Creating Reasoning Routines, Building Problem-Solvers

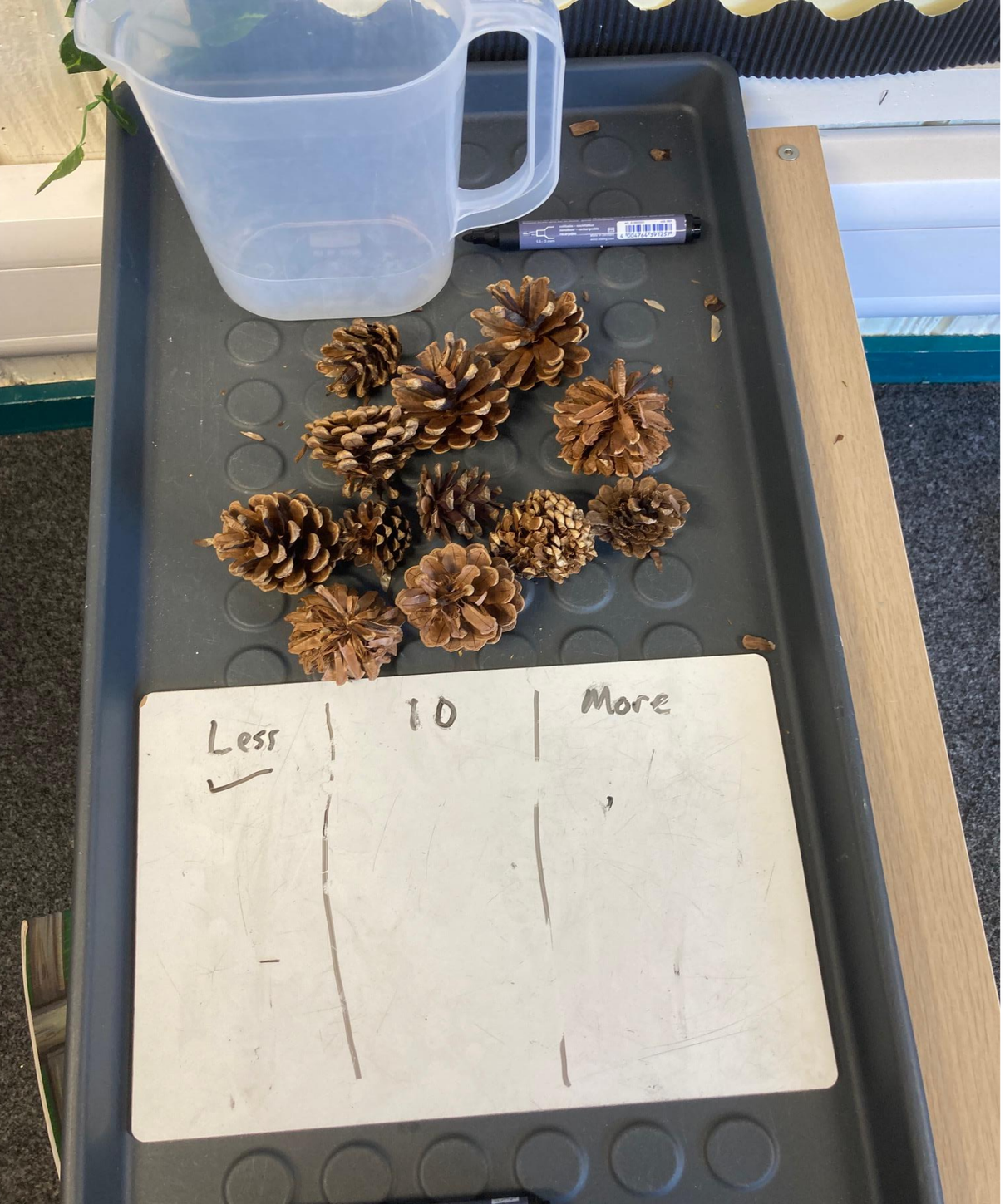
Session 1

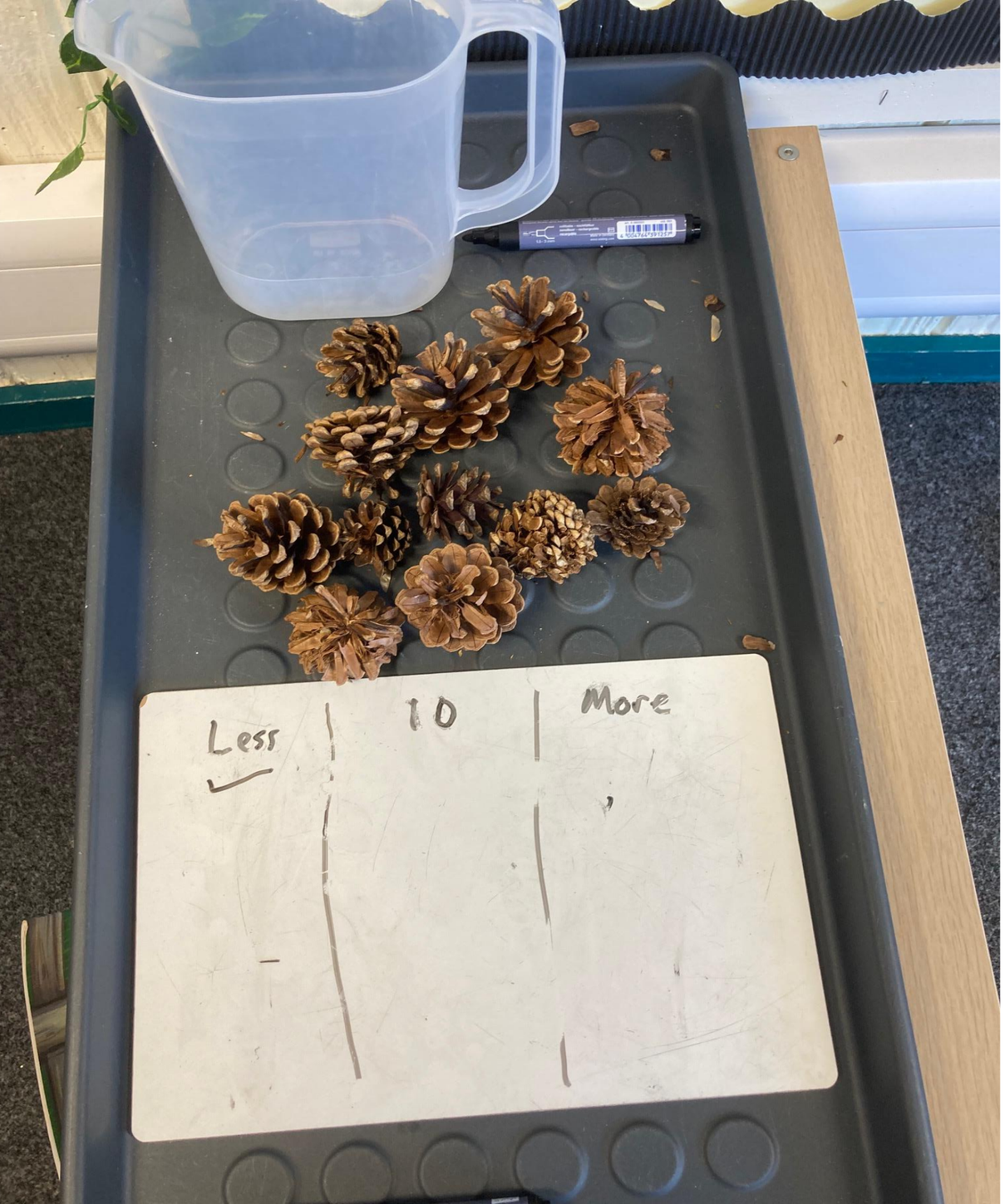
Whole Class Routines
Reasoning With Number

1:15pm start

www.iseemaths.com

Y1 & Y2


Less
10
More



When the counting task has a purpose that makes sense and has significance, children's counting skills operate at a higher level of thinking.

