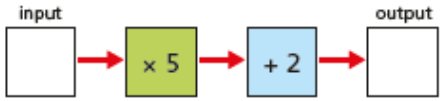
White Rose
Year 6 Activity Sheets

Monday – Lesson 1

Find a Rule

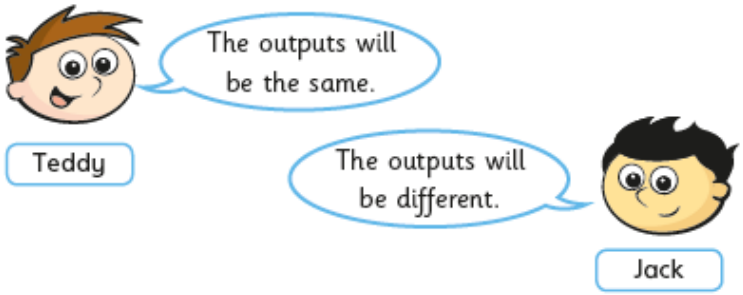
Find a rule – two step

1 Use the function machine to complete the table.



Input	1	2	3	5	10	50
Output						

2 Here is the same function machine with the steps in the reverse order.



Explain to a partner who you think is correct.

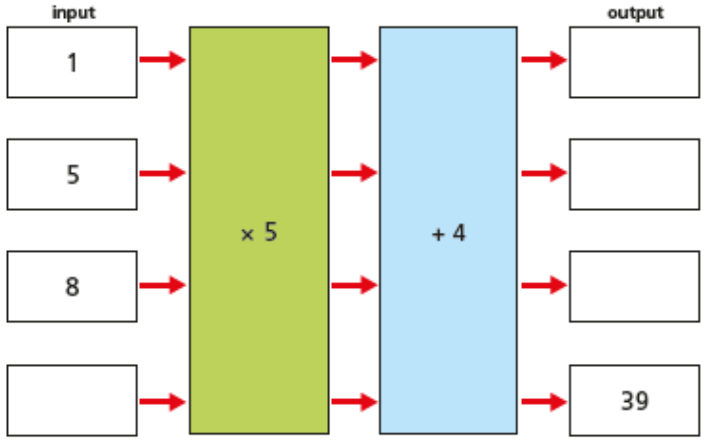
Use the function machine to complete the table.

Input	1	2	3	5	10	50
Output						

Who is correct? _____

3 Work out the missing outputs and inputs.

a)



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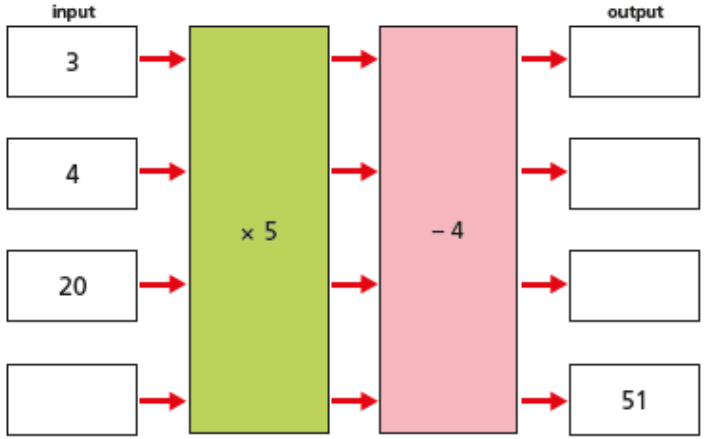

