

# Mathematics

Part C  
Student Booklet

1a

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Elevens namn och klass/grupp

## Instructions – Part C

**Time for the test** 90 minutes for Part B and Part C. You will get both parts at the same time. We recommend that you use no more than 45 minutes for work on Part B. When you have handed in your answers to Part B you may start using digital devices.

**Aids** Allowed aids on Part C are digital devices, formula sheet and ruler.

**Tasks** This part consists of one large task. In your work it is required of you to:

- show your solutions
- explain/motivate your thinking
- draw figures when required.

**Grading limits** The test (Part A–D) gives a total maximum of 85 points.

*Lower limit for test grade*

E: At least 21 points.

D: At least 34 points of which at least 10 points at level C or higher.

C: At least 44 points of which at least 18 points at level C or higher.

B: At least 55 points of which at least 5 points at level A.

A: At least 65 points of which at least 9 points at level A.

Name: \_\_\_\_\_

Date of birth: \_\_\_\_\_

Secondary program: \_\_\_\_\_

## Part C

### 14. Ant walk

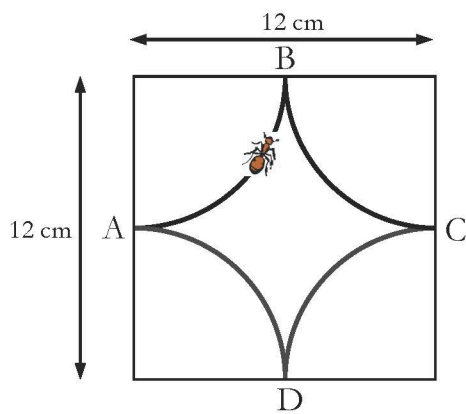


Figure 1

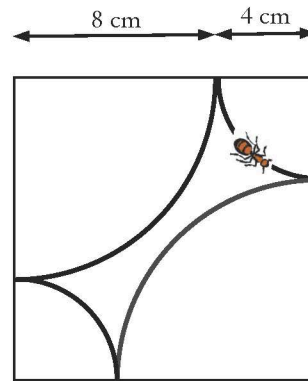
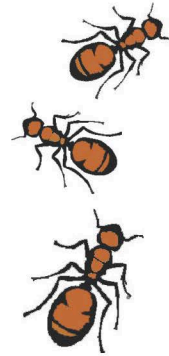


Figure 2



- I. Four circle arcs of the same radius are drawn in a square with a side of 12 cm (see figure 1). The centres of the circle arcs are on the vertices of the square. An ant walks along the circle arcs. It starts at A and walks to B and on to C and D and then to A again. How far has the ant then walked?
- II. Four other circle arcs, two with a radius of 4 cm and two with a radius of 8 cm, are drawn in another square with a side of 12 cm (see figure 2). The ant takes a walk along all four circle arcs. Show that this walk is the same length as the walk the ant took in figure 1.
- III. The radii of circle arcs can have many different values in squares with a side of 12 cm. Show that the ant's walk is always the same length.
- IV. If the ant is not allowed to cross its own path, the radii of the circle arcs may not have any arbitrary values. Investigate what radii are possible in this case.

(3/4/5)

*In assessing your work the teacher will take account of*

- what mathematical knowledge you have shown and how well you have carried out the task
- how well you have explained your work and given reasons for your conclusions
- how well you have presented your work.

