



W.C. 8th June

<https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1>

Maths

Dear parents/carers, there is no expectation to complete all the work or print worksheets off - children can work on paper if they want to write it down.

Thanks for all your hard work.

Also there is work on **StudyLadder** that we know the children love to use. You can email us on s83year6@st-annes.solihull.sch.uk for the password if your child has forgotten their login.

Purple Mash Look out for the activities: Number sequences, number pattern rules and number patterns. Also the game 'Sequence Snake'.

There is a Fluent in 5 at the start of Monday to Thursday for the children to practise their arithmetic.

After watching the videos and having a go at the practice activities, have a go at these activities. Depending on your confidence choose Mild, Medium or Spicy.

Extensions – You may wish to deepen your learning by looking at the Collins Worksheets provided by the BBC too.



Monday

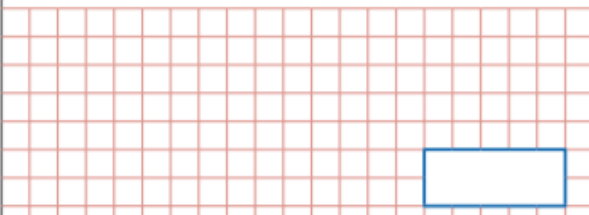
<https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1>

<https://whiterosemaths.com/homelearning/year-6/>

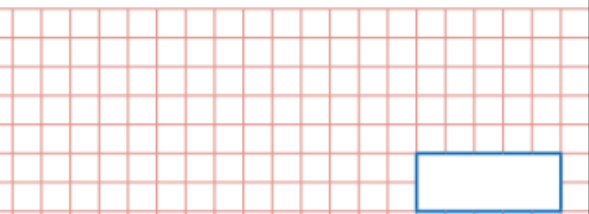
Finding a rule with one and two steps

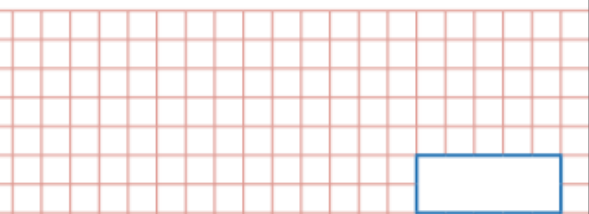
Fluent in 5

1	$3.43 \times 100 =$	
		
		1 mark

2	$1.32 \times 3 =$	
		
		1 mark

3	$\frac{3}{7} \text{ of } 28 =$	
		
		1 mark

4	$43 \times 21 =$	
		
		2 marks

5	$1,664 + 2,349 =$	
		
		1 mark

Key Vocabulary

Input – The original number that goes in to the function machine

Output – The number that comes out (answer) of the function machine once a calculation has been done

Function machine – Where a set rule is applied to an original number that then creates a new number e.g. $\times 4$

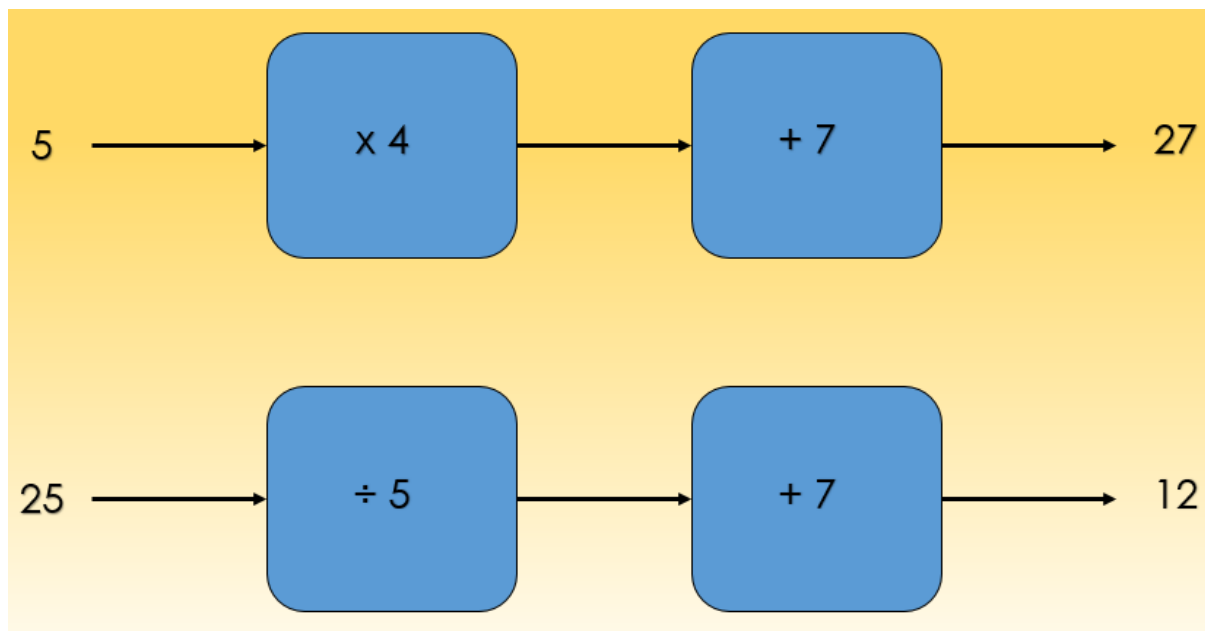
Inverse – Completing the opposite operation e.g. the inverse of addition is subtraction

Function Machine



Function Machine





Mild

Find a rule - one step

- 1 Whitney makes a pattern of triangles using sticks.

Complete the table below.



Number of triangles	1	2	3	4	5	10	
Number of sticks							90

- 2 Complete the tables.



To find the number of wheels, you multiply the number of bicycles by 2

a)

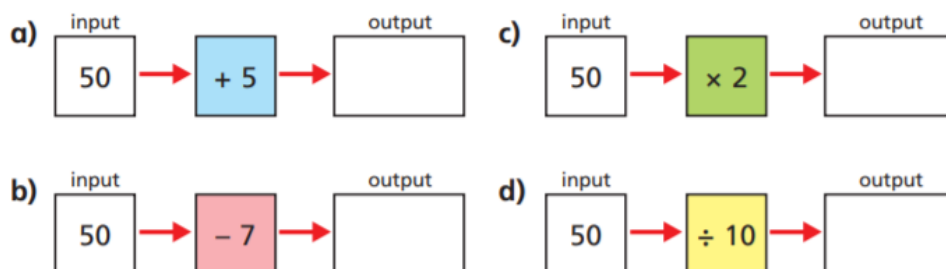
Number of bicycles	1	2	5			16
Number of wheels	2			18	24	

b)

Number of ants	1	2	5			16
Number of legs		12		18	24	

Explain how to find the number of legs.

