National Curriculum Objectives:

Mathematics Year 6: (6A1) Express missing number problems algebraically
Mathematics Year 6: (6A2) Use simple formulae

Differentiation:

Questions 1, 4 and 7 (Varied Fluency)
Developing Circle the correct function to complete the function machines. Use of whole numbers.
Expected Circle the correct function to complete the function machines. Use of all four operations where an input or output may be a decimal number, or a negative number.
Greater Depth Circle the correct function to complete the function machines. Use of all four operations where an input or output may be a decimal number, a fraction, or a negative number. Functions may also include decimal numbers.

Questions 2, 5 and 8 (Varied Fluency)
Developing Find the missing functions in the function machines. Use of whole numbers.
Expected Find the missing functions in the function machines. Use of all four operations where an input or output may be a decimal number, or a negative number.
Greater Depth Find the missing functions in the function machines. Use of all four operations where an input or output may be a decimal number, a fraction, or a negative number. Functions may also include decimal numbers.

Questions 3, 6 and 9 (Application and Reasoning)
Developing Decide who is correct and explain why. Use of whole numbers.
Expected Decide who is correct and explain why. Use of all four operations where an input or output may be a decimal number, or a negative number.
Greater Depth Decide who is correct and explain why. Use of all four operations where an input or output may be a decimal number, a fraction, or a negative number. Functions may also include decimal numbers.

More Year 6 Algebra resources.

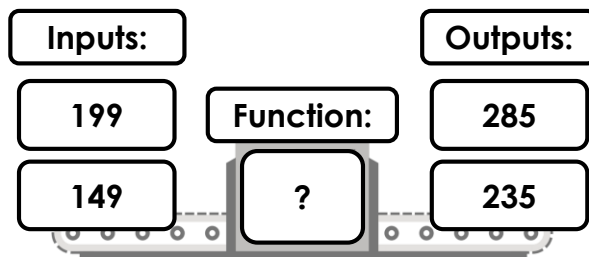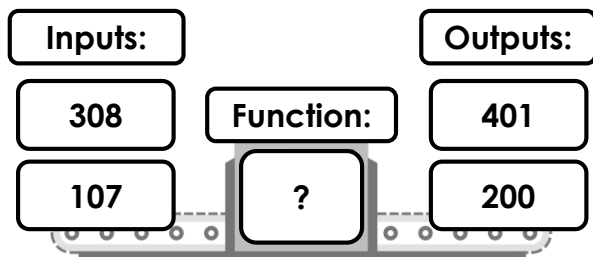Did you like this resource? Don't forget to review it on our website.

Find a Rule – One Step

1. Circle the correct function that will allow the inputs to be converted to the outputs below.
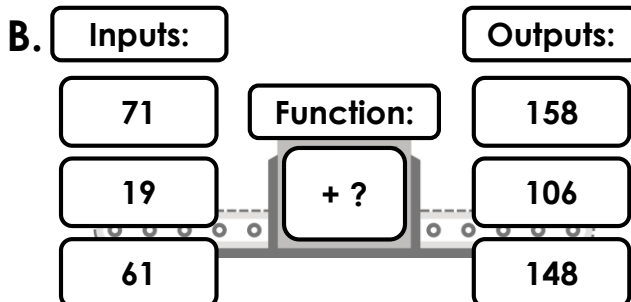
$$- 127 \qquad + 86 \qquad + 93$$
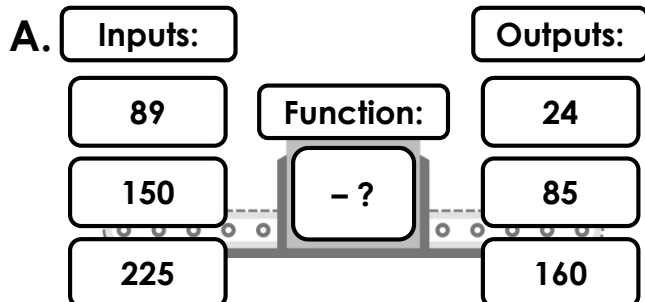
Inputs:	Function:	Outputs:
308		401
107	?	200

Inputs:	Function:	Outputs:
199		285
149	?	235

D

2. Find the missing functions in the function machines below.

A.

Inputs:	Function:	Outputs:
89		24
150	– ?	85
225		160

B.

Inputs:	Function:	Outputs:
71		158
19	+ ?	106
61		148

D

3. Bonnie and Tyler are discussing which function should be used in the function machine below. They want to create the biggest number possible.

