

Hyperthermia or heat exhaustion: Maintain adequate fluid intake as there is considerable fluid loss through sweating. Salt also needs replacing through the expedition food. Fainting is the most common heat disorder brought on by fatigue or over-exertion. A short rest, lying with the head down, legs up and drinking should remedy the situation.

Sprains: Apply a firm bandage and a cold compress if possible.

Broken limb: Make comfortable with a sling and get help.

Unconsciousness: Put into the recovery position and get help.

Shock: Lie down, raise legs, loosen any tight clothing, keep warm, reassure and get help.

Contact your supervisor or other nearest adult if help is required and dial 999 or 112 for a real emergency.

Safety

Safety is of paramount importance on an expedition. It is really just taking a common sense approach to everything, and you should think about the safety in all that you do.

Preparation and Training

- Acquire the relevant skills – map reading and using the compass.
- Planning the expedition – study the map and plan the route carefully - stick to footpaths / bridleways, avoid roads where possible, only use appropriate crossing points for rivers, streams or railways. Understand the terrain e.g. hills and know what to expect. Know the group's limitations and plan times and rest breaks appropriately.
- Kit selection – Choose appropriate clothing to take and wear. Pack emergency equipment and first aid kit. Distribute the weight of the group kit between the group.
- Health form – make sure that this is in your first aid kit and that supervisors and other members of the group are aware of any problems.

En Route

- Follow the highway code – walk in single file facing the oncoming traffic, except on sharp bends, where you can't be seen, in which case walk on the outside of the bend. When crossing roads, cross safely by all crossing together at the same time, line abreast.
- Follow the countryside code.
- Stay together – walk at the pace of the slowest, never lose sight of a group member and never split the group up (except in an emergency).
- Snacks and drinks – keep up energy levels and avoid dehydration.
- Clothing – stay clean and dry where possible, wear waterproofs when necessary.
- Hygiene – stay clean, wash hands and don't touch animals.

At Camp

- On arrival, don't be tempted to shed clothes, as you will soon get cold. Share out the work of putting up tents and making hot drinks. Keep organised and tidy and keep everything dry. Do not risk getting your dry clothes wet, even if it means staying in wet clothes until you are ready to retire to your tent. If necessary, put wet clothes on again to walk in the next day.
- Trangia – adhere to all the safety advice given above about the use of tranguias.
- Meals and drinks – remember to eat and drink regularly.
- Hygiene – always wash your hands before cooking and eating.

Use of Mobile Phones

You are allowed to take a mobile phone on your expedition and we would advise that there is at least one in the group. However it must remain turned off unless it is being used in an emergency situation.

- Pre-programme your phone with emergency numbers such as your Supervisor and Assessor.
- Ensure your phone is fully charged before your expedition and carry a spare charged battery.
- Ensure that you know how to send and receive 'text' messages, as these can be transmitted and received when reception is minimal, cannot be misheard, use very little battery power and messages can be easily stored for future reference.

- Ensure all phone users in your 'safety network' are not working from 'withheld' numbers so you can see who is calling and easily call them back using your phone's 'received call' or 'call-back' facility.
- Ensure you have your answerphone turned on and that you know how to retrieve messages.
- Ensure your 'Pay as you go' phone is charged up with adequate credit and that you are able to top up your credit in any situation if required.
- Do not be tempted to directly hold or use your mobile phone during a thunderstorm as evidence suggests that they increase the danger of lightning strikes.
- Be aware that there may be restricted mobile phone reception in your expedition area, so you cannot rely on your phone.