- 3 Calculate the outputs for the function machines below.



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.



Teddy

The outputs will be the same.

The outputs will be different.



Jack

Who do you think is correct?

Use the function machine to complete the table.

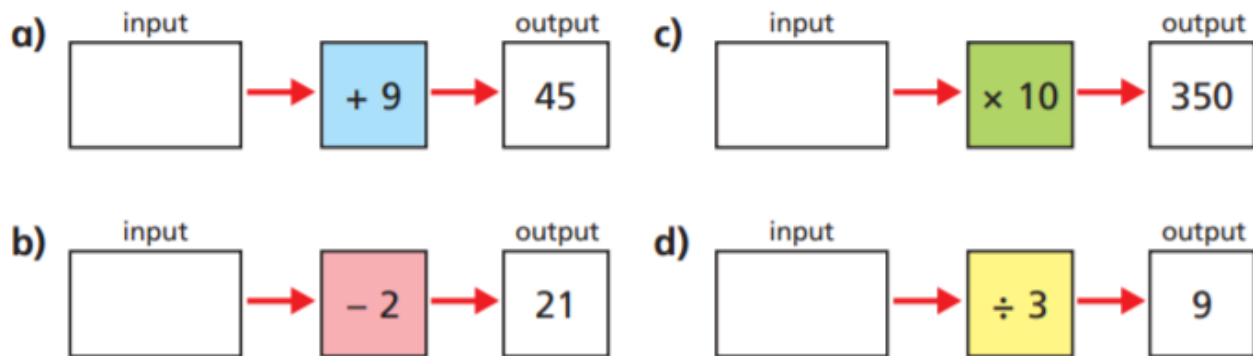
Input	1	2	3	5	10	50
Output						

Who is correct? _____

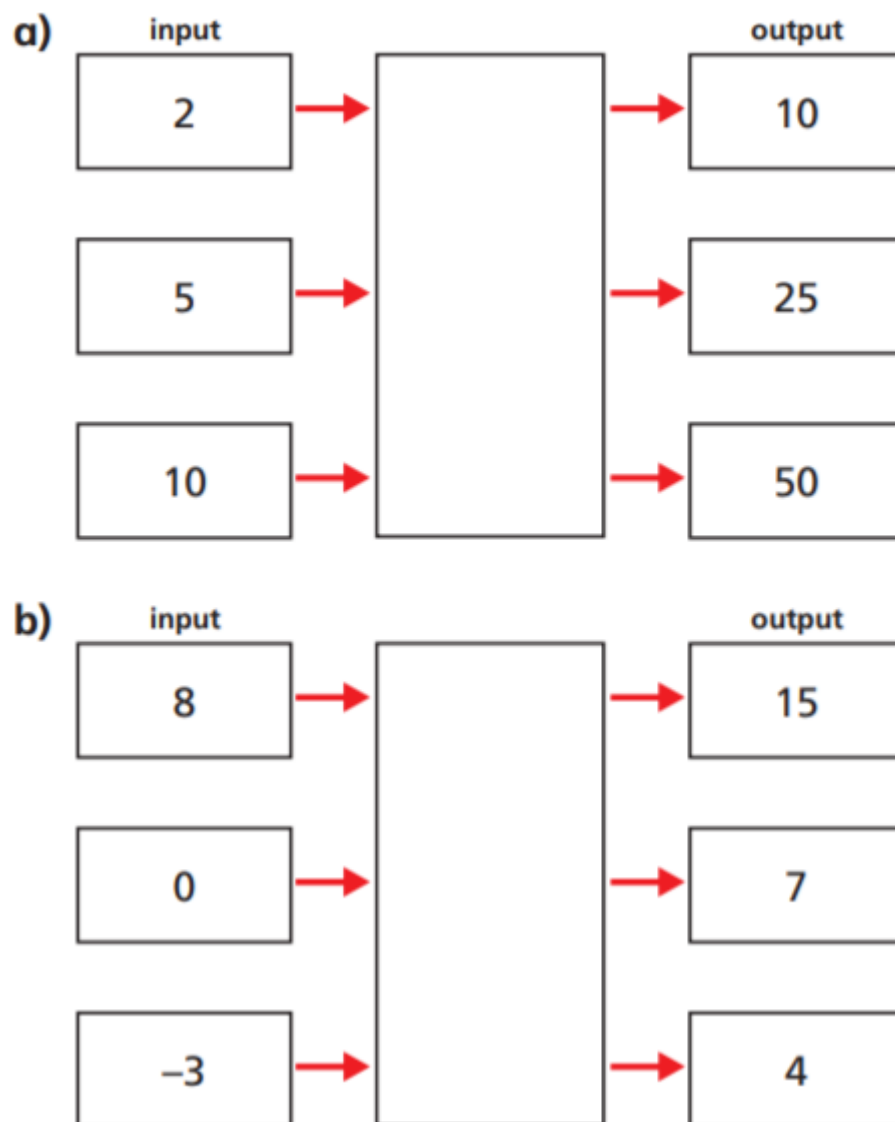
Medium

Find a rule - one step

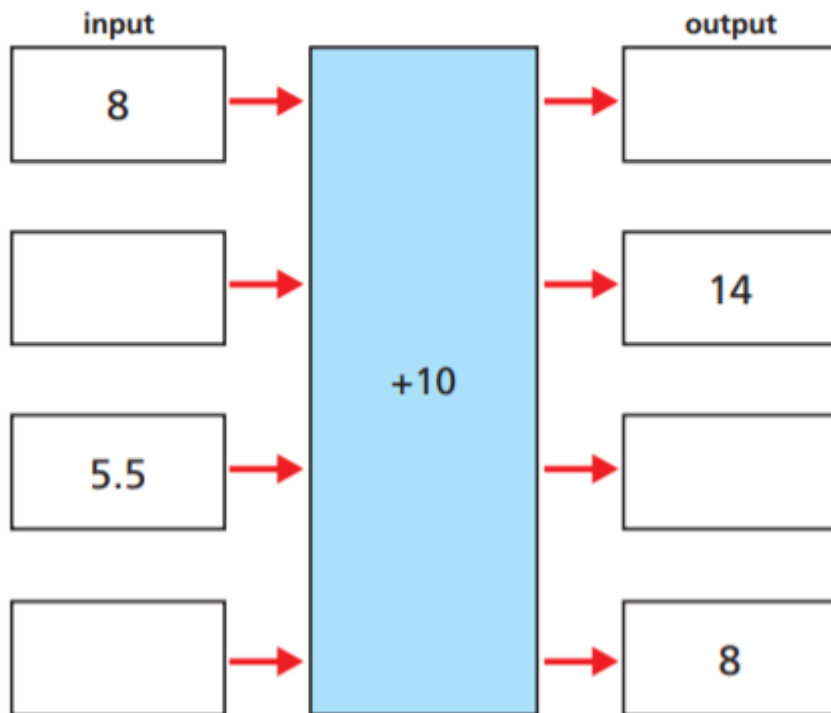
Calculate the inputs for the function machines.