Input:	Function:	Output:
19	?	?
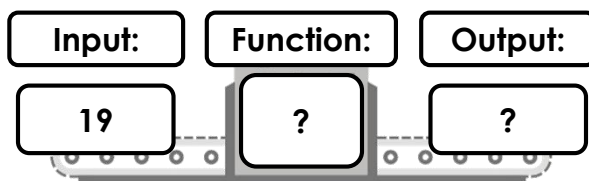
Bonnie: I think the function 'multiply 3' should be used.

Tyler: I think the function 'add 37' should be used.

Who do you agree with? Explain why.
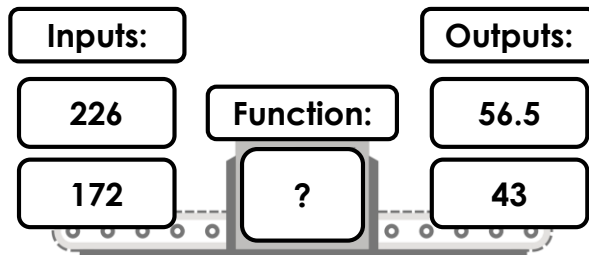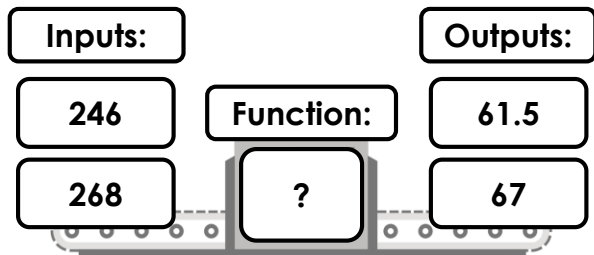
D

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Find a Rule – One Step

4. Circle the correct function that will allow the inputs to be converted to the outputs below.

$$- 108 \qquad \div 4 \qquad \div 6$$

Inputs:		Outputs:		Inputs:		Outputs:
246	Function:	61.5		226	Function:	56.5
268	?	67		172	?	43

E

VF
HW/Ext

5. Find the missing functions in the function machines below.

A.

Inputs:		Outputs:
52	Function:	416
101	x ?	808
91		728

B.

Inputs:		Outputs:
97	Function:	156
-5	+ ?	54
77		136

E

VF
HW/Ext

6. Billie and Joel are discussing which function should be used in the function machine below. They want to create the smallest number possible.

Input:	Function:	Output:
79.6	?	?

Billie: I think the function 'subtract 39.7' should be used.

Joel: I think the function 'divide by 2' should be used.

Who do you agree with? Explain why.

