

# WORKING BACKWARDS

CONTENT DOMAIN REFERENCES:  
N6, C8, F10

# KS2 SATS

## PRACTICE QUESTIONS BY TOPIC

1

Jemma thinks of a number.

[Extra] She says,

*'Add 3 to my number and then  
multiply the result by 5  
The answer is 35'*



What is Jemma's number?

Show your method

FORWARDS  $\rightarrow +3 \rightarrow \times 5 \rightarrow 35$

BACKWARDS

$$35 \div 5 = 7$$
$$7 - 3 = \underline{\underline{4}}$$

4

[2 marks]

2

Riaz thinks of a number.

[Extra] He says,

*'Halve my number and then add 17  
The answer is 23'*

What is Riaz's number?

Show your method

FORWARDS  $\rightarrow \div 2 \rightarrow +17 \rightarrow 23$

BACKWARDS

$$23 - 17 = 6$$
$$6 \times 2 = \underline{\underline{12}}$$

12

[2 marks]

**3**

[2005]

Josh thinks of a number.

He adds 4

He multiplies his result by 3

Then he takes away 9

His final answer is 90



What number did Josh start with?

Show your method

FORWARDS  $\rightarrow +4 \rightarrow \times 3 \rightarrow -9 \rightarrow 90$

BACKWARDS

$$90 + 9 = 99$$

$$99 \div 3 = 33$$

$$33 - 4 = \underline{29}$$

29

[2 marks]

**4**

[2016S]

Lara chooses a number less than 100

She divides it by 3 and then subtracts 11

She then divides this result by 2

Her answer is 10.5

What was the number she started with?

Show your method

FORWARDS  $\rightarrow \div 3 \rightarrow -11 \rightarrow \div 2 \rightarrow 10.5$

BACKWARDS

$$10.5 \times 2 = 21$$

$$21 + 11 = 32$$

$$32 \times 3 = \underline{96}$$

96

[2 marks]

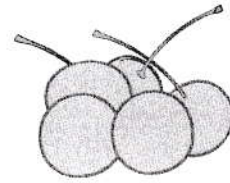
**5**

Seb had some cherries.

[2015]

Every day he ate 10 cherries and gave 5 away.

After he gave the last 5 cherries away, he had eaten 40 cherries altogether.



How many cherries did Seb have at the start?

Show your method

<u>EATS</u>	<u>GIVES AWAY</u>	
10	5	
10	5	
10	5	
10	5	
<u>TOTAL</u> <u>40</u>	<u>20</u>	$\rightarrow \underline{\underline{60}}$

60

[2 marks]

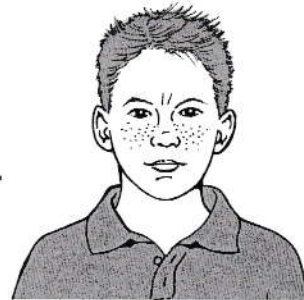
**6**

Liam thinks of a number.

[2010]

He divides it by 9 and then adds 25 to the result.

His answer is 36



What number did Liam start with?

Show your method

FORWARDS  $\rightarrow \boxed{\div 9} \rightarrow \boxed{+25} \rightarrow 36$

BACKWARDS

$$36 - 25 = 11$$

$$11 \times 9 = \underline{\underline{99}}$$

99

[2 marks]

**7**

Lara chooses a number less than 20

[2016]

She divides it by 2 and then adds 6

She then divides this result by 3

Her answer is 4.5

What was the number she started with?

Show your method

FORWARDS  $\rightarrow \div 2 \rightarrow +6 \rightarrow \div 3 \rightarrow 4.5$

BACKWARDS

$$4.5 \times 3 = 13.5$$

$$13.5 - 6 = 7.5$$

$$7.5 \times 2 = \underline{\underline{15}}$$

15

[2 marks]

**8**Monica thinks of a whole number.

[Extra]

She multiplies it by 3

She rounds her answer to the nearest 10

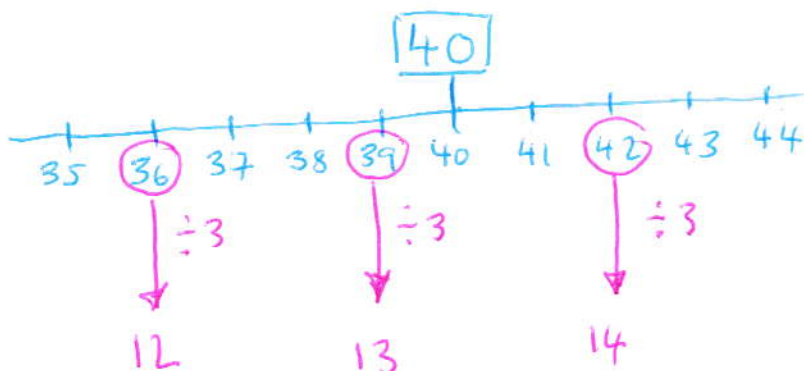
The result is 40

LOOK FOR A MULTIPLE  
OF 3 WHICH ROUNDS  
TO 40!

Write all the possible numbers that Monica could have started with.

12, 13 OR 14

[2 marks]



9

Emily chooses two numbers.

[2008]



She adds the two numbers together and divides the result by 2

Her answer is 44

One of Emily's numbers is 12

What is Emily's other number?

