

Mathematics

Delprov C

Årskurs

9

Elevens namn och klass/grupp

Instructions – Part C

The box beneath the task contains a description of what your teacher will consider when assessing your work.

It is very important that you clearly show how you have solved the tasks.

Aids: Calculator and formula sheet.

Solutions and answers must be written on a separate sheet of paper, not in the test booklet. The test booklet is to be handed in along with your solutions.

Name: _____

School: _____ Class: _____

Date of birth (year/month/day): _____

Good luck!

Illustrations: Jens Ahlbom

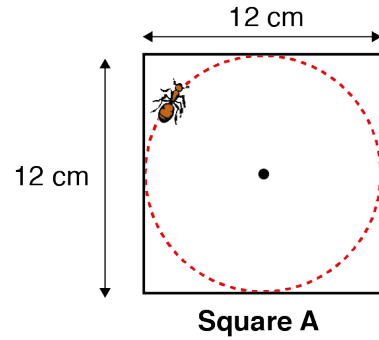
17. The ant's walk

(4/4/4)

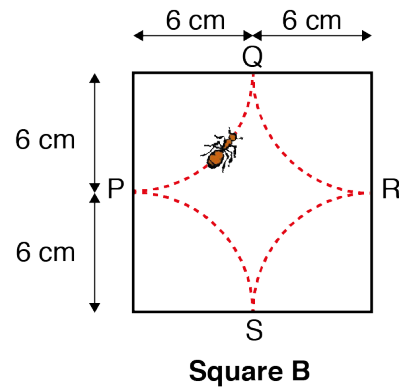
This task relates to the length an ant walks. The ant walks along an arc, and always moves from side to side in a square, along the dotted line.

The figures are not drawn to scale.

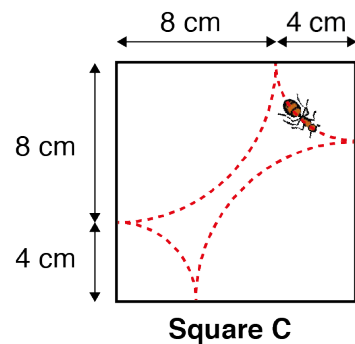
- a) Square A has sides measuring 12 cm. A circle measuring 12 cm in diameter is drawn inside this square. The ant walks all the way around the circle. How far has the ant walked?



- b) Square B has sides measuring 12 cm. Four arcs with the same radius are drawn inside this square. The centre of these arcs lie in the corners of the square. The ant is walking along the arcs. It begins at point P and walks to Q and then on to R and S and then to P again. Compare the length of the ant's walk in square B to the walk in square A. Explain your result.

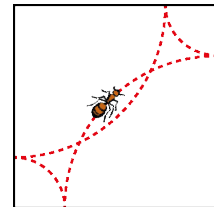


- c) Square C has sides measuring 12 cm. Four other arcs are drawn inside this square, two with a radius of 4 cm and two with a radius of 8 cm. The ant takes a walk along all four arches. Compare the length of the ant's walk in square C to the walk in square B. Explain your result.



d) Arcs that are drawn as explained in task b and c can have many different radiuses in squares with sides measuring 12 cm. Show that the ant's walk will always be the same length if it walks along all the arcs.

e) If the ant is not allowed to cross its own path, then the radiuses of the arcs cannot be just any length. Examine which radiuses are possible in a square with sides measuring 12 cm.



In this case, the ant has crossed its own path. It is not allowed to do that.

When assessing your work, the teacher will consider

- what mathematical knowledge you have shown, and how well you have completed the task
- how well you have shown your work
- how well you have motivated your answers.