Write the missing functions in the function machines.

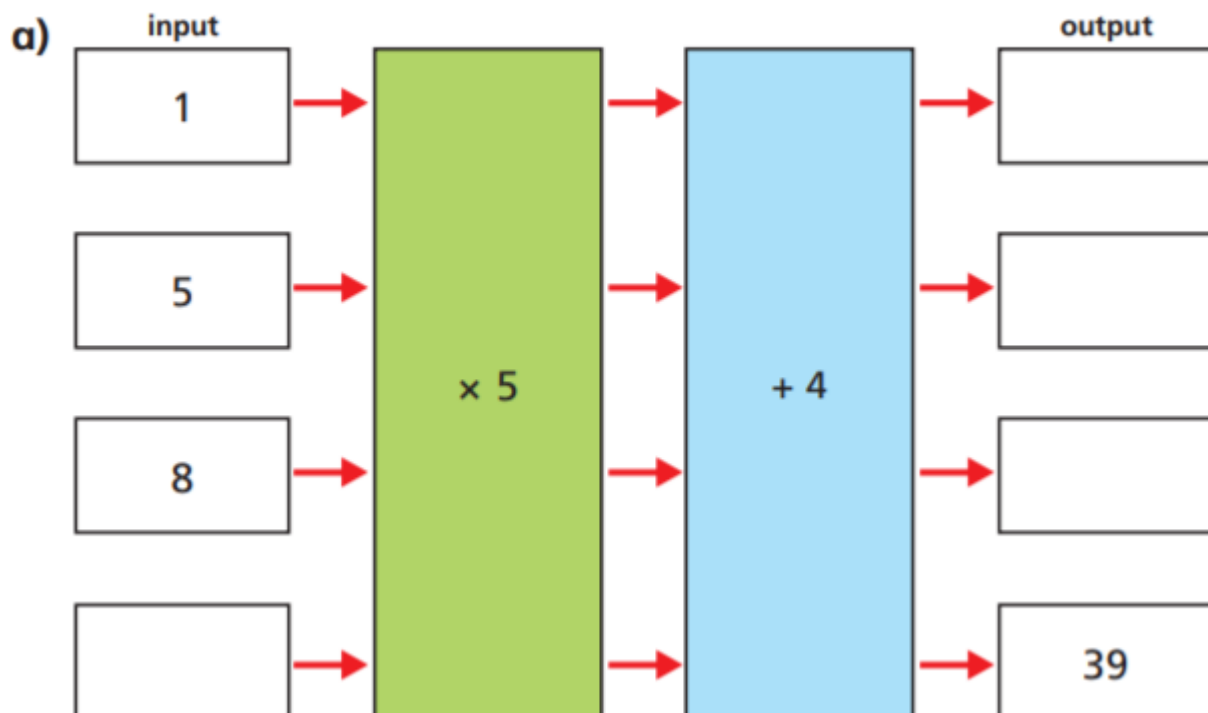


Calculate the missing inputs and outputs for the function machine.