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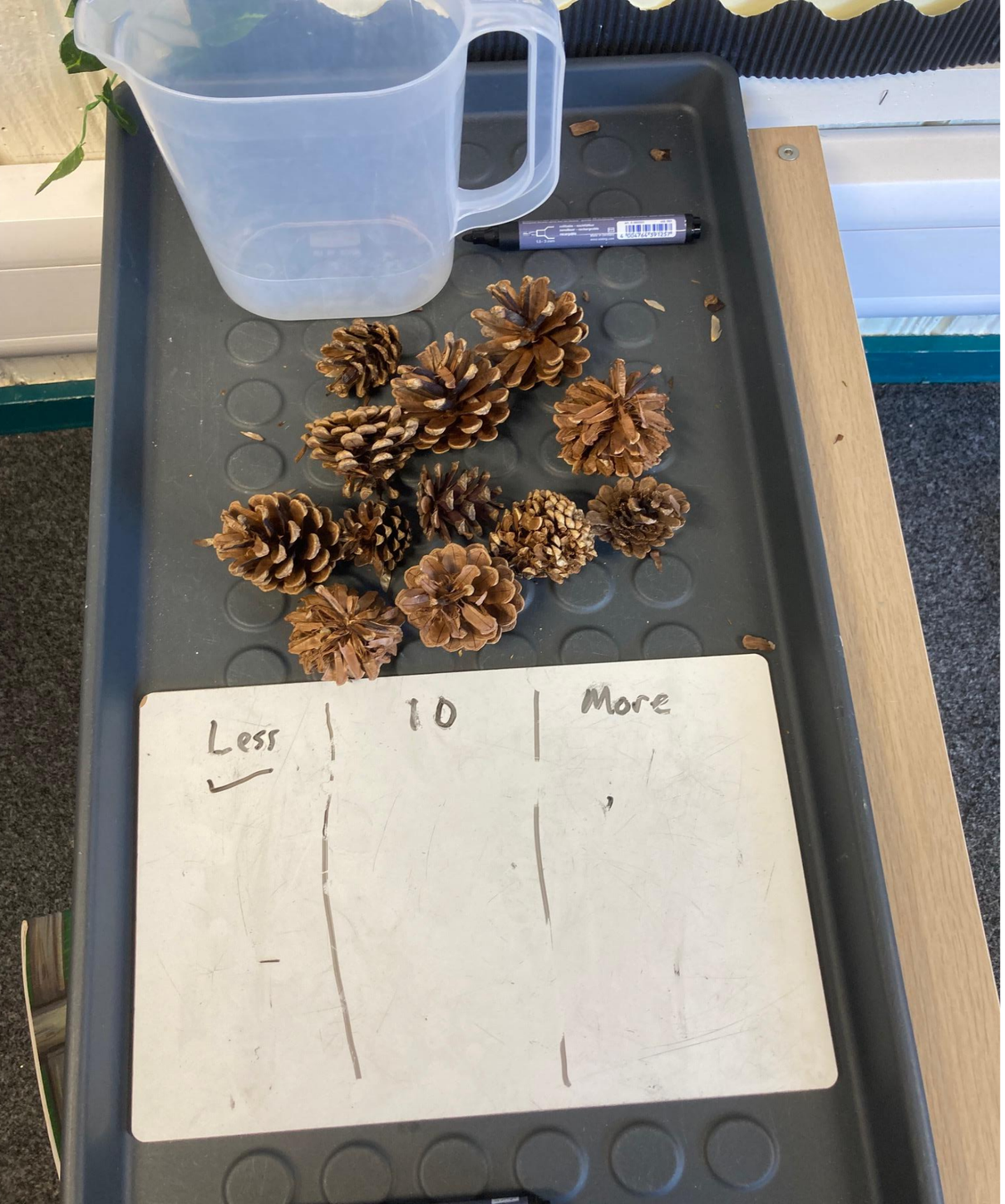



Happy Birthday
Samantha
Happy Birthday
Samantha
Happy Birthday
Samantha
Happy Birthday

Routines Within Interactive Teaching

Raising the internal narrative:

- Gap between question and response/discussion
- Silence in modelling

I already…

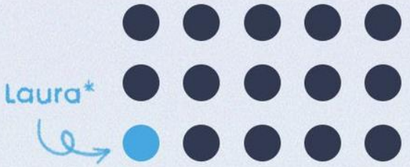
I will try…

Use this for…

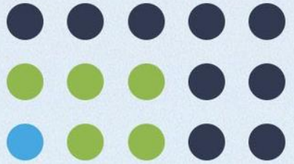
Problems will be…

Who is doing retrieval practice in the class?

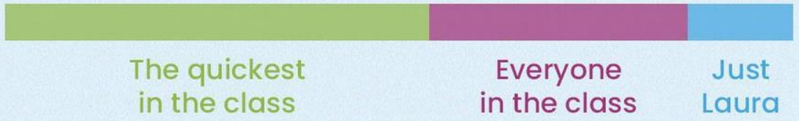
Laura*, what's the capital of Australia?

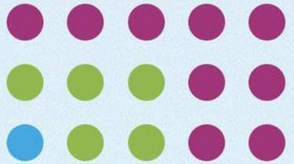


What's the capital of Australia, Laura*?



What's the capital of Australia.....Laura*?





* Other names are available

Routines Within Interactive Teaching

Raising the internal narrative:

- Gap between question and response/discussion
- Silent examples

I already…

I will try…

Use this for…

Problems will be…

There are **2** plates of cookies.

There are **5** cookies on each plate.

How many cookies are there altogether?

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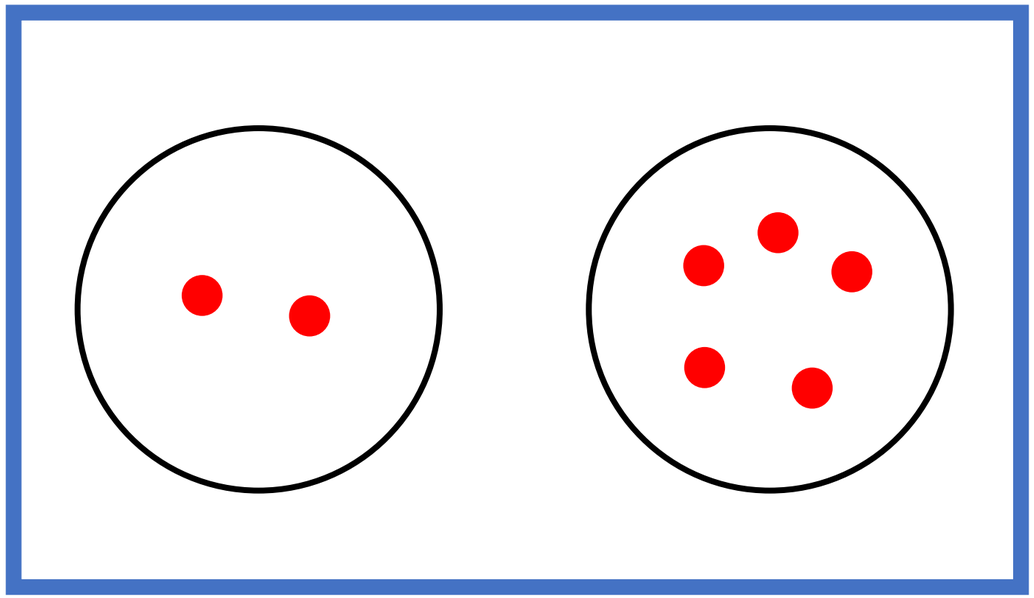
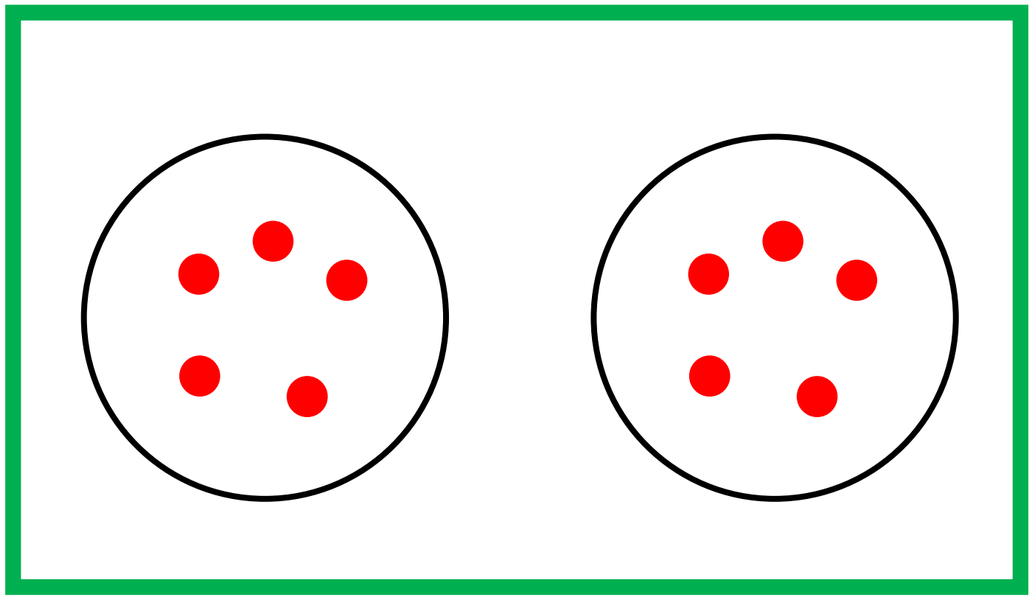
There are **5** cookies on each plate.