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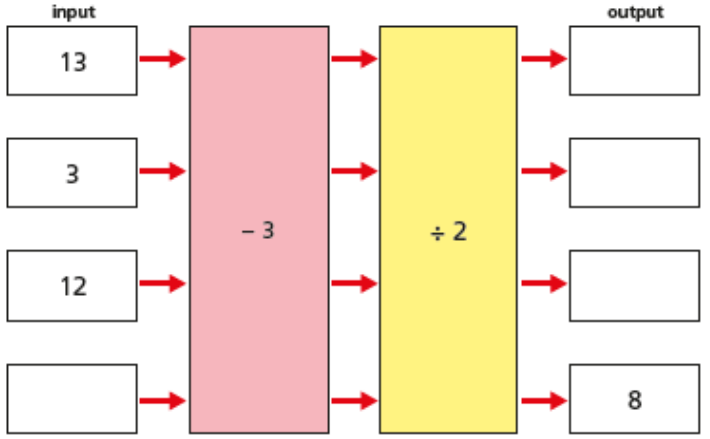
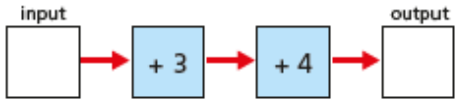


4 Tick the pairs of function machines that will give the same outputs for a given input.

a)



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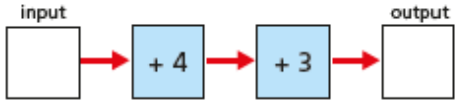

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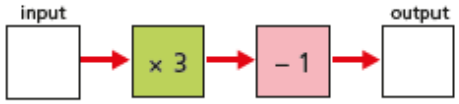

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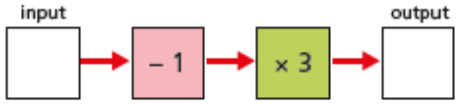

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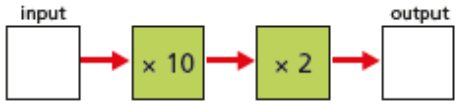

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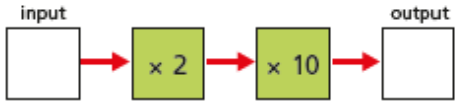


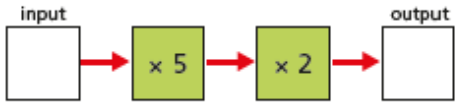
Explain your reasoning to a partner.

5 Here are some 2-step function machines.

For each machine, write a single step that would give the same output.

Check your answers by inputting values.

a)



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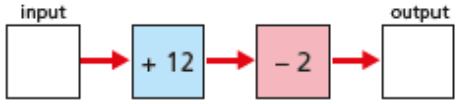
b)



_____

c)

_____

Can all 2-step function machines be written as a 1-step function machine?

Talk about it with a partner.

6 Here is a function machine.

a) Complete the table.

Input	10	3		
Output			40	280

b) Rosie puts a number into the machine and she gets out the same number.

Work out Rosie's number.

7 Mr Hall and Mrs Rose order some photos online.

a) Mr Hall orders 16 photos.

How much does he pay?

b) Mrs Rose pays £6.05

How many photos did she order?

Tuesday – Lesson 2

Forming Expressions

Forming expressions

1 Tommy uses multilink cubes to represent an unknown number and base ten ones to represent 1

 = x  = 1

Write algebraic expressions to describe the sets of cubes.

The first one has been done for you.

a)  $2x + 3$

b) 

c) 

d) 

e) 

f) 

g) 

h) 

2 Use Tommy's method to represent these expressions.

a) $x + 2$

b) $2x$

c) $3x + 1$

d) $x + 6$

Compare answers with a partner.

3 Use cubes to help you simplify the following expressions.

The first one has been done for you.

a) $2y + 5 + y$

 $3y + 5$

b) $3a + 2 + a + a$

c) $6p + 2 - 2p$

d) $m + 4 + 3m - 3$

4 Complete the function machines.

a)

input		output
2	→	6
7	→	11
y	→	

b)

input		output
2	→	4
5	→	10
y	→	

c)

input	output
6	3
12	9
y	

d)

input	output
30	3
50	5
y	

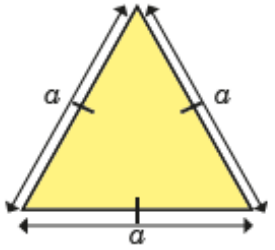
5 Match each statement to the equivalent algebraic expression.