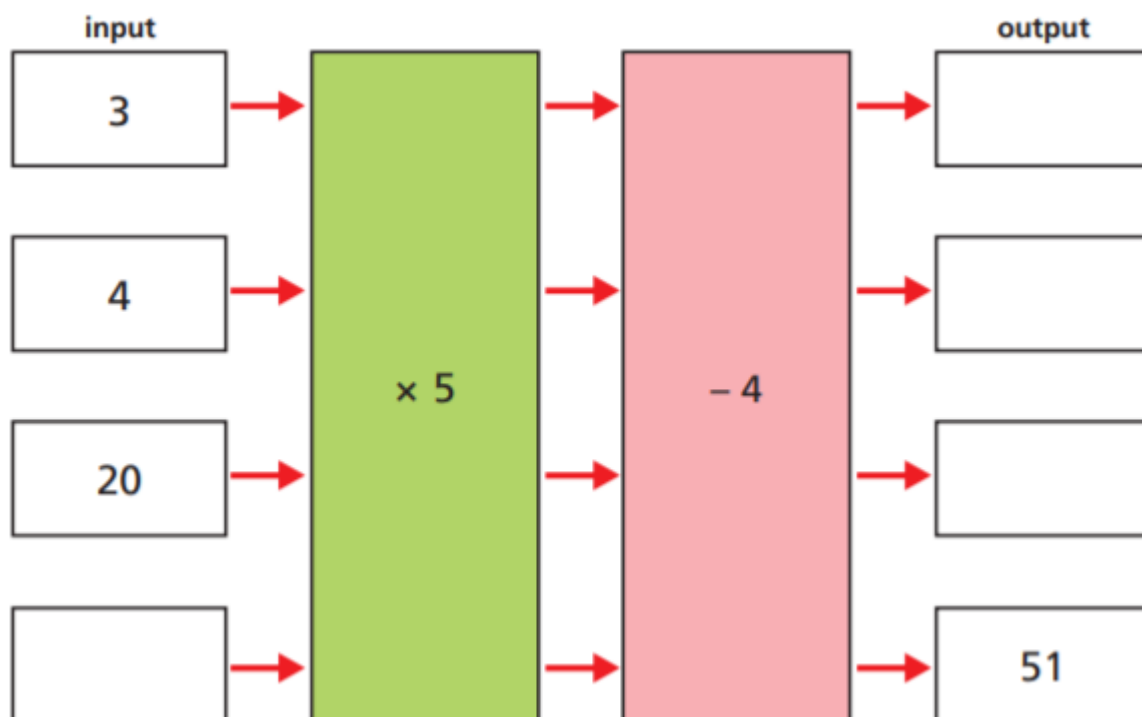


Find a rule - two step

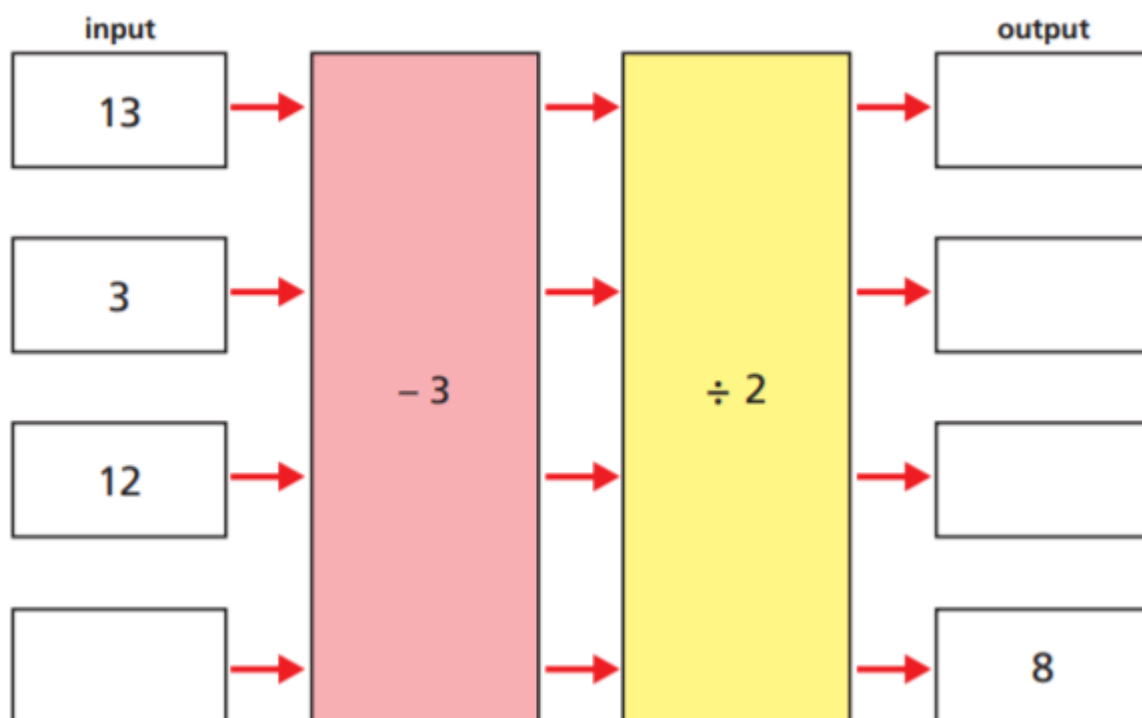
Work out the missing outputs and inputs.



b)



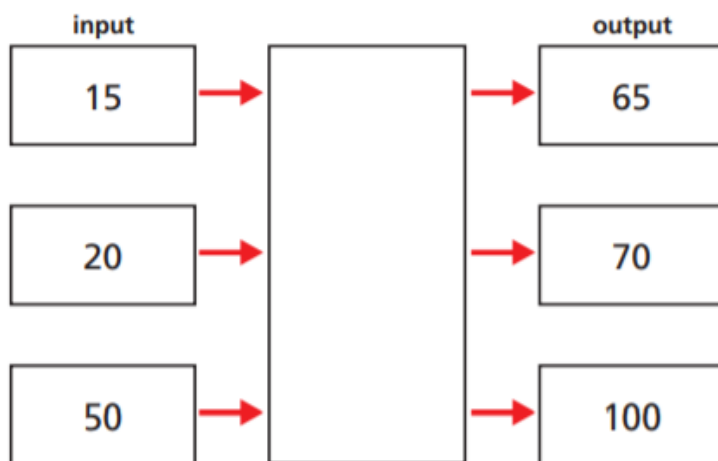
c)



Spicy

Find a rule - one step

Look at the function machine.



a) What is the output, if the input is zero?

b) What is the input, if the output is zero?

Here is a function machine.



Dora

The rule is add 9

The rule is multiply by 2.5



Dexter

Who do you agree with? _____

Explain your answer.

In a function machine, if the input is 3 and the output is 12, what could the function be?

Write two different functions and complete the table of outputs for each function.



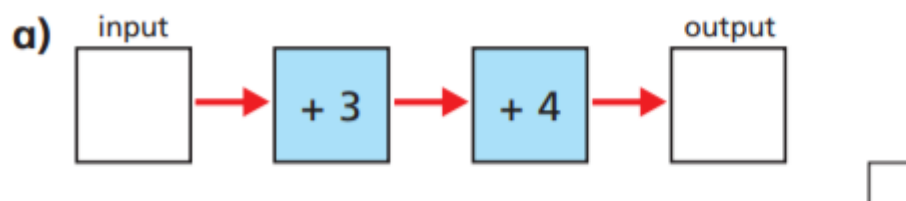
Input	3	4	5	10	20	100
Output	12					

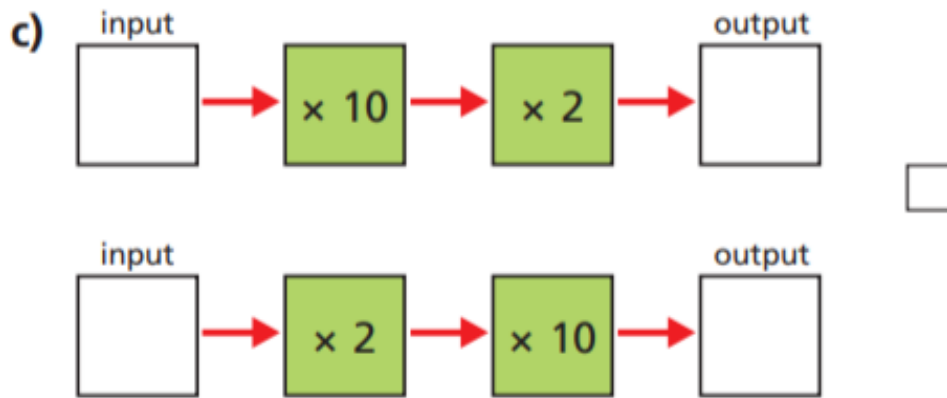


Input	3	4	5	10	20	100
Output	12					

Find a rule - two step

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





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.



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.

Tuesday

<https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1>

<https://whiterosemaths.com/homelearning/year-6/>

Forming expressions and understanding algebraic expressions

Fluent in 5

1

3 3 7 6 3

1 mark

2

$6.33 \times 2 =$

1 mark

3

$\frac{1}{3} + \frac{3}{3} =$

1 mark

4

$\frac{11}{12} \times 144 =$

1 mark

5

$8,953 - 695 =$

1 mark

Forming Expressions

Grace has n sweets. Lucy has 4 sweets more than Grace.

Therefore Lucy has $n + 4$ sweets.

Ryan has 2 sweets less than Grace.

Therefore Ryan has $n - 2$ sweets.

Jake has 3 times more sweets than Grace.

Therefore Jake has $n \times 3$ sweets.

This can be written as $3n$.

Forming Expressions

An expression is a group of numbers, letters and operation symbols.

Add 14 to a

$$a + 14$$

Subtract 20 from b

$$b - 20$$

Multiply c by 4

$$4c$$

12 more than d

$$d + 12$$

Multiply e by 3 and subtract 5

$$3e - 5$$

Add 12 to f and then multiply by 2

$$2(f + 12)$$

Mild

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

$$\text{Green cube} = x \quad \text{Red cube} = 1$$

Write algebraic expressions to describe the sets of cubes.