How many cookies are there altogether?





Task 1: Which Picture?

Jen has 6 cats.

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2 of the cats are inside.

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How many cats are outside?

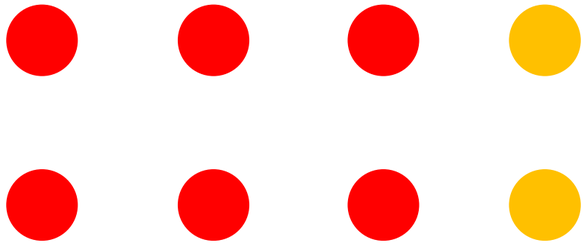
Task 1: Which Picture?

Jen has 6 cats.

2 of the cats are inside.

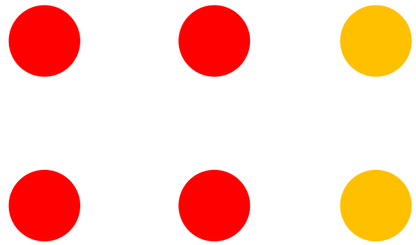
How many cats are outside?

6 + 2



Which Picture?

6 – 2



Task 1: Which Picture?

Jen has 6 cats.

2 of the cats are inside.

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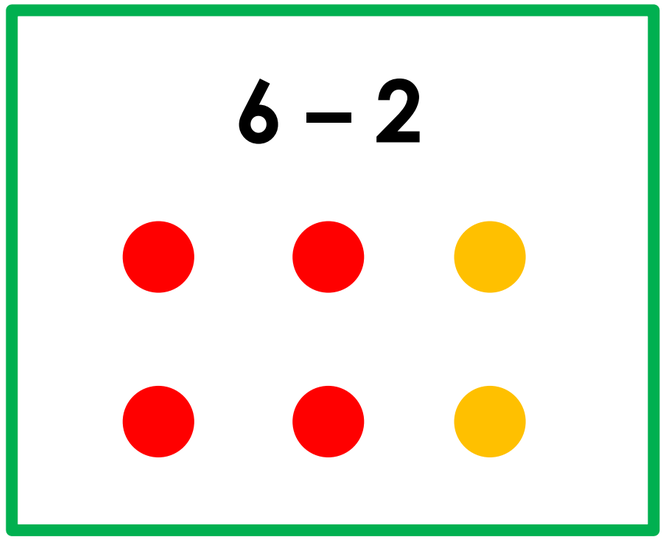
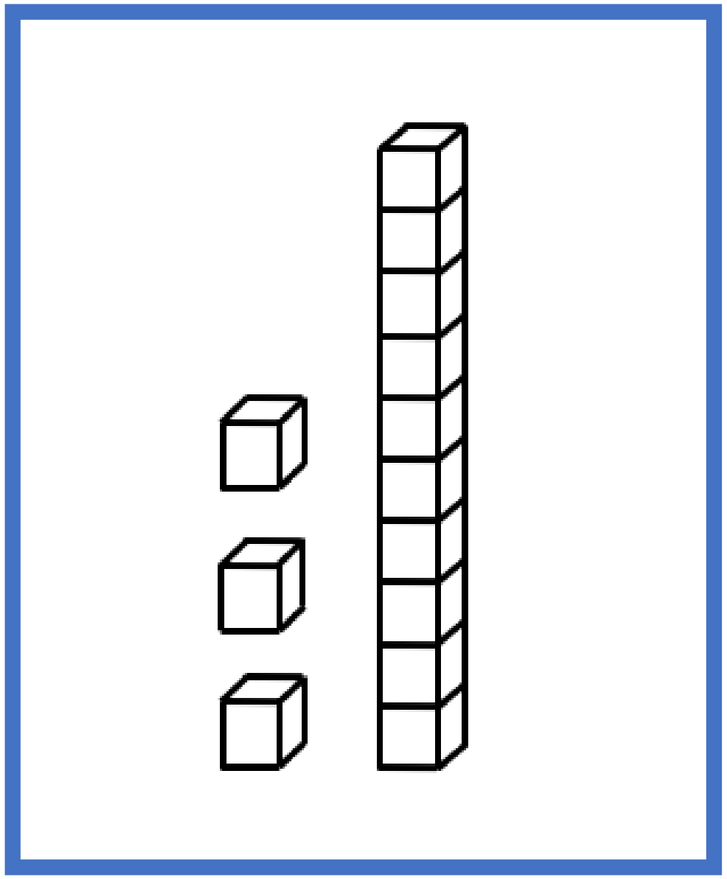
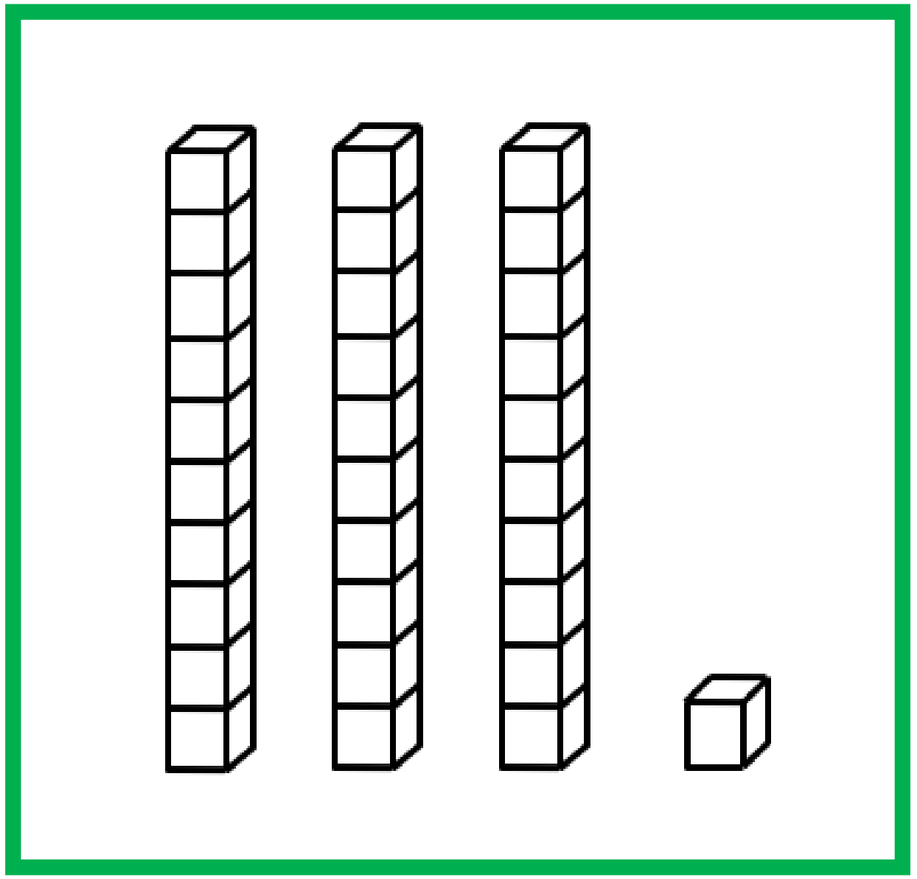


Which picture show 31?





Which Answer?

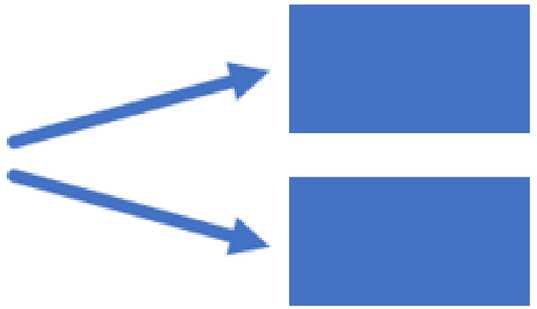
Write forty-two

Tim: 402 **Harry:** 42

Explain the mistake

Which Answer?

Sixty-three



Which Answer?

