ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL THREE

INSTRUCTIONAL GUIDE

SECTION 6

EO C390.01 – IDENTIFY TYPES OF MAPS

Total Time: 30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-803/PG-001, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Photocopy the handout located at Annex E for each cadet.

The following maps are the minimum required to instruct this lesson: topographical, orienteering, street, and road. However, as many examples of different types of maps should be collected.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for TPs 1–3 to orient the cadets to maps and present basic or background material on the purposes, types, and care of maps.

Demonstration and performance was chosen for TP 4 as it allows the instructor to explain and demonstrate folding a map while providing an opportunity for the cadets to practice folding a map under supervision.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall have identified types of maps.

IMPORTANCE

It is important for cadets to understand the types of maps in order to choose the appropriate map to meet their needs.

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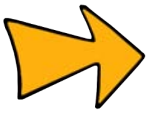
Teaching point 1 **Explain the Purpose of a Map**

Time: 5 min Method: Interactive Lecture

THE PURPOSE OF A MAP

Maps are designed to give the user specific information based on its type. While there are many different types of maps, there is information that is common to most types.



The art and science of making maps is called cartography. The oldest known maps are preserved on Babylonian clay tablets from about 2300 B.C.

A MAP IS A SCALE REPRESENTATION OF THE GROUND

A map is usually drawn to scale, that is, it is a proportionately smaller representation of the area depicted. However, many maps distort key features to highlight or emphasize them on the map. For example, roads are almost always depicted wider than they would be to scale. Scales may range from 1 : 5 000 (very high detail map) to 1 : 10 000 000 (a globe or a map of the world).

A MAP USES SYMBOLS TO REPRESENT BOTH PHYSICAL AND MAN-MADE FEATURES FOUND ON THE GROUND

Many features on a map are too small to see if depicted to scale. Cartographers (map-makers) use internationally accepted symbols to represent both natural and man-made features. These symbols are commonly known as conventional signs.

Maps Identify Locations Such as Towns, Lakes, and Rivers, by Name

Locations such as towns, lakes, and rivers are identified by name. Other important features such as mountains, highways, and political boundaries are also identified.

Map Designs Reflect the Needs of the User

Map designs reflect the individual needs of the user. Urban planners need a map that shows where water, sewer, and electrical lines are located. Travellers need to get to where they want to be, whether it is within a city or across the country. Education providers need maps that show the demographics (the statistical data of a population such as age, education, etc) of the region to know where their students may be coming from. Cadets need a map that will help them navigate, whether it is planning a flight or using a compass to trek to a survival site.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What is the purpose of a map?

Q2. Internationally accepted symbols used to represent both natural and man-made features are known as what?

Q3. Maps identify many types of locations by name. Identify three.

ANTICIPATED ANSWERS

A1. Maps are designed to give the user specific information based on its type.

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A2. These symbols are commonly known as conventional signs.

A3. Locations such as towns, lakes, and rivers are identified by name. Other important features such as mountains, highways, and political boundaries are also identified.

Teaching point 2 **Describe the Various Types of Maps**

Time: 5 min Method: Interactive Lecture

VARIOUS TYPES OF MAPS

Maps contain information based on their type.



If the type of map is available as a training aid, it should be displayed when it is being discussed.

Topographical

This type of map is commonly used by the military. The purpose of a topographical map is to present a picture of the ground as it really exists. Topographical maps show as much detail as the scale allows, generally 1 : 25 000, 1 : 50 000, or 1 : 250 000. This is the main type of map used by cadets for ground navigation.

Orienteering

Through the International Orienteering Federation (IOF), specific rules and standards have been set for the production of orienteering maps, including colour, symbols, and scales. They are more detailed than topographical maps, with reference to vegetation and landforms.

Political

Political maps show countries, provinces, counties and other political borders. Most globes show the political boundaries of the world.

Street

Street maps are designed to help commuters and tourists locate key sites such as roads and highways, police stations, fire halls, hospitals, schools, parks and more within a metropolitan area (eg, town, city).

Road

Road maps are designed to show the roads and highways over a large area like a province or territory. They show how to travel between cities, towns, parks, etc.

Statistical

Statistical maps show statistical information such as the production levels of crops or minerals across a country.

Relief

Relief maps are a three-dimensional representation, usually of terrain. The terrain elevation is usually exaggerated by a factor between five and ten. This helps to visually recognize the terrain features.

Outline

Outline maps show large areas with only borders, and coastlines showing. They normally have a high map scale (eg, 1 : 10 000 000).

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Air Photo

Air photo maps are actual pictures used in reconnaissance or to create many of the maps listed. They are the most accurate in that they show the actual area. Satellites pictures now represent the next level of air photo maps with the ability to zoom in on almost any area in the world.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. What is the main type of map used by cadets for ground navigation?

Q2. To travel from one city to another, what type of map is best?

