

25.01.21 Percentage of an amount (1)

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

1) Mo says,

To find 10% you divide by 10, so to find 50% you divide by 50



Do you agree? Explain why.

2) Eva says to find 1% of a number, you divide by 100

Whitney says to find 1% of a number, you divide by 10 and then by 10 again.

Who do you agree with?
Explain your answer.

3) Complete the missing numbers.

$$50\% \text{ of } 40 = \underline{\quad}\% \text{ of } 80$$

$$\underline{\quad}\% \text{ of } 40 = 1\% \text{ of } 400$$

$$10\% \text{ of } 500 = \underline{\quad}\% \text{ of } 100$$

25.01.21 Percentage of an amount (1)

ANSWER SHEET

1) Mo says,

To find 10% you divide by 10, so to find 50% you divide by 50

Do you agree? Explain why.



Possible answer:

Mo is wrong because 50% is equivalent to a half so to find 50% you divide by 2

2)

Eva says to find 1% of a number, you divide by 100

Whitney says to find 1% of a number, you divide by 10 and then by 10 again.

Who do you agree with?

Explain your answer.

They are both correct.

Whitney has divided by 100 in two smaller steps.

3) Complete the missing numbers.

50% of 40 = ____% of 80

____% of 40 = 1% of 400

10% of 500 = ____% of 100

25

10

50

26.01.21 Percentage of an amount (2)

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

- 1) Four children in a class were asked to find 20% of an amount, this is what they did:



Whitney

I divided by 5 because 20% is the same as one fifth

I found one percent by dividing by 100, then I multiplied my answer by 20



Amir



Alex

I did 10% add 10%

I found ten percent by dividing by 10, then I multiplied my answer by 2



Jack

Who do you think has the most efficient method? Explain why.

Who do you think will end up getting the answer incorrect?

-
- 2) How many ways can you find 45% of 60?

Use similar strategies to find 60% of 45

What do you notice?

Does this always happen?

Can you find more examples?

26.01.21 Percentage of an amount (2)

ANSWER SHEET

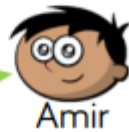
- 1) Four children in a class were asked to find 20% of an amount, this is what they did:



Whitney

I divided by 5 because 20% is the same as one fifth

I found one percent by dividing by 100, then I multiplied my answer by 20



Amir



Alex

I did 10% add 10%

I found ten percent by dividing by 10, then I multiplied my answer by 2



Jack

Who do you think has the most efficient method? Explain why.
Who do you think will end up getting the answer incorrect?

All methods are acceptable ways of finding 20%. Children may have different answers because they may find different methods easier. Discussion could be had around whether or not their preferred method is always the most efficient.

- 2) How many ways can you find 45% of 60?

Use similar strategies to find 60% of 45

What do you notice?

Does this always happen?

Can you find more examples?

Possible methods include:

$$10\% \times 4 + 5\%$$

$$25\% + 20\%$$

$$25\% + 10\% + 10\%$$

$$50\% - 5\%$$

To find 60% of 45

$$10\% \times 6$$

$$50\% + 10\%$$

$$10\% \times 3$$

Children will notice that 45% of $60 = 60\%$ of 45

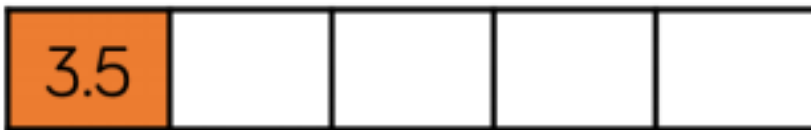
This always happens.

27.01.21 Percentages (missing values)

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

- 1) What percentage questions can you ask about this bar model?



-
- 2) Fill in the missing values to make this statement correct.
Can you find more than one way?

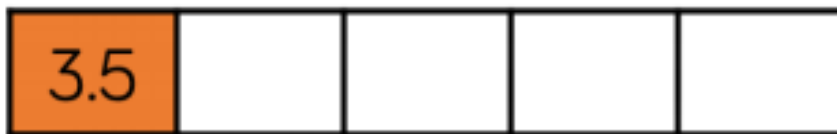
$$25\% \text{ of } \boxed{} = \boxed{} \% \text{ of } 60$$

-
- 3) A golf club has 200 members.
- 58% of the members are male.
50% of the female members are children.
- (a) How many male members are in the golf club?
- (b) How many female children are in the golf club?