Show your method

FORWARDS  $A + B \rightarrow \div 2 \rightarrow 44$

BACKWARDS

$44 \times 2 = 88$

IF ONE NUMBER = 12

OTHER = 76

76

[2 marks]

10

Dev thinks of a **whole** number.

[2017]

He multiplies it by 4

He rounds his answer to the nearest 10

The result is 50

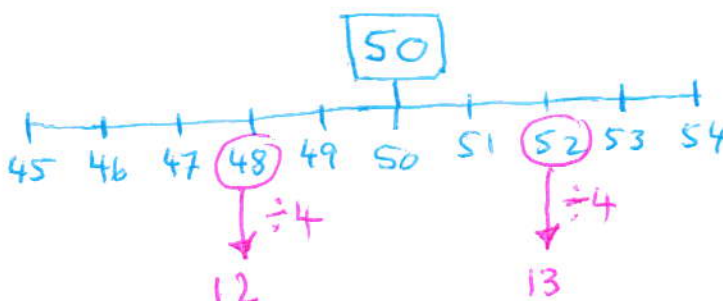
LOOK FOR A MULTIPLE OF  
4 WHICH ROUNDS TO 50

Write **all** the possible numbers that Dev could have started with.

12 OR 13

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[2 marks]



**11**

Rita chooses a number less than 50

[Extra]

She adds 4 and then multiplies the result by 5

She then divides the new result by 2

Her final answer is 40

What was the number she started with?

Show your method

FORWARDS  $\rightarrow +4 \rightarrow \times 5 \rightarrow \div 2 \rightarrow 40$

BACKWARDS

$$40 \times 2 = 80$$

$$80 \div 5 = 16$$

$$16 - 4 = \underline{12}$$

12

[2 marks]

**12**

Danny thinks of a number.

[Extra]

He doubles the number and then subtracts 3

He divides his result by 5

His final answer is 13

What number did Danny start with?

Show your method

FORWARDS  $\rightarrow \times 2 \rightarrow -3 \rightarrow \div 5 \rightarrow 13$

BACKWARDS

$$13 \times 5 = 65$$

$$65 + 3 = 68$$

$$68 \div 2 = \underline{34}$$

34

[2 marks]

13

Amy thought of a number.

[2014]

She added 0.5 to her number and then doubled the result.

Then she subtracted 0.5 and doubled the new result.

Her final answer was 61

What number did Amy start with?

Show your method

FORWARDS  $\rightarrow +0.5 \rightarrow \times 2 \rightarrow -0.5 \rightarrow \times 2 \rightarrow 61$

BACKWARDS

$$61 \div 2 = 30.5$$

$$30.5 + 0.5 = 31$$

$$31 \div 2 = 15.5$$

$$15.5 - 0.5 = \underline{15}$$

15

[2 marks]

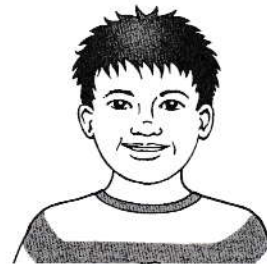
14

Ben thinks of a number.

[2008]

He adds half of the number to a quarter of the number.

The result is 60



What was the number Ben first thought of?

Show your method

$$\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4}$$

$$= \frac{3}{4}$$

$$\frac{3}{4} \text{ of } x = 60 \Rightarrow \frac{1}{4} \text{ is } 20 \rightarrow (n =) 80$$

(n =) 80

[2 marks]

15

Liam thinks of a number.

[2004]

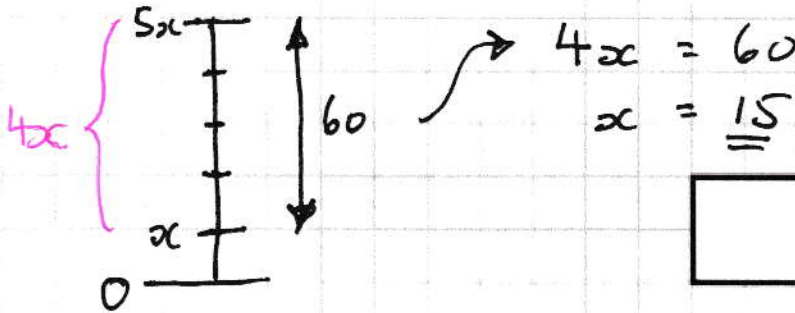
He **multiplies the number by 5** and then **subtracts 60** from the result.



His answer equals the number he started with.

What was the number Liam started with?

Show your method

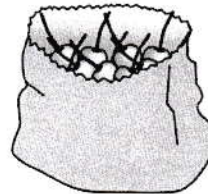


[2 marks]

16

Sarah had a bag of cherries.

[2010]



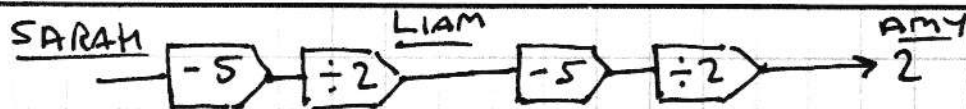
She ate 5 cherries, then gave half of what she had left to Liam.

Liam ate 5 of his cherries, then gave half of what he had left to Amy.

Amy got 2 cherries.

How many cherries did Sarah have in her bag at the start?

Show your method



BACKWARDS

$$2 \times 2 = 4$$

$$4 + 5 = 9$$

$$9 \times 2 = 18$$

$$18 + 5 = \underline{\underline{23}}$$

23

[2 marks]