# Higher Check In - 6.05 Language of functions

1. Fill in the empty box in this function machine.

22





16

1. Fill in the empty boxes in the function machine below to show the function .

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1. Write the equation for the function given by this function machine.

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1. Write down the inverse function of .
2. Function 1 is given by  and Function 2 is given by . Use the diagram below to work out the output when the input is 5.

5

Function 1

Function 2

1. A function is given by the first function machine below. Use the blank function machine below to show that the inverse function is given by .







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1. Function 1 is given by  and Function 2 is given by .

Show that the composite function, ‘Function 1 followed by Function 2’ is different to the composite function, ‘Function 2 followed by Function 1’.

1. Function 1 is given by  and Function 2 is given by .

Show that the equation for the composite function formed by Function 1 followed by Function 2 is the same as .

1. Work out Function 1 for the composite function below given that the composite function, ‘Function 1 followed by Function 2’, is given by .

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Function 1





1. Function 1 is given by  and Function 2 is given by .

A composite function is produced by applying Function 1 followed by Function 2.

Work out an equation for the inverse of this composite function.

**Extension**

Write function machines to change the following:

1. km/h into m/s,
2. miles per gallon into kilometres per litre,

(Hint: use 5 miles = 8 kilometres and 1 gallon = 4.5 litres)

1. g/cm3  into kg/m3.

Answers

1. + 130

square

**

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1. 
2. 
3. 13

**

**







1. Function 1 followed by Function 2 is given by .

Function 2 followed by Function 1 is given by .

 so they will give different outputs for all values of *x* oe.

1. 





1. 
2.  simplifies to . The inverse function is given by .

**Extension**













m/s

km/h



miles per gallon



kilometres per litre



kg/m3





g/cm3

(Note: 1 m3 = 1 000 000 cm3)

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| **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |  | **Assessment Objective** | **Qu.** | **Topic** | **R** | **A** | **G** |
| AO1 | 1 | Find a missing operation in a function machine |  |  |  |  | AO1 | 1 | Find a missing operation in a function machine |  |  |  |
| AO1 | 2 | Complete a function machine for an equation |  |  |  |  | AO1 | 2 | Complete a function machine for an equation |  |  |  |
| AO1 | 3 | Write an equation for a function machine |  |  |  |  | AO1 | 3 | Write an equation for a function machine |  |  |  |
| AO1 | 4 | Write down an inverse function |  |  |  |  | AO1 | 4 | Write down an inverse function |  |  |  |
| AO1 | 5 | Find the output of a composite function |  |  |  |  | AO1 | 5 | Find the output of a composite function |  |  |  |
| AO2 | 6 | Complete a function machine for an inverse function |  |  |  |  | AO2 | 6 | Complete a function machine for an inverse function |  |  |  |
| AO2 | 7 | Express a composite function as an equation, and understand the order of operations |  |  |  |  | AO2 | 7 | Express a composite function as an equation, and understand the order of operations |  |  |  |
| AO2 | 8 | Express a composite function as an equation, and simplify |  |  |  |  | AO2 | 8 | Express a composite function as an equation, and simplify |  |  |  |
| AO3 | 9 | Solve a problem involving a composite function |  |  |  |  | AO3 | 9 | Solve a problem involving a composite function |  |  |  |
| AO3 | 10 | Write the inverse of a composite function |  |  |  |  | AO3 | 10 | Write the inverse of a composite function |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| AO2 | 6 | Complete a function machine for an inverse function |  |  |  |  | AO2 | 6 | Complete a function machine for an inverse function |  |  |  |
| AO2 | 7 | Express a composite function as an equation, and understand the order of operations |  |  |  |  | AO2 | 7 | Express a composite function as an equation, and understand the order of operations |  |  |  |
| AO2 | 8 | Express a composite function as an equation, and simplify |  |  |  |  | AO2 | 8 | Express a composite function as an equation, and simplify |  |  |  |
| AO3 | 9 | Solve a problem involving a composite function |  |  |  |  | AO3 | 9 | Solve a problem involving a composite function |  |  |  |
| AO3 | 10 | Write the inverse of a composite function |  |  |  |  | AO3 | 10 | Write the inverse of a composite function |  |  |  |