The first one has been done for you.

a)  $2x + 3$ _____

b)  _____

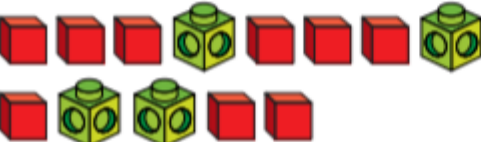
c)  _____

d)  _____

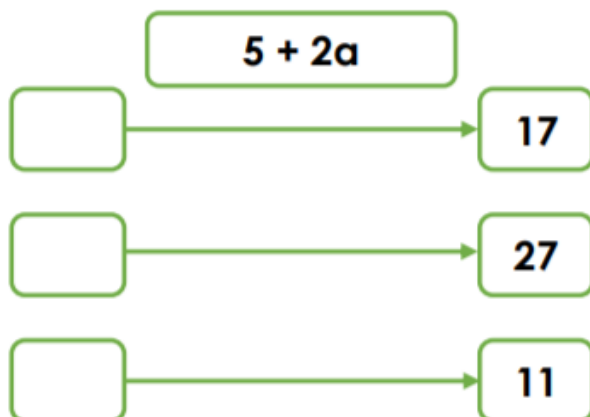
e)  _____

f)  _____

g)  _____

h)  _____

- 2) Toby is using the expression $5 + 2a$. Calculate the value of a when his outputs are;



Medium

Use cubes to help you simplify the following expressions.

The first one has been done for you.

a) $2y + 5 + y$



$3y + 5$

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

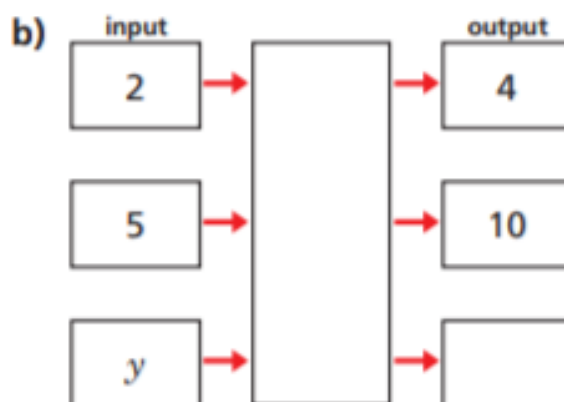
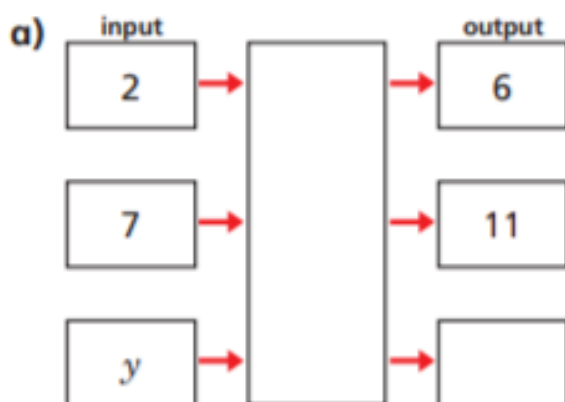


c) $6p + 2 - 2p$



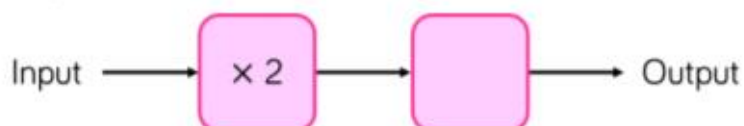
d) $m + 4 + 3m - 3$

Complete the function machines.



This function machine gives the same output for every input.

For example if the input is 5 then the output is 5 and so on.



What is the missing part of the function?

What other pairs of functions can you think that will do the same?

Jake is using the rule $(a + 5) \times 3$.

Jake says:



Both rules will give the same answer.

Do you agree? Explain your answer.

Use the cards below to create 4 different algebraic expressions for this function machine.

4 x $\div$ 2 + 7

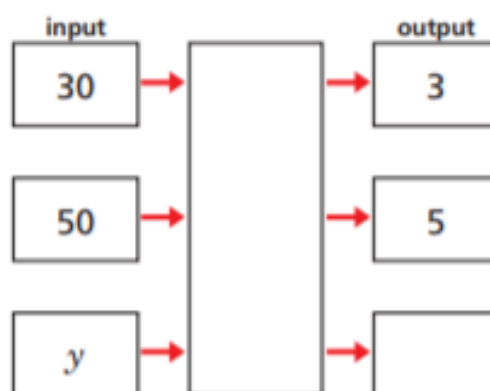
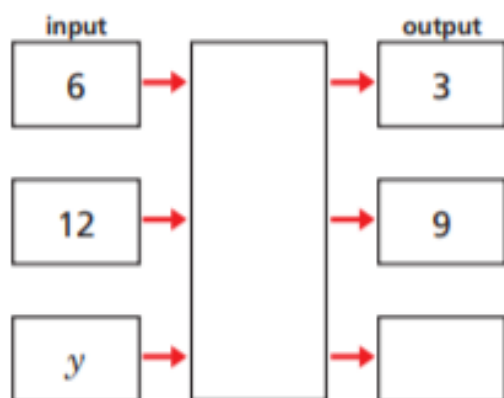


Work out the outputs for each expression.

What is the greatest output you can make?

Spicy

Complete the function machines.



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

$y + 5$

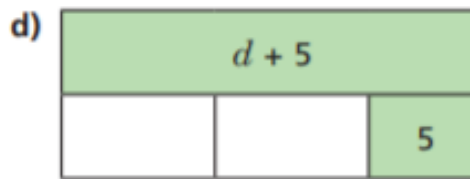
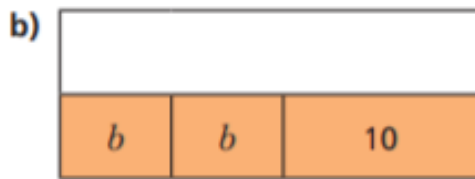
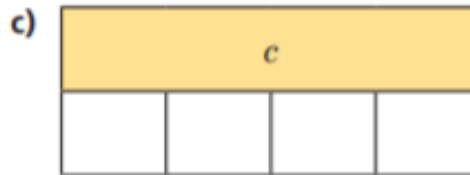
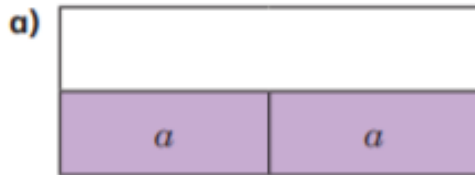
double y

$5y$

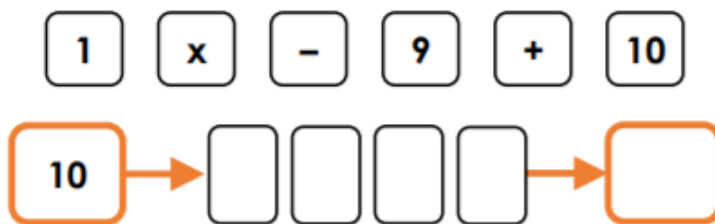
y^2

$\frac{y}{5}$

Complete the bar models.