27.01.21 Percentages (missing values)

ANSWER SHEET

- 1) What percentage questions can you ask about this bar model?



Possible answer:
If 20% of a number is 3.5, what is the whole?
What is 60%?
What is 10%?

2)

Fill in the missing values to make this statement correct.

Can you find more than one way?

$$25\% \text{ of } \boxed{} = \boxed{} \% \text{ of } 60$$

Possible answers:

$$25\% \text{ of } 60 = 25\% \text{ of } 60$$

$$25\% \text{ of } 120 = 50\% \text{ of } 60$$

$$25\% \text{ of } 24 = 10\% \text{ of } 60$$

$$25\% \text{ of } 2.4 = 1\% \text{ of } 60$$

$$25\% \text{ of } 180 = 75\% \text{ of } 60$$

- 3) A golf club has 200 members.

58% of the members are male.

50% of the female members are children.

- (a) How many male members are in the golf club?
(b) How many female children are in the golf club?

116 male members

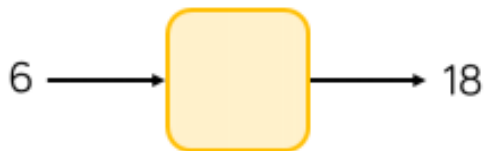
42 female children

28.01.21 Find a rule—one step

Reasoning and problem solving—Maths extension

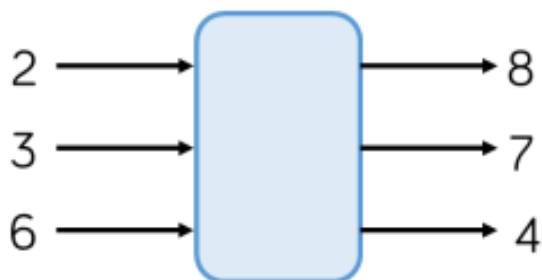
Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

- 1) Eva has a one-step function machine.
She puts in the number 6 and the
number 18 comes out.



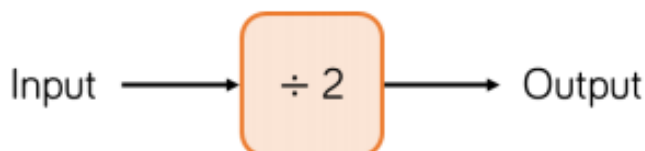
What could the function be?
How many different answers can you
find?

- 2) Amir puts some numbers into a function
machine.



What is the output from the function
when the input is 16?

- 3) Dora puts a number into the function
machine.



Dora's number is:

- A factor of 32
- A multiple of 8
- A square number

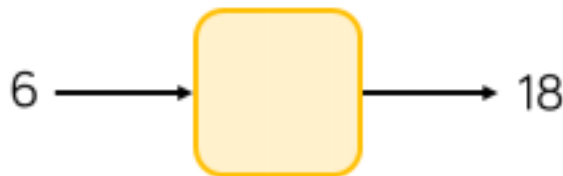
What is Dora's input?
What is her output?

Answers can be found on the next page.

28.01.21 Find a rule—one step

ANSWER SHEET

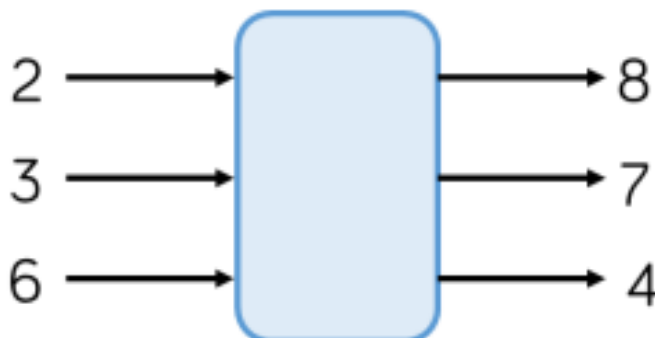
- 1) Eva has a one-step function machine.
She puts in the number 6 and the
number 18 comes out.



What could the function be?
How many different answers can you
find?

The function could
be $+ 12$, $\times 3$

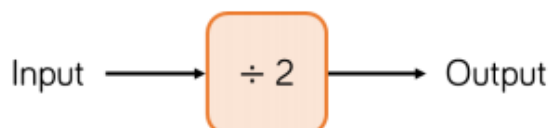
- 2) Amir puts some numbers into a function
machine.



