Testing and debugging algorithms

Learn and practise | Free preview

A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

• Trace algorithms and use test cases to find and correct errors.

• Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

An algorithm needs clear inputs, ordered operations and outputs. A trace table records intermediate values so errors can be located.

Test normal cases, boundary cases and unusual valid inputs. A test that happens to work does not prove an algorithm is correct for every input.

Worked example

An area algorithm outputs length+width for a rectangle. Test 8 and 3, then fix it.

The algorithm outputs 11.

Rectangle area should 8×3=24; replace addition with multiplication.

Answer: Output length×width

Try it yourself

Name: _____ Date: _____

1. Trace: start n=5; n=n+3; n=2n. Find output.

2. A mean algorithm uses sum/(count -1). Test data 2,4,6 and repair it.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 16

5→8→16.

2. Wrong 6; correct 4 using sum/count

12/3=4.

Curriculum reference: VC2M8A04

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