Common Problems

<p><u>Tiredness</u> Carrying a heavy rucksack for a long distance is hard work</p>	<p>Get fit before the expedition – the best training for walking is walking. Try to keep your bag light – only take what you need – and pack it and carry it properly. Walk at a steady pace and take occasional rest breaks. Eat energy-giving snacks en route and plan high-energy meals.</p>
<p><u>Blisters</u> Your feet take most of the strain</p>	<p>Choose strong, well fitting boots. Wear thick woollen socks (perhaps two pairs of socks). Treat blisters as soon as you feel soreness.</p>
<p><u>Sore shoulders and hips</u></p>	<p>Wear sensible tops which give protection to your shoulders – not strappy tops. Wear sensible trousers and shirts which come to below your hips – no bare mid-riffs. Adjust your rucksack properly so that the weight is on your hips, not on your shoulders.</p>
<p><u>Cold / wet</u> Being cold or wet, or both is uncomfortable and can be dangerous</p>	<p>Wear warm, suitable clothing, adding more layers if necessary. Make sure your spare clothing remains dry. Make sure your waterproofs are accessible and put them on at the first sign of rain.</p>
<p><u>Cold at night</u> A good night's sleep is essential.</p>	<p>Take an adequate sleeping bag. Use a sleeping mat to provide insulation. Have a hot drink before going to bed. Wear plenty of clothes in bed, including hat and gloves.</p>
<p><u>Getting lost</u> Everybody gets a little lost sometimes</p>	<p>Learn the navigation, map and compass skills. Those with the maps should concentrate on the map at all times – always know exactly where you are on the map. Everybody should be involved in the navigating. If you are lost, look around for landmarks and find them on the map. Retrace your steps to a known position. Don't keep going in the wrong direction.</p>

Caring for the Countryside

The expedition allows you to enjoy the countryside, but you also have the responsibility to care for it:

- Be safe, by following advice and signs, particularly if footpaths are closed for safety reasons.
- Be aware of erosion – walk in single file on narrow footpaths, don't erode the edges, follow zigzag paths downhill, not straight down, never climb fences or walls, always use stiles and gates instead.
- Leave gates as you find them and never take short cuts through crops – footpaths often follow around the edges of fields.
- Be aware of litter on the journey and at the campsite – take litter away with you or place in a bin, don't let rubbish blow away. Remove unnecessary packaging before you go on an expedition.
- Show consideration and respect for others, particularly by restricting noise – the countryside is a quiet place and others don't want to be disturbed by noisy or rowdy teenagers.
- Don't harm any animals, birds, plants or trees.

Expedition Presentations

Everyone in the expedition team must make a presentation or produce a report related to the aim of the expedition.

Throughout the expedition observe all the events and emotions you experience – use all your senses (sight, smell, hearing, touch). Record information and feelings in a notebook. Make a note when you see things, as you probably won't remember later. Consider how you feel about your expedition – record amusing incidents, anxious or exciting moments. Also think about what you have learned about yourself and others in your group.

It is best to complete your presentation within a couple of weeks of your expedition, when it is still fresh in your mind. You can use any form of presentation – written, oral, drama, portfolio of photos, drawings, paintings, poetry. Sound and video recordings are also appropriate. Digital cameras and audio and video equipment can be used on the expedition, although make sure they have adequate protection and spare batteries.

A written report provides a permanent record of a major achievement – it can be hand written or could be a Powerpoint presentation – supported by photos, sketches and diagrams. This is something for you to keep and treasure in the future, so it is worth putting in the effort to produce a good report.

Presentations can be done by individuals or by the group - but it must be clear as to who has produced what in the presentation. It should reflect genuine effort from each member of the team.

You can also choose who will assess your presentation – generally your group assessor, but it could be somebody else who has been involved with the expedition in some way. The presentation should be discussed at the planning stage, so that it can fit in with the aim of the expedition.

As well as a report on your aim, your report may include the following information:

- Title page – group members, expedition dates, expedition area, expedition aim, names of supervisors and assessors.
- Route cards and tracing of the route.
- Kit list – review what you used / didn't use.
- First aid kit list – did you need to use anything from it?
- Menus.
- Illustrations, sketches, photographs.
- Weather conditions
- Group morale – highs and lows
- Details of the journey – who led and when, did you get lost? Were you on time?
- Details of the camping – what was the food like, how well did you sleep?
- Any funny incidents, or difficulties.
- Why did you choose your particular aim and was it successful?
- Conclusion – overall, did you enjoy it and will you want to go on to do the next Award level?

The **main reason** for participants not completing the expedition section is failure to submit a presentation. This has then wasted both your own time and energy and that of all of the adults involved.