Write the missing statements.

5 more than y	$2y$
y less than 5	$y - 5$
y multiplied by 5	$5 - y$
y divided by 5	$y + 5$
double y	$5y$
	y^2
	$\frac{y}{5}$

6 Write an algebraic expression to represent the perimeter of each shape.

a)



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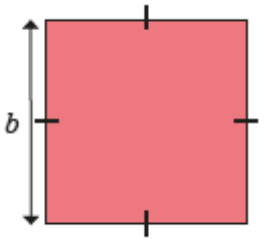
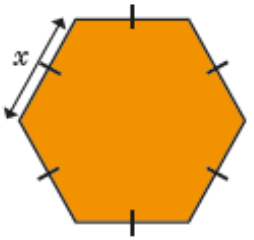


c)



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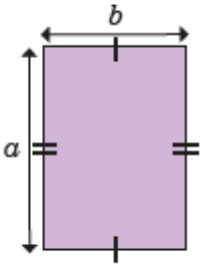

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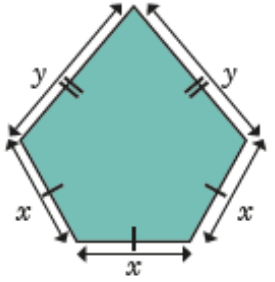
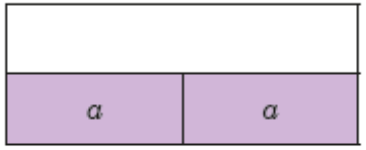


7 Complete the bar models.

a)



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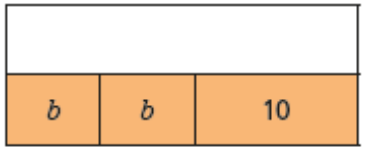
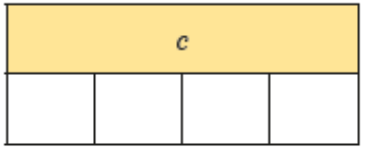


c)



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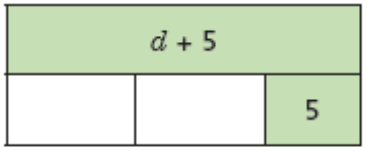
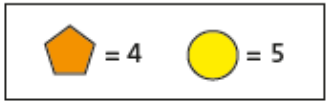


Wednesday – Lesson 3

Substitution

Substitution

1



Use the given facts to work out the calculations.

a) 

b) 

c) 

2

Use the given facts to work out the calculations.

a) 

b) 

c) Create your own calculation that will be equal to 22

3 If $x = 5$, write the values of the expressions in the corresponding grid.

The first one has been done for you.

$3x$	x^2	$2x - 5$
$4x + 2$	$\frac{x}{2}$	$2(x + 1)$
$7x$	$x + 9$	$x - 7$

15		

4 If $a = 10$ and $b = 6$, work out the values of the expressions.

a) $a + b =$ d) $2a + b =$

b) $a - b =$ e) $3a - 17 =$

c) $2a =$ f) $2(a - b) =$

5 If $m = \frac{4}{5}$ and $k = 0.1$, work out the value of $m + 2k$

6

It does not matter what p and q are, $p + q$ and $q + p$ will always give the same answer.

Mo

Do you agree with Mo? _____

Explain your answer.

_____

_____

_____

7

$m = 7 \quad n = 5$

Write >, < or = to compare the expressions.

a) $2m$ ◯ 10

b) $n - 1$ ◯ 5

c) $2n + m$ ◯ $2m + n$

d) $7n$ ◯ $5m$

8

$a = 10$

Write the expressions in order, starting with the smallest value.

