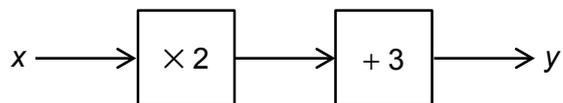
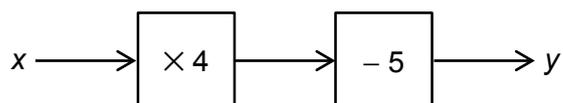


Topic Check In - 6.05 Language of functions

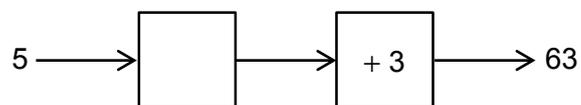
1. Use the function machine to find the value of y when $x = 4$.



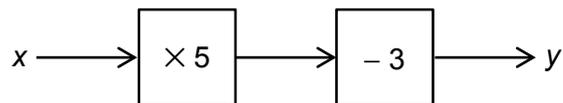
2. Use the function machine to find the value of y when $x = -3$.



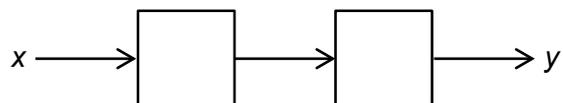
3. Complete the empty box in the function machine below.



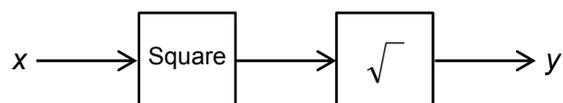
4. Find a formula for y in terms of x for this function machine.



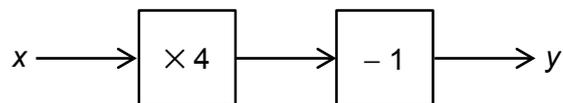
5. Complete the boxes to make the formula $y = 3(x - 1)$.



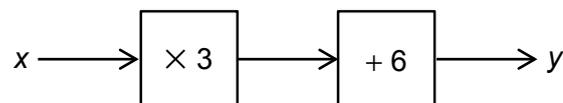
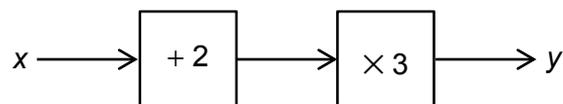
6. Explain why the value of y is always the same as the value of x for this function machine.



7. Jane says that if you double the value of x you double the value of y when using this function machine. Show that Jane is wrong.



8. Explain why for any value of x both function machines give the same value of y .

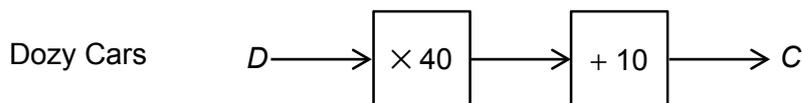
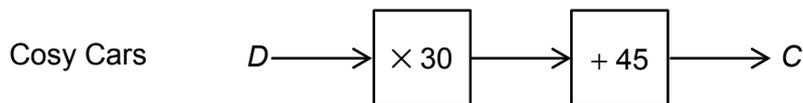


9. An approximate rule for changing from degrees Celsius (C) to degrees Fahrenheit (F) is:

Double C and add 30.

Draw a function machine to convert degrees Fahrenheit (F) to degrees Celsius (C).

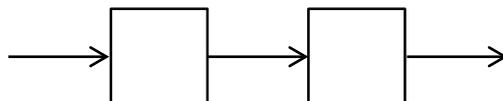
10. Tom has the choice of renting a car from either the Cosy Car Company or the Dozy Car Company. The function machines below show how total cost (C) is calculated based upon the number of rental days (D). Use the information to explain when it would be better to rent a car from the Cosy Car Company.



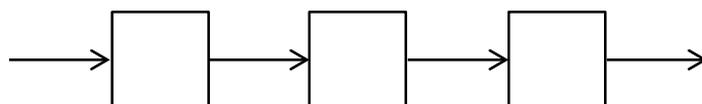
Extension

When the numbers 2, 3, 4, 5 are inputs, the outputs are 3, 9, 15, 21.

- a) Create a 2-step function machine for these inputs and outputs.



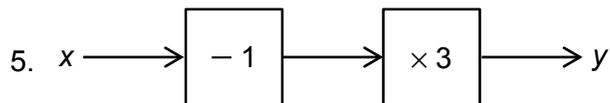
- b) Create a 3-step function machine for these inputs and outputs.



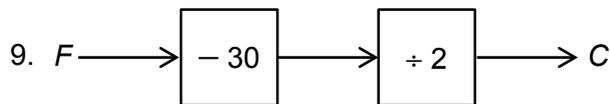
GCSE (9-1) MATHEMATICS

Answers

1. 11
2. -17
3. $\times 12$
4. $y = 5x - 3$



6. Square and $\sqrt{\quad}$ are inverse (accept opposite) operations.
7. Choose an appropriate x value and its double. Show that these two inputs do not result in outputs that are different by a multiple of 2.
e.g. $x = 3$ gives $y = 11$, but $x = 6$ gives $y = 23$.
 $2 \times 11 = 22$ not 23.
8. First formula is $y = 3(x + 2) = 3x + 6$.
Second formula is $y = 3x + 6$.



10. Results table or equivalent method.

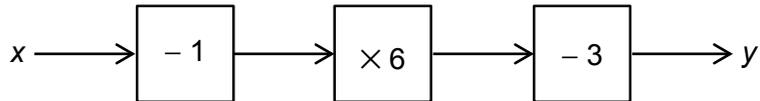
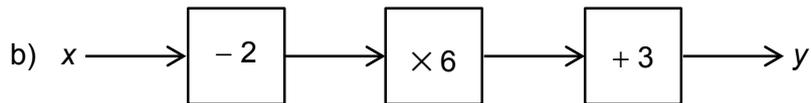
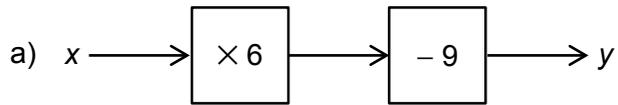
Days	1	2	3	4	5	6
Cosy	75	105	135	165	195	225
Dozy	50	90	130	170	210	250

Tom should rent his car from the Cosy Car Company if he wants a car for four or more days.



GCSE (9-1) MATHEMATICS

Extension



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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Use a function machine with positive numbers.			
AO1	2	Use a function machine with negative numbers.			
AO1	3	Find a missing operation in a function machine.			
AO1	4	Derive a formula from a function machine.			
AO1	5	Apply a formula to a function machine.			
AO2	6	Understand inverse operations.			
AO2	7	Understand order of operations in function machines.			
AO2	8	Understand order of operations in function machines.			
AO3	9	Translate a problem in words to a function machine.			
AO3	10	Solve a problem using function machines.			

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