Routines Within Interactive Teaching

Raising the internal narrative:

- Gap between question and response/discussion
- Silent examples

Mass participation:

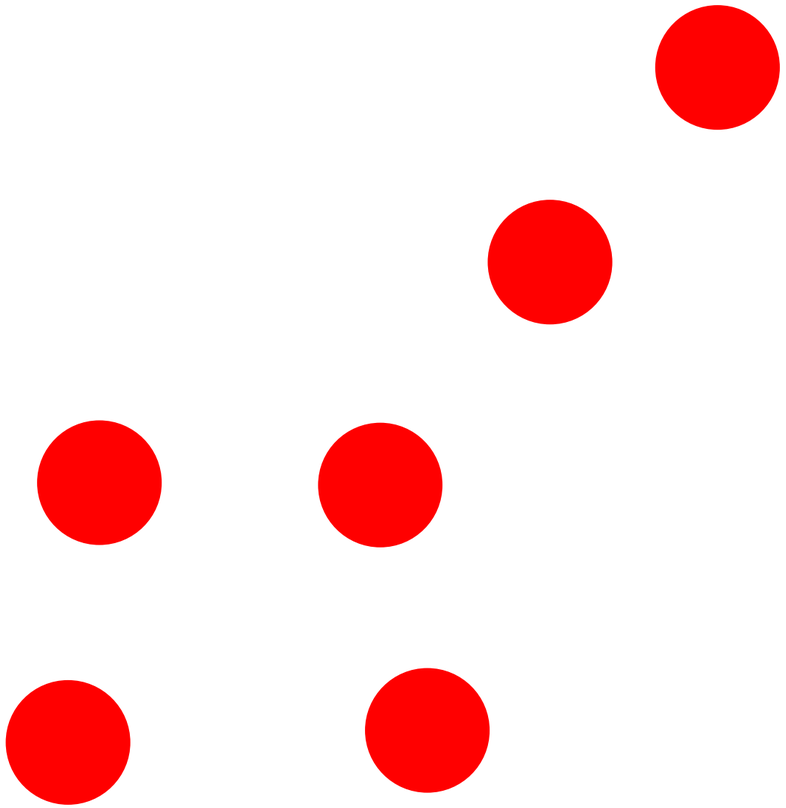
- Form of answer before question
- Wait time 2, other perspectives

I already…

I will try…

Use this for…

Problems will be…



Routines Within Interactive Teaching

Raising the internal narrative:

- Gap between question and response/discussion
- Silent examples

Mass participation:

- Form of answer before question
- Wait time 2, other perspectives

Managing discussions

Feedback

I already…

I will try…

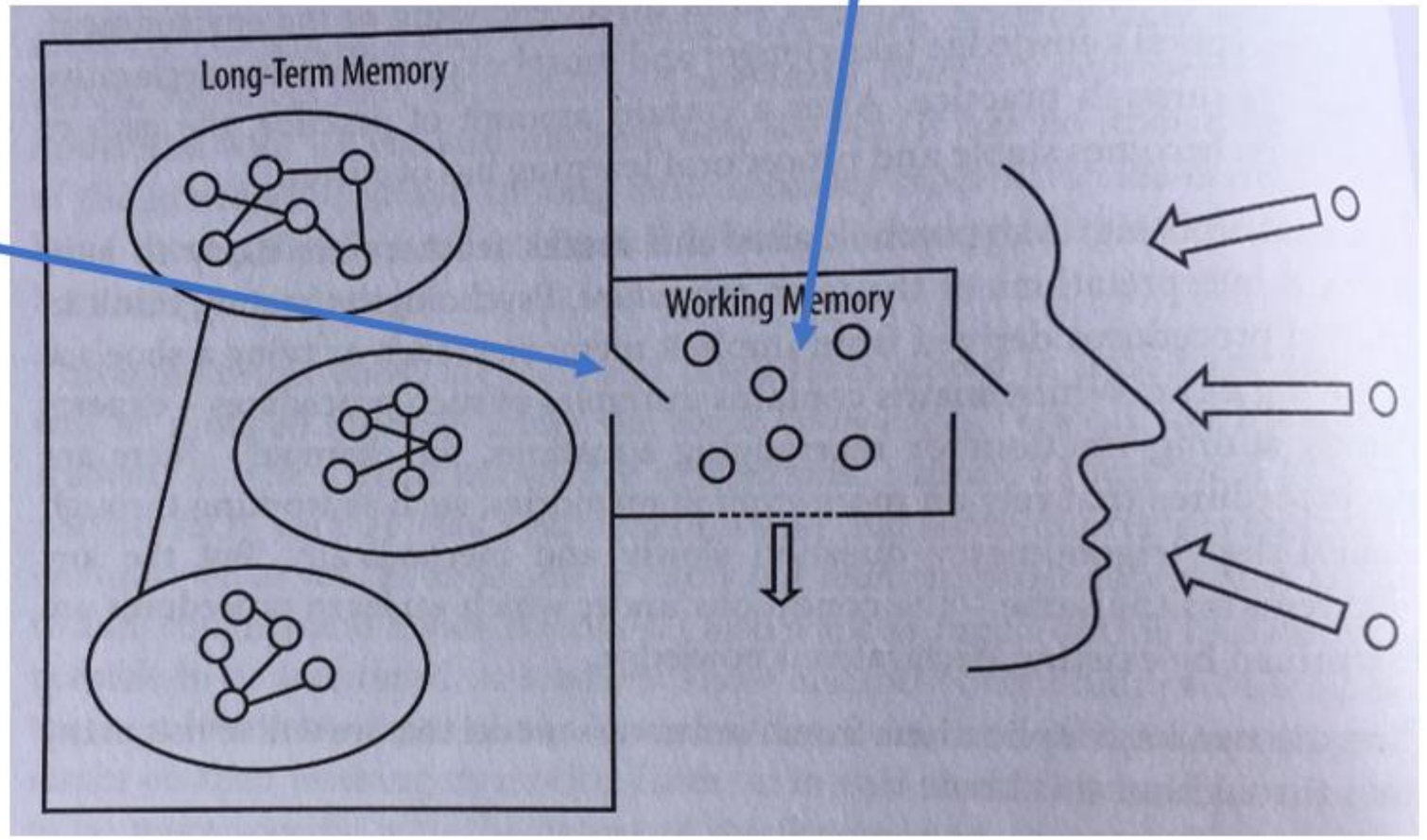
Use this for…

Problems will be…

Reasoning: the process of sense-making

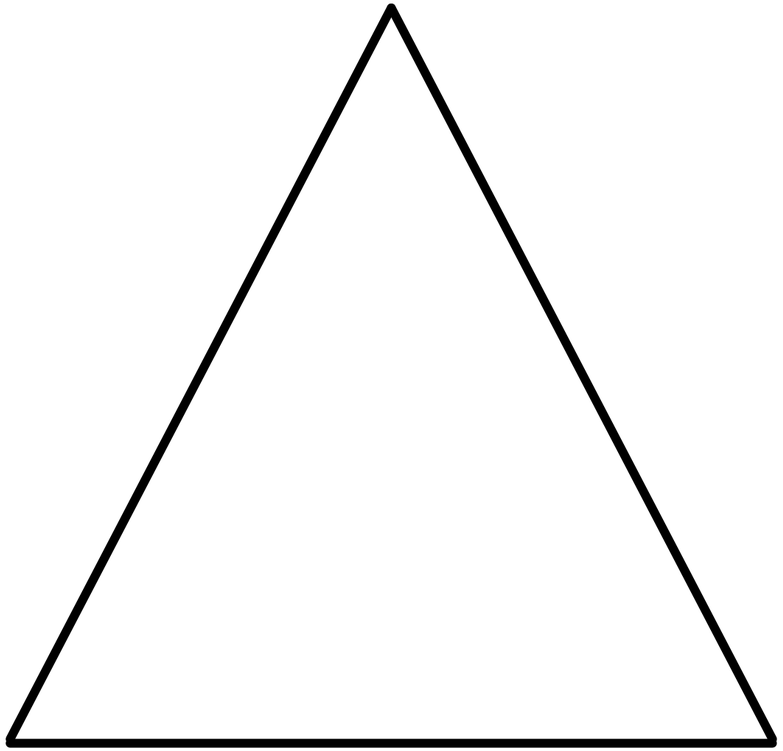
Simultaneous visual/oral processing

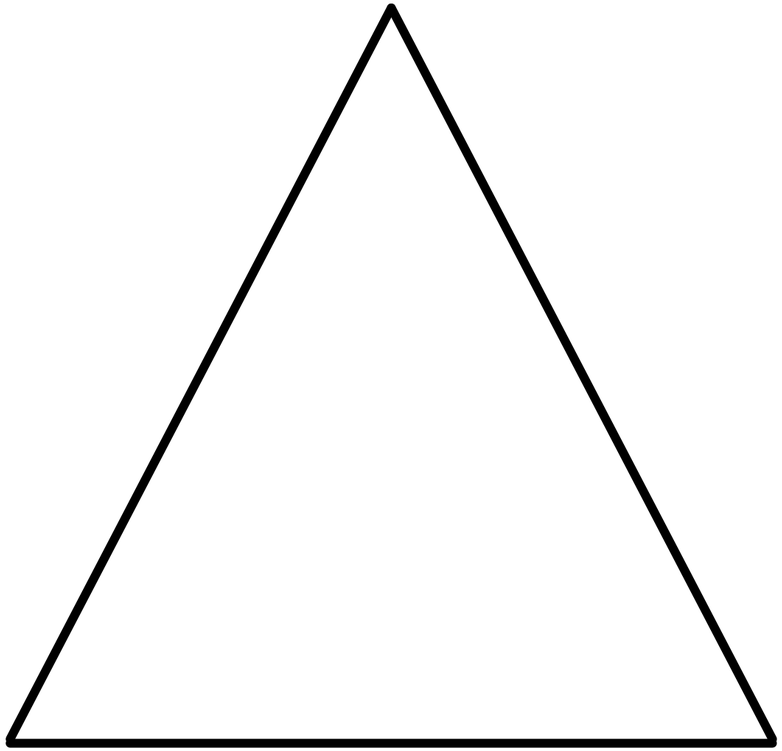
Prior learning, initial success

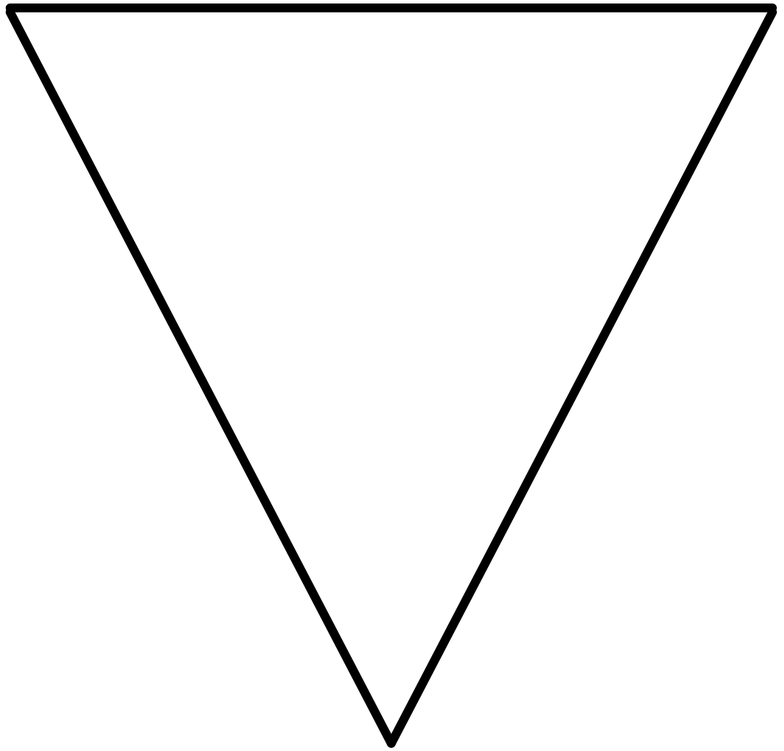