Use the cards below to create 4 different algebraic expressions for this function machine.



Work out the outputs for each expression.

What is the greatest output you can make?

True or false?

A two step function machine which has $+4$, -9 as its functions could provide the same output using just one step.



Explain your answer.

A two step function machine which has $+10$, -5 as its functions could provide the same output using just one step.



Explain your answer.

Wednesday

<https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1>

<https://whiterosemaths.com/homelearning/year-6/>

Substitute into simple expressions and formulae

Fluent in 5

1	$300 + \boxed{} = 1,000 =$	1 mark

2	$431 \times 7 =$	1 mark

3	$\frac{6}{7} \times 140 =$	1 mark

4	$\frac{5}{6} + \frac{3}{6} =$	1 mark

5	$9,034 + \boxed{} = 13,439$	1 mark

Mild

1

$$\text{Orange Pentagon} = 4 \quad \text{Yellow Circle} = 5$$

Use the given facts to work out the calculations.

a) $\text{Orange Pentagon} + \text{Orange Pentagon} + \text{Yellow Circle}$

b) $\text{Orange Pentagon} + \text{Orange Pentagon} - \text{Yellow Circle}$

c) $\text{Yellow Circle} + \text{Yellow Circle} + \text{Yellow Circle} + \text{Orange Pentagon} + \text{Orange Pentagon}$

2

$$\text{Purple Triangle} = 12 \quad \text{Red Square} = 5$$

Use the given facts to work out the calculations.

a) $\text{Purple Triangle} - \text{Red Square}$

b) $\text{Purple Triangle} \times \text{Red Square}$

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

a)

Match the expressions to their values.

If  = 2 and  = 10.

A.  + 

8

B.  - 

20

C.  x 

4

b)

Match the expressions to their values.

If  = 5 and  = 25.

A.  - 

20

B.  + 

30

C.  + 

50

a)

True or false?

If $a = 10$ and $b = 5$.

$$2a + b = 22$$

b)

True or false?

If $a = 7$ and $b = 15$.

$$2b - 2a = 16$$

Medium

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		

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) $2(a - b) =$

True or false?

If $x = 10$, $y = 2$ and $z = 5$.

$$3x + y + z = 37$$

Who is correct?

$$a = 12 \text{ and } b = 6$$



Jacob

$$a \times b \text{ is } 12 \times 6 = 72$$



Lily

$$a \times b \text{ is } 12 \times 4 = 48$$

$$a = 3b - 4$$

$$c = a + 10$$

Evie says:



$$\text{If } b = 5 \text{ then } c = 20.$$

Is she correct?

Explain your answer.

Spicy



Mo

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

Do you agree with Mo? _____

Explain your answer.

$$m = 7 \quad n = 5$$

Write $>$, $<$ or $=$ to compare the expressions.

a) $2m$ 10

b) $n - 1$ 5

c) $2n + m$ $2m + n$

d) $7n$ $5m$

$$a = 10$$

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

$$5a$$

$$a + 5$$

$$\frac{a}{5}$$

$$a^2$$

Complete the table.

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

True or false?

If $c = 5.1$, $d = 0.5$ and $e = 5$.

$$(3c + 2d) - 4e = 3.7$$

Jaiden is calculating the perimeter of a rectangle.

He is using the equation $P = 2a + 2b$.



When $a = 6.5\text{cm}$, he calculates that $P = 19\text{cm}$.

What is the value of b ?

Thursday

<https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1>

<https://whiterosemaths.com/homelearning/year-6/>

Forming and solving one step equations

Fluent in 5

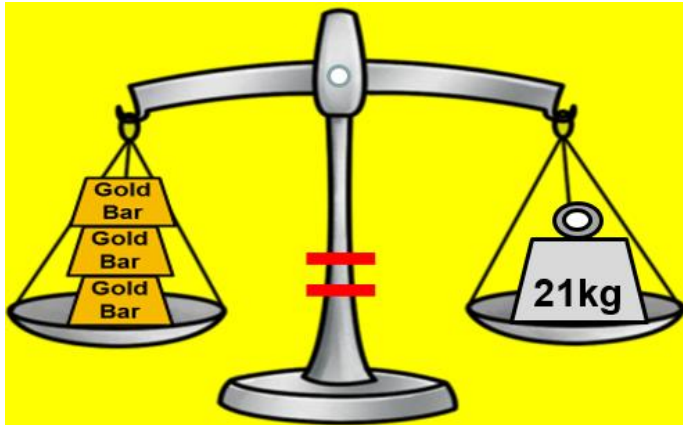
1	$700 + \boxed{} = 2,000$	☐ 1 mark

2	$5 + 6 + 3 =$	☐ 1 mark

3	$1.30 \times 6 =$	☐ 1 mark

4	$\begin{array}{r} 9321 \\ \times 6 \\ \hline \end{array}$	☐ 1 mark

5	$3,433 \div 11 =$	☐ 1 mark



Work out the value of one gold bar

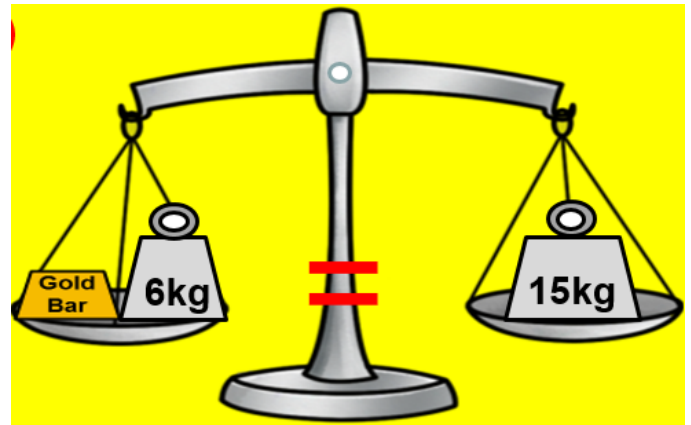
You may not know this but you have just solved an equation