E

RPS
HW/Ext

Find a Rule – One Step

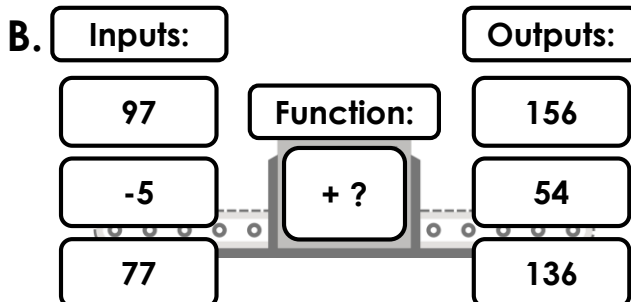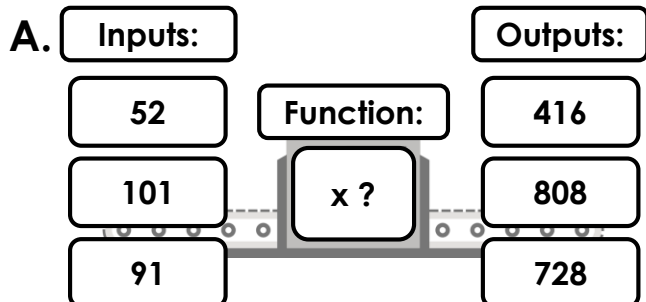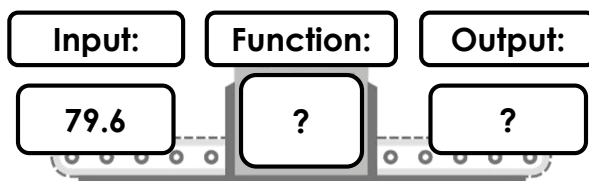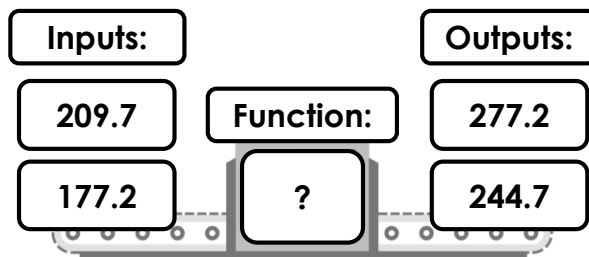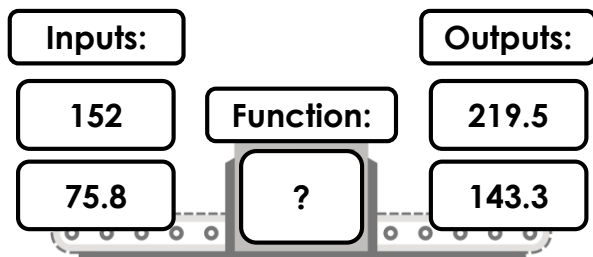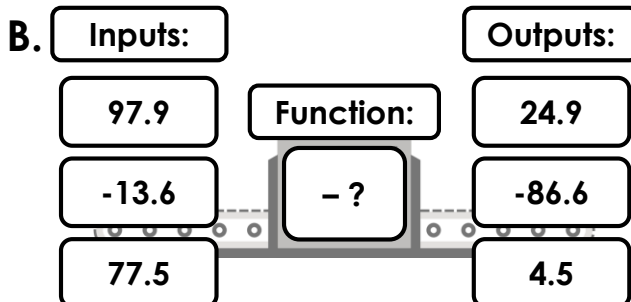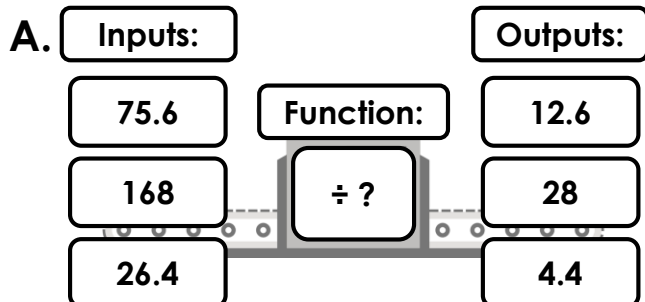7. Circle the correct function that will allow the inputs to be converted to the outputs below.

+ 65.5   **x 2**   **+ 67.5**

Inputs:		Outputs:
152	Function:	219.5
75.8	?	143.3

Inputs:		Outputs:
209.7	Function:	277.2
177.2	?	244.7

GD

8. Find the missing functions in the function machines below.

A.

Inputs:		Outputs:
75.6	Function:	12.6
168	÷ ?	28
26.4		4.4

B.

Inputs:		Outputs:
97.9	Function:	24.9
-13.6	– ?	-86.6
77.5		4.5

GD

9. Bob and Dylan are discussing which function should be used in the function machine below. They want to create the smallest number possible.

Input:	Function:	Output:
$\frac{2}{8}$	?	?
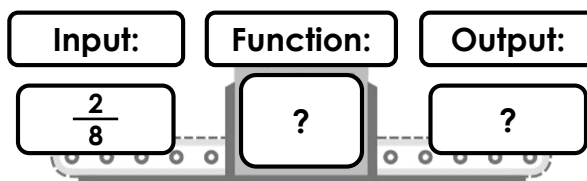
Bob: I think the function 'subtract 0.31' should be used.

Dylan: I think the function 'divide by 5' should be used.

Bob

Dylan

Who do you agree with? Explain why.

GD

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Homework/Extension – Find a Rule – One Step – Year 6 Greater Depth

Developing

1. **+ 93**
2. **A. – 65; B. + 87**
3. **Various answers, for example:**
Bonnie is correct. This is because 19 x 3 = 57, whereas 19 + 37 = 56, and 57 is bigger than 56.

Expected

4. **÷ 4**
5. **A. x 8; B. + 59**
6. **Various answers, for example:**
Joel is correct. This is because 79.6 ÷ 2 = 39.8, whereas 79.6 – 39.7 = 39.9, and 39.8 is smaller than 39.9.

Greater Depth

7. **+ 67.5**
8. **A. ÷ 6; B. – 73**
9. **Various answers, for example:**

Bob is correct. This is because $\frac{2}{8}$ is equal to 0.25 as a decimal, so 0.25 – 0.31 = -0.06, whereas 0.25 ÷ 5 = 0.05, and -0.06 is smaller than 0.05.

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