Q3. Most maps are flat (two dimensional). What type discussed is not?

ANTICIPATED ANSWERS

A1. Topographical maps.

A2. A road map.

A3. Relief maps.

Teaching point 3 **Describe How to Care for a Topographical Map**

Time: 5 min Method: Interactive Lecture

HOW TO CARE FOR A TOPOGRAPHICAL MAP

Some maps produced are already waterproofed, however, most maps are not. Paper maps are expensive and may be easily damaged. Precautions must be taken to protect them from water, dirt and wind. Maps, when exposed to water, will become soggy, start to deteriorate and become very easy to tear.

Waterproofing the Map

Preparing a map for exposure to the elements is a vital step in prolonging the life of the map. Ways to prepare a map for waterproofing include:

- **Resealable Plastic Bag Method.** This method requires a large heavyweight resealable clear plastic bag and waterproof tape (eg, clear packing tape). Place the folded map into the bag with one edge at the sealed opening and an adjacent edge along one of the two sides of the bag. Cut enough tape to completely adhere to one edge of the bag from corner to corner. Stick one half of the tape along one edge of the bag that overhangs the map, from corner to corner. Flip the bag over (on to the side of the map that is not being used) and fold the tape down on itself and the other side of the bag. Fold the empty portion of the bag over the backside of the map and tape it down.
- **Contact Paper.** Sometimes called Map Tac, this is a clear plastic that has an adhesive on one side. Covering the map with contact paper will waterproof the map; however, it will become very stiff. A wet-erase marker or grease pencil will be required to write on the map. Use rubbing alcohol to remove permanent marker.
- **Chemical Coatings.** Chemical coatings are effective in waterproofing maps; however, they must be applied carefully in a well-ventilated area. They are sprayed or brushed onto the map. The coating must be allowed to fully dry before using the map.

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Drying Technique

If a map gets wet, carefully open it fully and let it dry completely on a flat clean surface. If it dries when it is folded, it may stick together, ruining the map.

Only Partially Opening in a Strong Wind

A map should never be fully opened in a strong wind. It should be opened to the area being used, and refolded along the original fold lines.

Using Pencil and Erasing When Work is Complete

Use only pencil to mark your maps and erase all markings gently. Maps that are protected by plastic can be marked using wet-erase markers or grease pencils.

Storing the Map

Maps should be stored in a dry place, rolled, folded, or laid flat.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. Name the three types of waterproofing techniques discussed.

Q2. How should a map be handled in a strong wind?

Q3. Where should maps be stored?

ANTICIPATED ANSWERS

A1. Resealable plastic bag method, contact paper, and chemical coatings.

A2. It should be opened to the area being used, and refolded along the original fold lines.

A3. Maps should be stored in a dry place.

Teaching point 4 — **Explain, Demonstrate, and Have Cadets Practice Folding a Map**

Time: 10 min — Method: Demonstration and Performance



For this skill lesson, it is recommended that the instruction take the following format:

(1) Explain and demonstrate folding the map.

(2) Explain and demonstrate each step required to complete the skill. Monitor cadets as they imitate each step.

(3) Monitor the cadets' performance as they practice the complete skill.

The cadets will use Annex E as their map. This annex also shows the steps in pictorial format.

Note: Assistant instructors may be used to monitor the cadets' performance.

The steps to fold a map:

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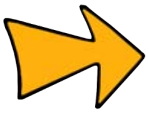
Lay map face up (north at the top), fold map in half by bringing the top of the map sheet down to the bottom of the map sheet.

Fold the top half of the map sheet up in half again, then turn the map over and fold the bottom half to match the top half.

Fold the ends of the map in half from left to right.

Fold each of the open ends back into half again so that the map name and index to adjacent map sheet appears on the outside.



If the map is folded correctly, it should now open like an accordion in the shape of an M with the map name visible on top.

CONFIRMATION OF TEACHING POINT 4

The cadets' participation in folding a map will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

QUESTIONS

Q1. A map is usually drawn to scale. What does this mean?

Q2. What type of map should be used to travel from the Same City Museum to the Same City Zoo?

Q3. If the map is folded correctly, how should it now look?

ANTICIPATED ANSWERS

A1. A map is a proportionately smaller representation of the area depicted.

A2. A street map.

A3. The map should now open like an accordion in the shape of an M with the map name visible on top.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

CLOSING STATEMENT

It is important for cadets to understand the types of maps in order to choose the appropriate map.

INSTRUCTOR NOTES/REMARKS

The following types of maps are the minimum required to instruct this lesson:

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- topographical,
- orienteering,
- street, and
- road.

REFERENCES

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C0-007 (ISBN 0-02-029265-1) Kjellstrom, B. (1994). *Be Expert With Map and Compass: The Complete Orienteering Handbook*. New York, NY: Hungry Minds, Inc.

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