$5a$	$a + 5$	$\frac{a}{5}$	a^2

9

$a = 15$

Write three different algebraic expressions that give a value of 40

_____ _____ _____

10 Complete the table.

x	$5x$	$5x - 1$
2		
10		
12		
	25	
		34
		99

Thursday – Lesson 4

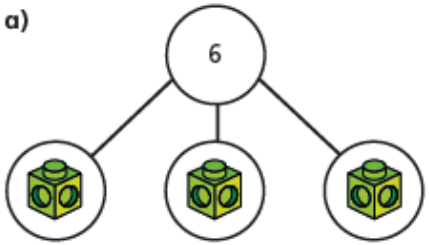
Solve simple one-step equations

Solve simple one-step equations

1 Write an equation for each part-whole model.

Work out the value of the multilink cube in each equation.

a)



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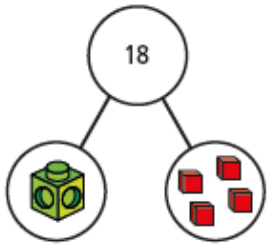
= ☐

b)



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= ☐

2 There are some counters under the cup.

There are 10 counters in total.

a) If c is the number of counters under the cup, explain why $c + 6 = 10$

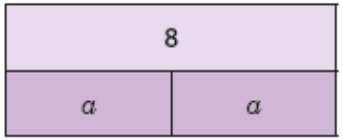
b) Work out the value of c. $c =$ ☐

c) How many counters are under the cup? ☐

3 Write algebraic equations to represent the bar models.

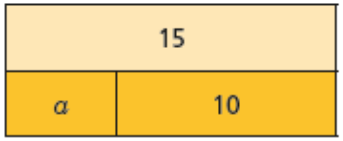
Find the value of a in each one.

a)



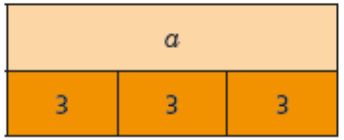
$a =$ ☐

b)



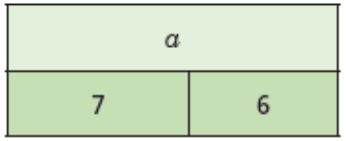
$a =$ ☐

c)



$a =$ ☐

d)



$a =$ ☐

4 Nijah is solving the equation $x - 8 = 20$

$x - 8 = 20$

$x = 20 - 8$

$x = 12$

What mistake has Nijah made?

_____

_____

5 Solve the equations.

a) $x + 7 = 20$

$x =$ ☐

b) $10y = 80$

$y =$ ☐

c) $4m = 22$

$m =$ ☐

d) $g - 3 = 15$

$g =$ ☐

e) $32 = t - 5$

$t =$ ☐

f) $\frac{u}{6} = 3$

$u =$ ☐

6 Filip thinks of a number.

He subtracts 5 from his number.

He ends up with 10

Write an algebraic equation to represent Filip's problem.

_____

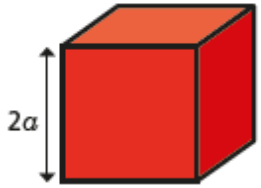
Solve the equation to work out his number.

☐

7 Dexter builds a tower.

Each block is $2a$ high.

He uses 7 blocks.



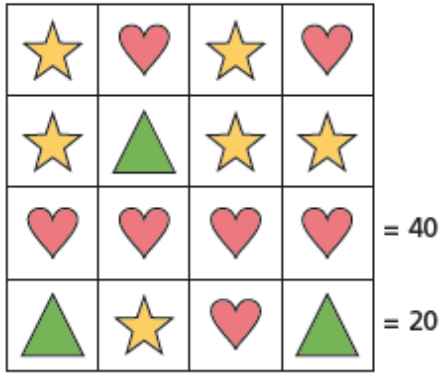
The total height of his tower is 42 cm.

Write an equation to represent the height of Dexter's tower and find the value of a.

$a =$ ☐ cm

8 Work out the value of each shape.

Write the equations that you solved to find the value of each shape.



♥ = ☐ ★ = ☐ ▲ = ☐

Work out the missing total of each row and column.

Compare answers with a partner.

Friday

Note to Parents:

The Friday Challenge will be made available on the White Rose Year 6 Home Learning page closer the time. 😊