$$3g = 21$$

$$\div 3$$

$$\div 3$$

$$g = 7\text{kg}$$



Work out the value of one gold bar

You may not know this but you have just solved an equation

$$g + 6 = 15$$

$$- 6$$

$$- 6$$

$$g = 9\text{kg}$$

Forming Equations

$$a + 14 = 20$$

$$b - 20 = 15$$

$$4c = 28$$

$$d + 12 = 30$$

$$3e - 5 = 10$$

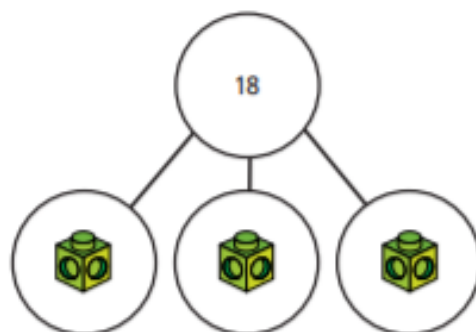
$$2(f + 12) = 44$$

An equation is a number statement with an equal sign (=). Expressions on either side of the equal sign are of equal value.

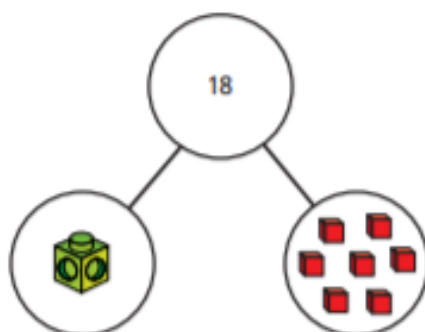
Mild

- 1 Match each equation to the part-whole model it represents.

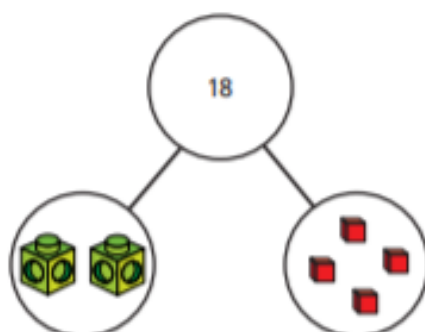
$$y + 7 = 18$$



$$2y + 4 = 18$$



$$3y = 18$$

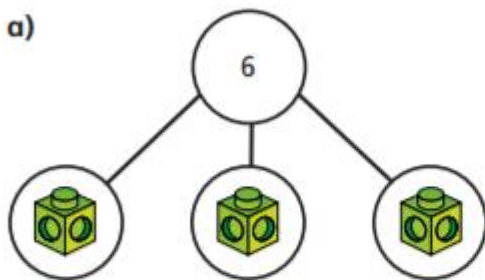


Solving one step equations

- 1 Write an equation for each part-whole model.

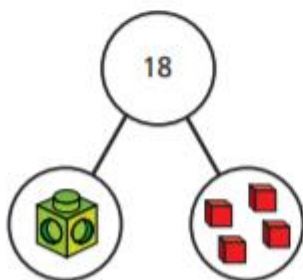
Work out the value of the multilink cube in each equation.

a)



$$\text{multilink cube} = \square$$

b)



$$\text{multilink cube} = \square$$

- 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 .

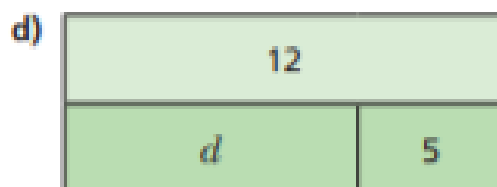
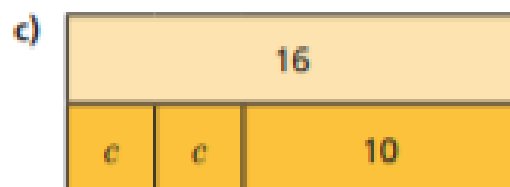
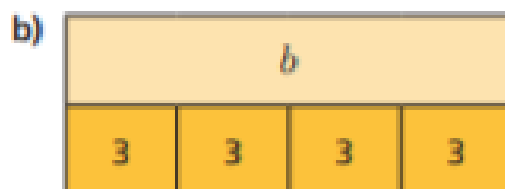
$$c = \square$$

- c) How many counters are under the cup?

$$\square$$

Medium

Write equations to represent the bar models.



Is there more than one possible equation for each?

Draw a bar model to represent each equation.

a) $3a = 21$

c) $6 + 9 = c$

--

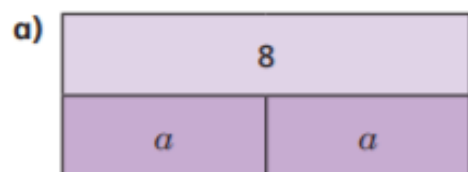
b) $2b + 6 = 10$

d) $\frac{d}{2} = 7$

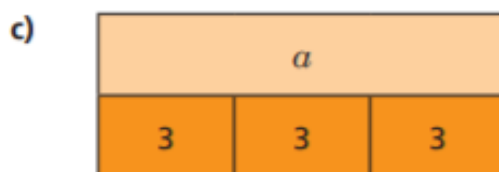
--

Write algebraic equations to represent the bar models.

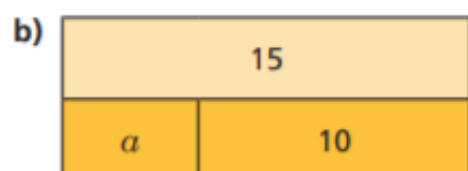
Find the value of a in each one.



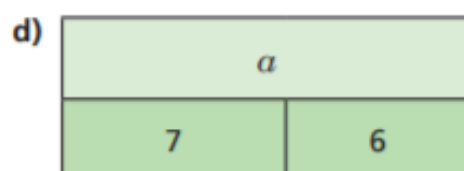
$$a = \boxed{}$$



$$a = \boxed{}$$



$$a = \boxed{}$$



$$a = \boxed{}$$

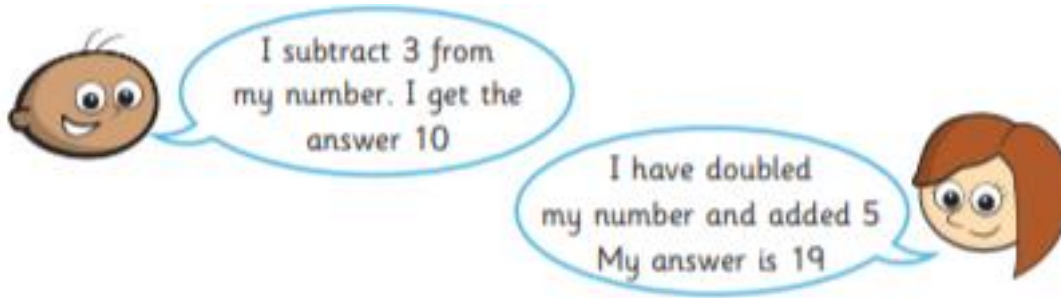
Nijah is solving the equation $x - 8 = 20$

$$\begin{aligned} x - 8 &= 20 \\ x &= 20 - 8 \\ x &= 12 \end{aligned}$$

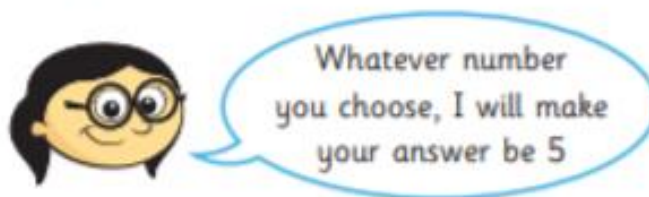
What mistake has Nijah made?