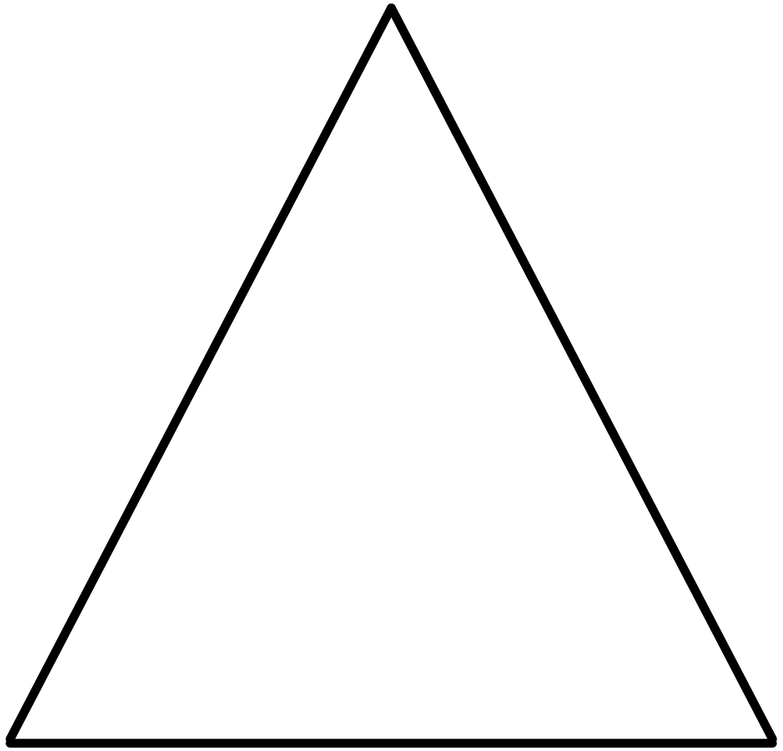
Novice

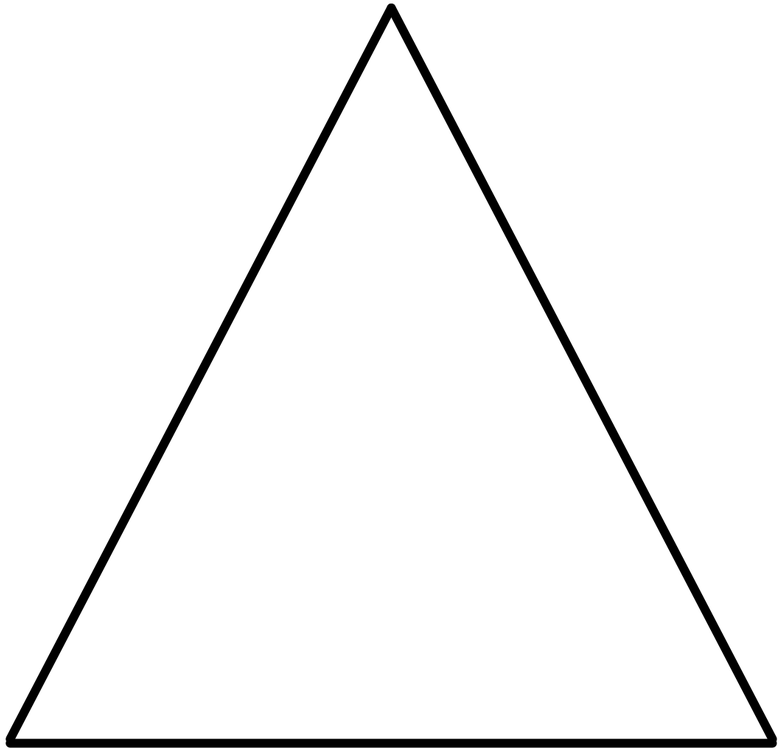
Expert

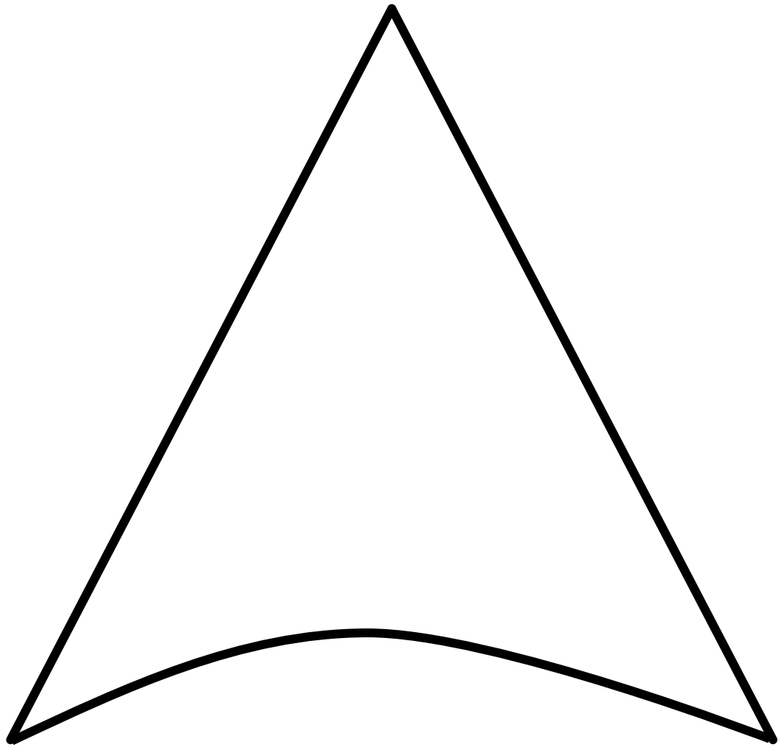


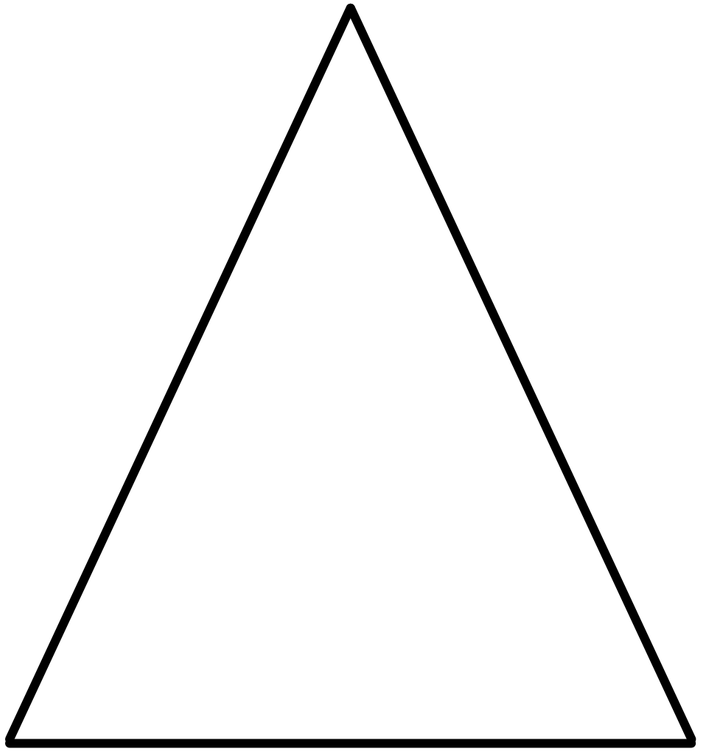


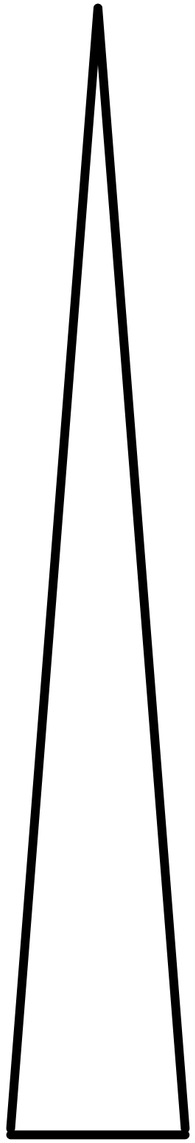


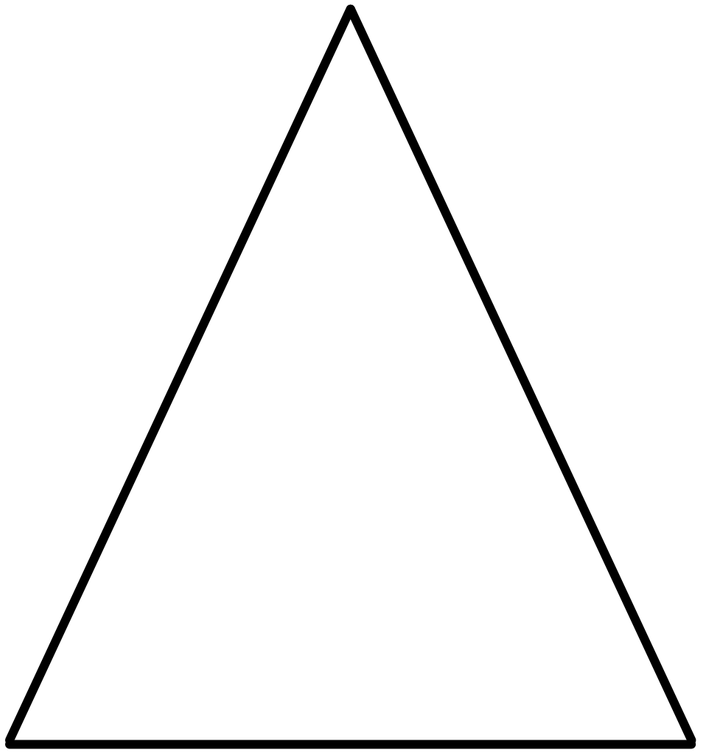


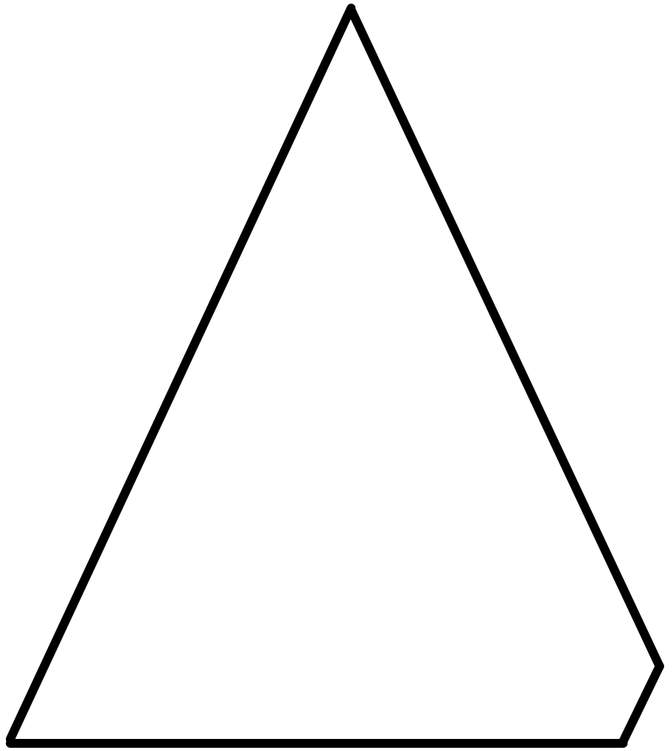






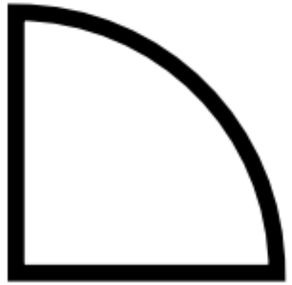


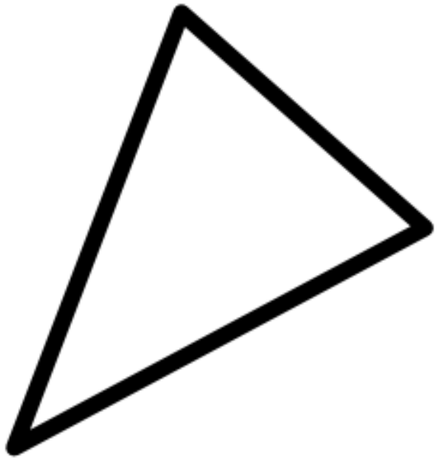


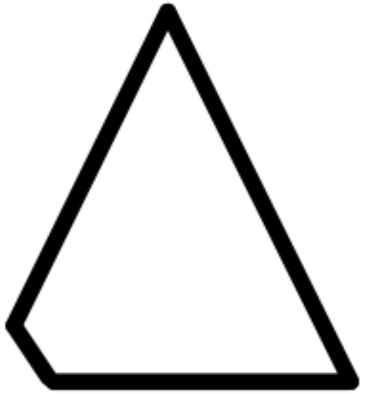


Is it a triangle?