What is the output from the function
when the input is 16?

The function is
subtract from 10
so the output is
 -6

- 3) Dora puts a number into the function
machine.



Dora's number is:

- A factor of 32
- A multiple of 8
- A square number

What is Dora's input?
What is her output?

Dora's input is 16

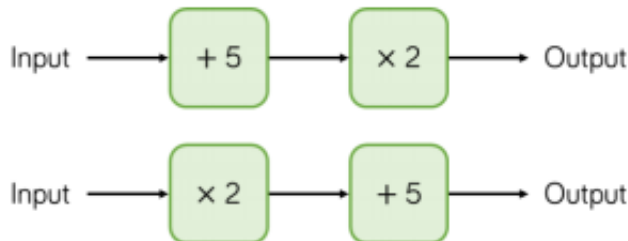
Her output is 8

29.01.21 28.01.21 Find a rule—two step

Reasoning and problem solving—Maths extension

Answer and reason the questions below to deepen your mathematical understanding. Once complete, self-mark using the answer sheet.

- 1) Teddy has two function machines.



He says,

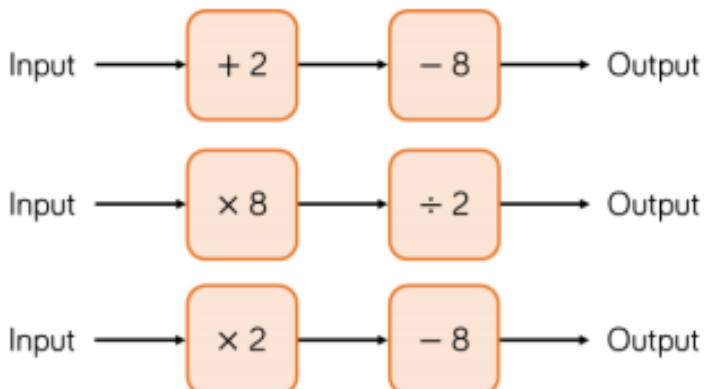


The function machines
will give the same
answer.

Is Teddy correct?

Is there an input that will give the same
output for both machines?

-
- 2) Mo has the following function machines.



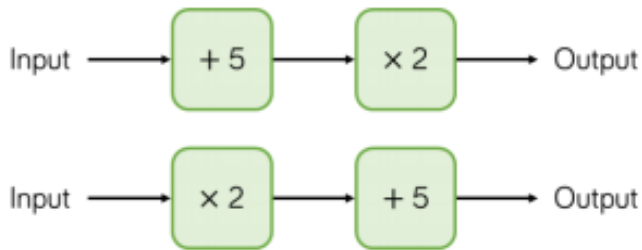
Explain which of these can be written as
single function machines.

Answers can be found on the next page.

29.01.21 28.01.21 Find a rule—two step

ANSWER SHEET

- 1) Teddy has two function machines.



He says,



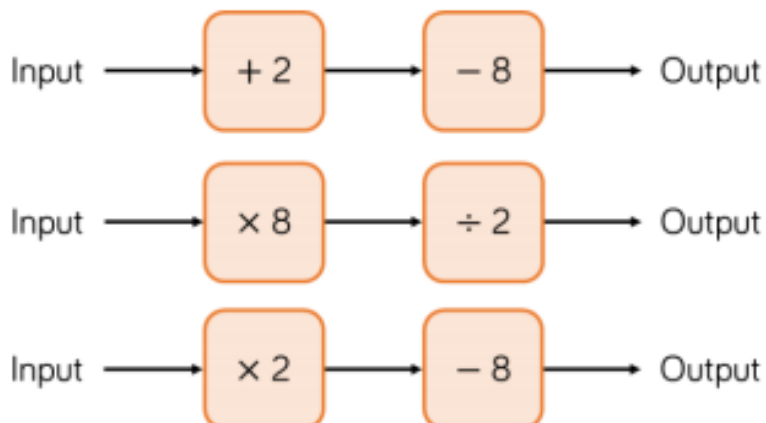
The function machines
will give the same
answer.

Is Teddy correct?

Is there an input that will give the same
output for both machines?

No they do not
give the same
answer.
Encourage
children to refer to
the order of
operations to help
them understand
why the outputs
are different.

- 2) Mo has the following function machines.



Explain which of these can be written as
single function machines.

The first one can
be written as $- 6$

The second can be
written as $\times 4$

The third cannot
be written as a
single machine.