EO M122.05 – DETERMINE A GRID REFERENCE

1. **Performance:** Determine a Grid Reference

2. **Conditions:**

   a. Given:

      (1) Topographical / military maps,

      (2) Supervision, and

      (3) Assistance as required.

   b. Denied: Nil.

   c. Environmental: Classroom or training area large enough to accommodate the entire group during map work.

3. **Standard:** The cadet shall determine four and six figure grid references (GR) (within the correct grid, and to 100 metres accuracy, respectively), for a series of features on a topographical map.

4. **Teaching Points:**

TP	Description	Method	Time	Refs
TP1	Explain the use of grid lines and the difference between eastings and northings, to include: a. eastings are a series of parallel lines plotted as an overlay to the map sheet, which are drawn from top to bottom and numbered sequentially from west to east; and b. northings are a series of parallel lines plotted as an overlay to the map sheet, which are drawn from left to right and numbered sequentially from south to north.	Interactive Lecture	5 min	A2-004 (Ch 6, art 601)
TP2	Explain, demonstrate, and have the cadets practise determining a four-figure grid reference, to include: a. four-figure GRs have four numerical digits; b. the numbers are listed by recording the two-digit easting followed by the two-digit northing; and c. the grid lines that intersect in the bottom left corner of the grid square in question identify the grid square.	Demonstration and Performance	10 min	A2-004 (Ch 6, art 602)
TP3	Explain, demonstrate and have the cadets practise estimating a six-figure GR, to include: a. using an imaginary grid system (an overlay to divide a grid square into 100 equal sized smaller grid squares with 10 along the bottom edge and 10 along the side edge).	Demonstration and Performance	10 min	A2-004 (Ch 6, art 603 - 606)

Unofficial convenience copy of A-CR-CCP-701/PG-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PG-001/A-CR-CCP-701-PG-001.pdf.
Verify against the official publication.

TP	Description	Method	Time	Refs
	b. explaining grid reference accuracy, to include: 1. a four-figure GR is accurate to 1000 m (1 km), and 2. a more accurate GR is a six-figure grid reference, which is accurate to 100 m.			
TP4	Explain, demonstrate, and have the cadets construct a romer for use in determining six-figure GRs, to include: a. defining romer as a device used for measuring, instead of estimating, a point within a grid square. b. identifying the types of romers available for use and where to find them, to include: 1. compass, 2. protractor, and 3. constructed. c. constructing a romer by: 1. fetching a blank piece of paper with a square edge; 2. placing one side of the square edge along the hundred metre scale bars and marking off the one hundred metre segments beginning at the corner of the paper and working outward; 3. numbering these markings from zero (at the corner of the paper) to ten; and 4. repeating steps (2) and (3) for the adjacent edge.	Demonstration and Performance	10 min	A2-004 (Ch 6, art 610)

Unofficial convenience copy of A-CR-CCP-701/PG-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PG-001/A-CR-CCP-701-PG-001.pdf.
Verify against the official publication.

TP	Description	Method	Time	Refs
TP5	Explain, demonstrate, and have cadets practise determining a six-figure GR using a constructed romer, to include: a. placing the corner of the constructed romer on the conventional sign or location; b. determining the 4 figure GR (those are the first, second, fourth and fifth number of the 6 figure GR); c. reading the value along the X Axis of the romer where it crosses the easting on the map sheet (this is the third number of the 6 figure GR); and d. reading the value along the Y Axis of the romer where it crosses the northing on the map sheet (this is the sixth number of the 6 figure GR). **Note**: If the values read in d. and e. are between two numbers, it is necessary to round down to the nearest number.	Demonstration and Performance	15 min	A2-004 (Ch 6, art 610)

5. **Time:**

a.	Introduction / Conclusion:	10 min
b.	Interactive Lecture:	5 min
c.	Demonstration and Performance:	45 min
d.	Total:	60 min

6. **Substantiation:**

   a. An interactive lecture was chosen for TP 1 to orient the cadets to grid lines and to the difference between eastings and northings.

   b. A demonstration and performance was chosen for TPs 2 to 5 as it allows the instructor to explain and demonstrate how to determine 4 and 6 figure GR while providing an opportunity for the cadets to practice those skills.

7. **References:** A2-004 B-GL-382-005-FP-001 Canadian Forces. (1976). *Maps, fields, sketching, and compasses* (Vol. 8). Ottawa, ON: The Department of National Defence.

8. **Training Aids:**

   a. Presentation aids (i.e., whiteboard / flipchart / OHP) appropriate for classroom / training area,

   b. Topographical / military maps,

   c. Compass with romer, and

   d. Example of constructed romer.

9. **Learning Aids:**

   a. Topographical / military maps (one per two cadets), and

Unofficial convenience copy of A-CR-CCP-701/PG-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PG-001/A-CR-CCP-701-PG-001.pdf.
Verify against the official publication.

b. Materials for the construction of a romer.

10. **Test Details:** Nil.

11. **Remarks:** Cadets are to be provided with adequate time during field training exercises to practise this skill (ex. during a day hike).

Unofficial convenience copy of A-CR-CCP-701/PG-001, cached 2026-11-08 from https://app.cadets.gc.ca/cadet-publications/A-CR-CCP-701-PG-001/A-CR-CCP-701-PG-001.pdf.
Verify against the official publication.