✓ ✗







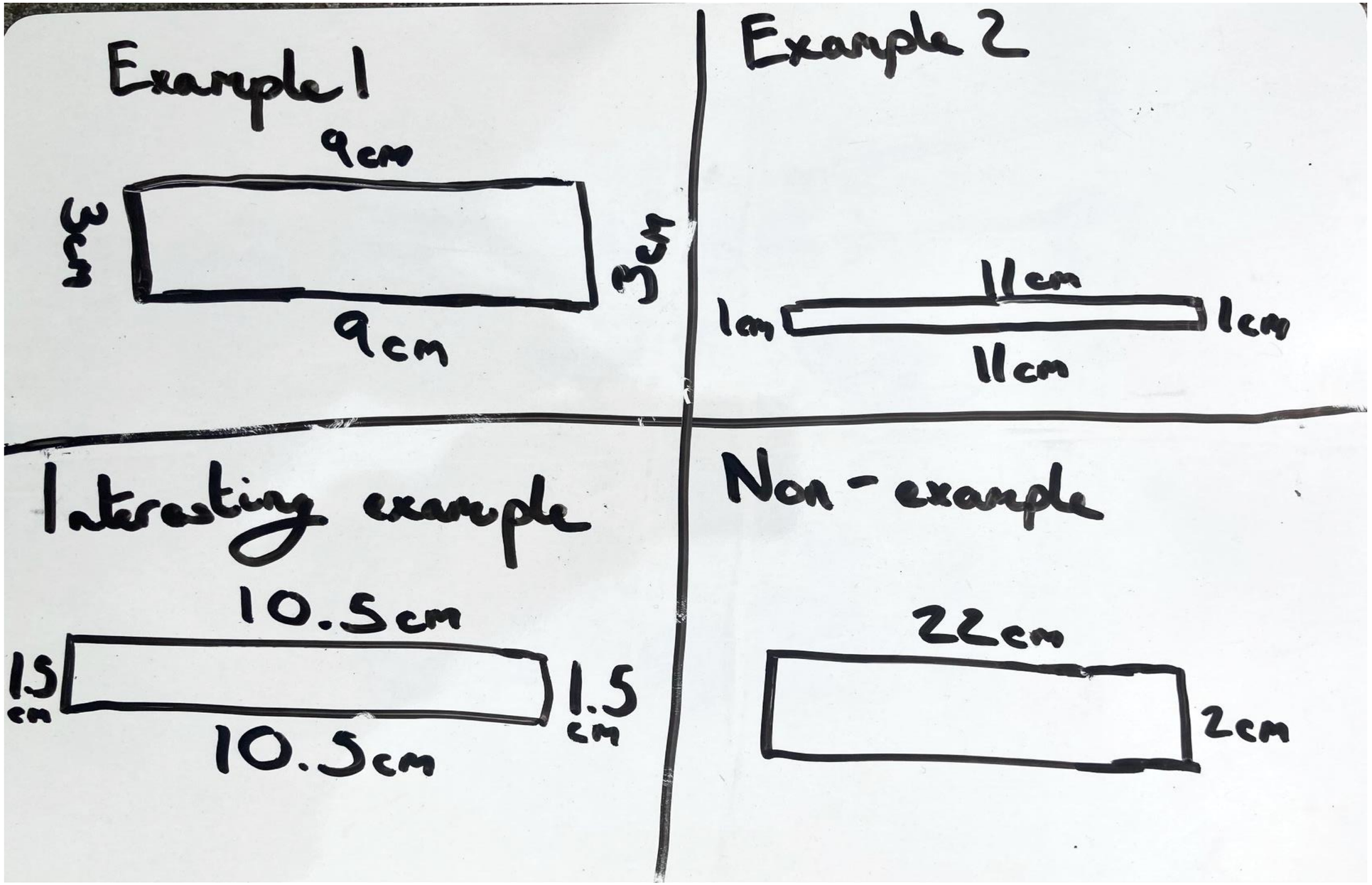
Example 1

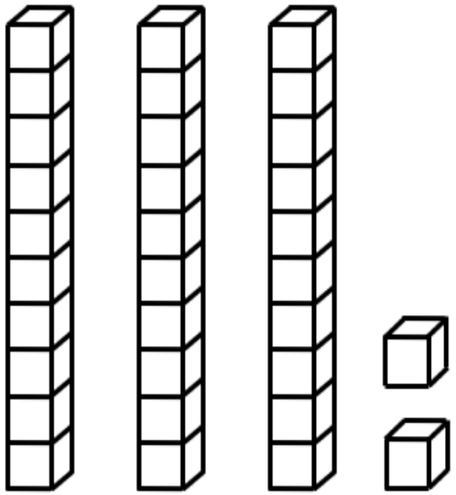
Example 2

Example

Non-example

A rectangle with a perimeter of 24cm.





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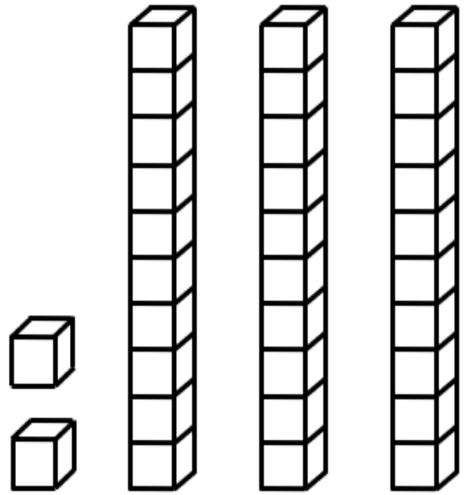

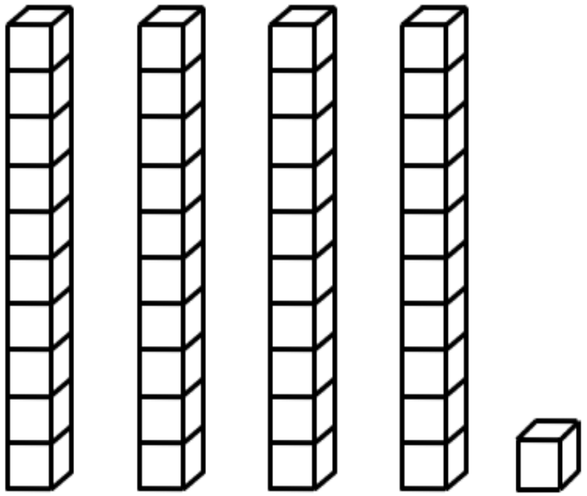

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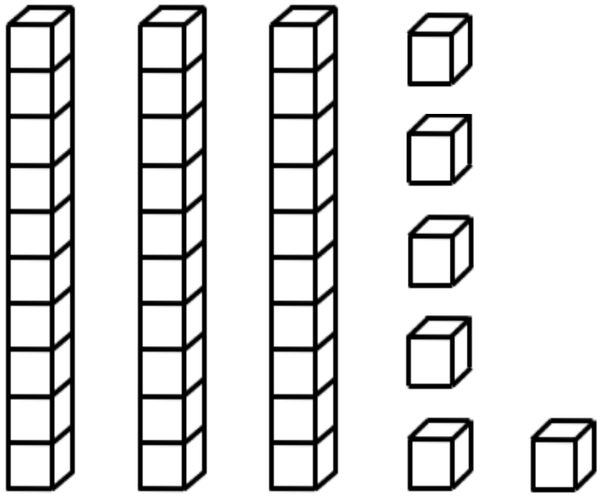

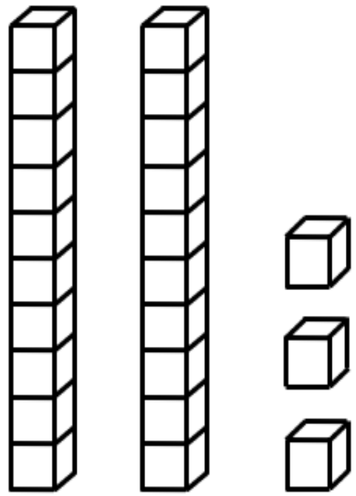

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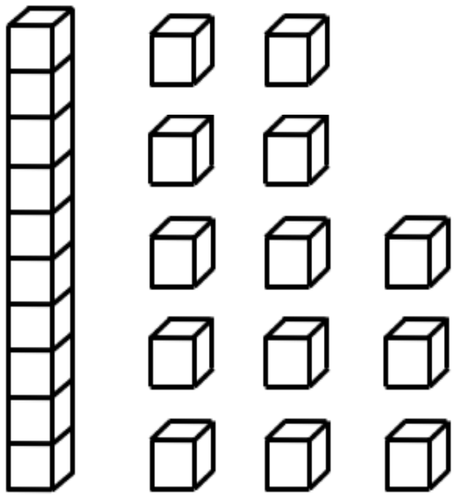
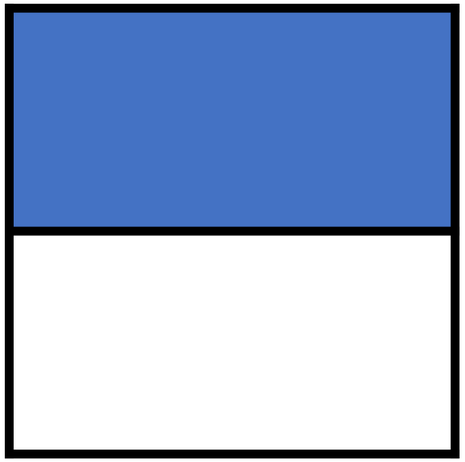


This picture shows $\frac{1}{2}$



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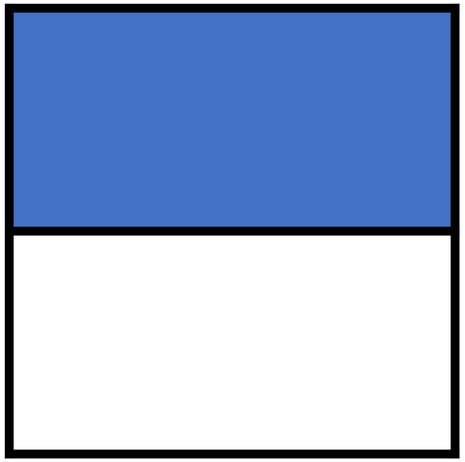