Spicy

Tommy and Rosie are thinking of a number each. Write an equation to represent each problem.



Annie has a number trick.



Here is Annie's trick.

- Step 1: think of a number
- Step 2: double it
- Step 3: add 10
- Step 4: divide by 2
- Step 5: take away the number you first thought of

a) Pick a starting number and follow the steps.

Did you get the answer 5?

b) Write an expression for each step of Annie's trick.

Solve the equations.

a) $x + 7 = 20$

$x =$

d) $g - 3 = 15$

$g =$

b) $10y = 80$

$y =$

e) $32 = t - 5$

$t =$

c) $4m = 22$

$m =$

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

$u =$

Work out the value of each shape.

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

				
				
				= 40
				= 20
				32

 =

 =

 =

Work out the missing total of each row and column.

Friday

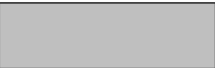
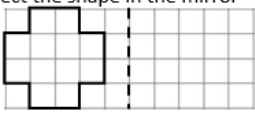
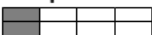
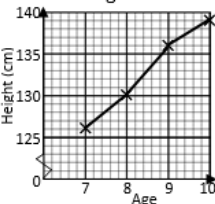
<https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1>

Maths in football

Key Skills

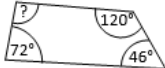
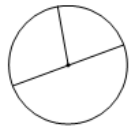
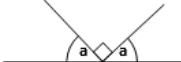
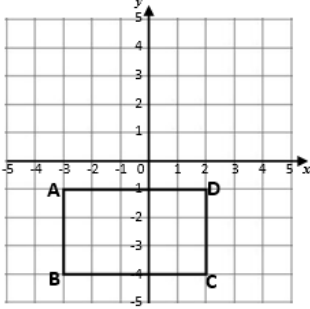
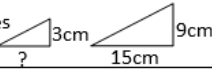
Remember these sheets are only to work from not on so don't worry if you cannot complete a couple of the questions, just read through them instead.

Mild

A: Place Value, Add and Subtract		B: Multiply, Divide and Fractions		C: Measure, Geometry and Statistics	
1. What is the value of the 7 in this number? 7,186,354	5:1	11. Write all of the factors of 26.	5:8	21. If 4 litres is approximately 7 pints, about how many litres are equal to 21 pints?	5:20
2. Put these in order, smallest first: 1,012,685 99,956 867,600 1,300,423	5:1	12. Which of the following are prime numbers ? 17 21 23 25 27	5:9		
3. Round 596,147 to the nearest ten thousand .	5:2	13. $4,170 \div 6$	5:10	22. Calculate the area of this rectangular field: 25m 10m 	5:21
4. What is the missing number? 53,450 54,450 56,450	5:2	14. 1.04×100	5:11		
5. Put these in order, smallest first: -10, -3, -2, -7, -9, -6	5:3	15. What is 1^3 ?	5:12	23. Reflect the shape in the mirror line. 	5:28
6. What year is represented by these Roman Numerals? MMIX	5:4	16. Put these in order, smallest first: $\frac{5}{6}$ $\frac{8}{12}$ $\frac{16}{18}$	5:13		
7. $212,190 - 14,085 =$	5:5	17. Find an equivalent fraction of $\frac{2}{8}$. 	5:14	24. Rose recorded her height each year: Between which two ages did Rose grow the most? 	5:29
8. $63,460 + 17,175 =$	5:5	18. Write the answer as a mixed number . $\frac{12}{15} + \frac{6}{15}$	5:15		
9. Complete this sum without written working. $20,500 - 6,200 =$	5:6	19. $\frac{5}{11} \times 44 =$	5:16		
10. The temp. was -9°C . It rose by 8°C , then dropped by 10°C . What is it now?	5:7	20. Write 0.83 as a fraction.	5:17	25. How much taller was Rose at the age of 10 than when she was 7?	5:29
Total (A)		Total (B)		Total (C)	
Test Total (A+B+C)		R (0-9)	Y (10-19)	G (20-25)	

Key Skills

Medium and Spicy

A: Place Value, Add, Subtract, Multiply and Divide		B: Fractions, Ratio, Proportion and Algebra		C: Geometry, Position and Direction	
1. Write in words: 1,900,345	6:1	11. Simplify this fraction fully: $\frac{12}{44}$	6:7	21. Find the missing angle. 	6:24
2. What is the value of the 5 in this number? 5,273,914	6:1	12. $3\frac{3}{4} + \frac{5}{6} =$	6:8	22. On the circle write a letter ' C ' on the circumference . 	6:25
3. Round 3,457,318 to the nearest million .	6:1	13. $\frac{4}{9} \div 2 =$	6:9	23. Find the value of a . 	6:26
4. The temperature rises from -8°C to 14°C. How many degrees has it risen?	6:2	14. What is the value of the 7 in this number: 58.473	6:10	24. What are the co-ordinates of A ? 	6:27
5. 8,135 x 13	6:3	15. Give your answer as a decimal: 26 ÷ 8	6:11	25. Reflect rectangle ABCD in the x-axis .	6:28
6. What is the remainder? 8,014 ÷ 22	6:3	16. Write this percentage as a fraction and a decimal . 	6:12		
7. Write two common factors of 24 and 30.	6:4	17. Find 70% of 360.	6:13		
8. There are two prime numbers between 20 and 30. What are they?	6:4	18. These shapes are similar . 	6:14		
9. 35 ÷ 5 + 2	6:5	19. There are t sweets in a bag. 15 of them are eaten. Write an expression.	6:15		
10. What is my change if I buy as many £3.45 footballs as I can with £25?	6:6	20. Which two numbers add together to make 23 and have a difference of 7?	6:17		
Total (A)		Total (B)		Total (C)	
Test Total (A+B+C)		R (0-9)	Y (10-19)	G (20-25)	