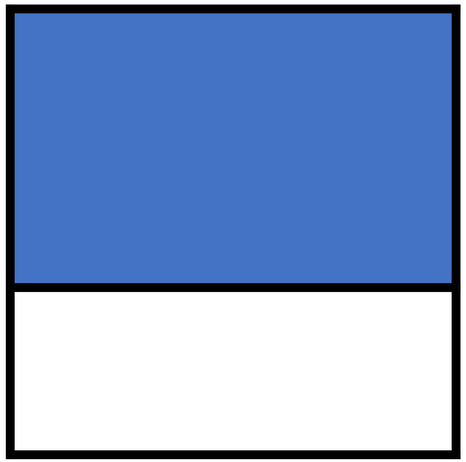

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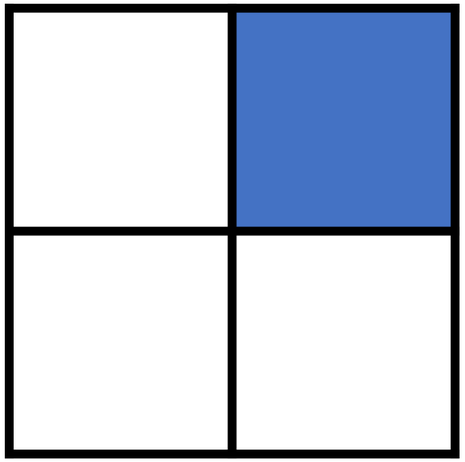

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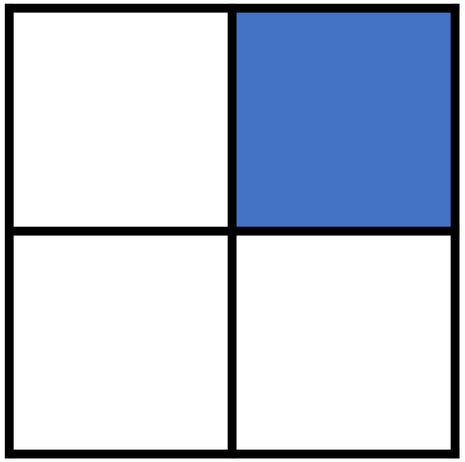

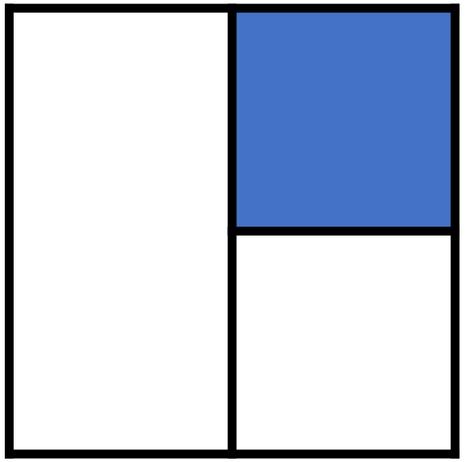

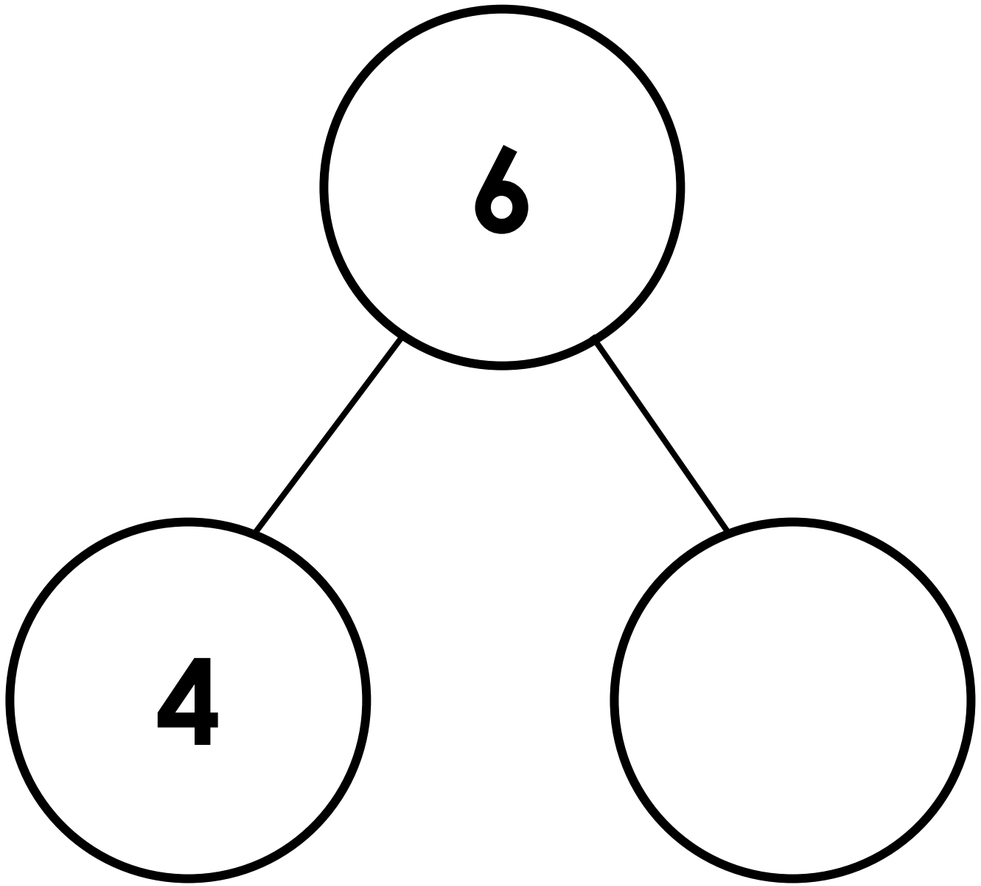
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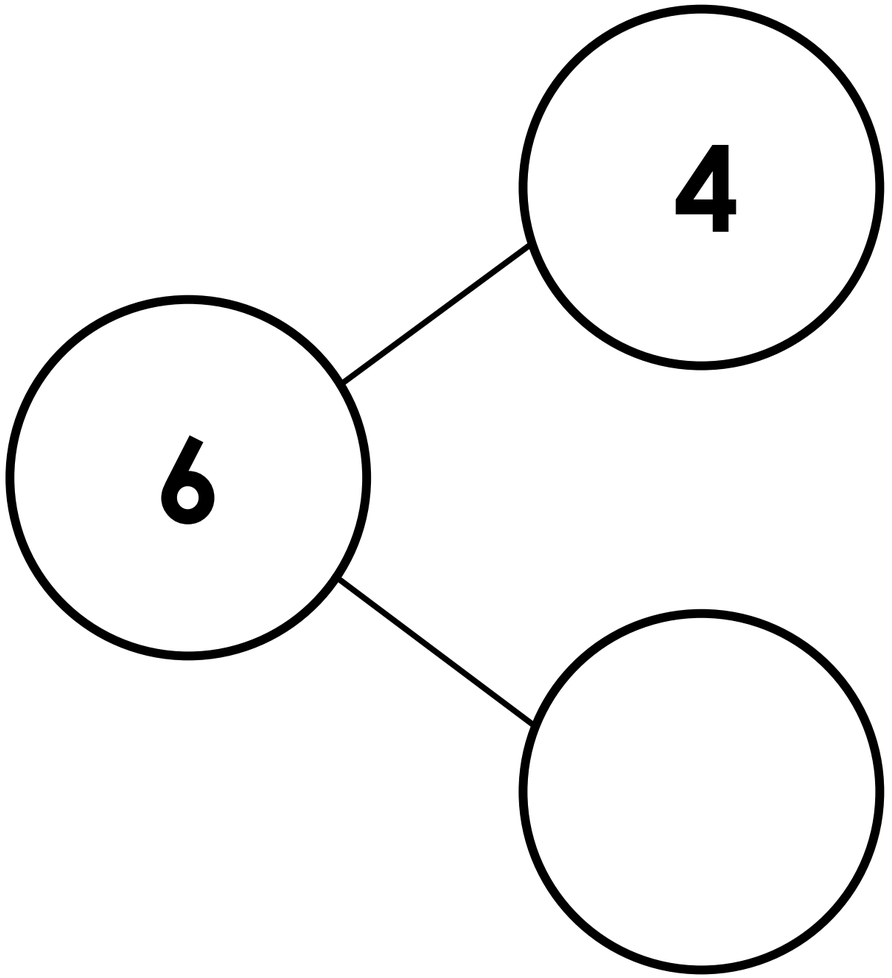
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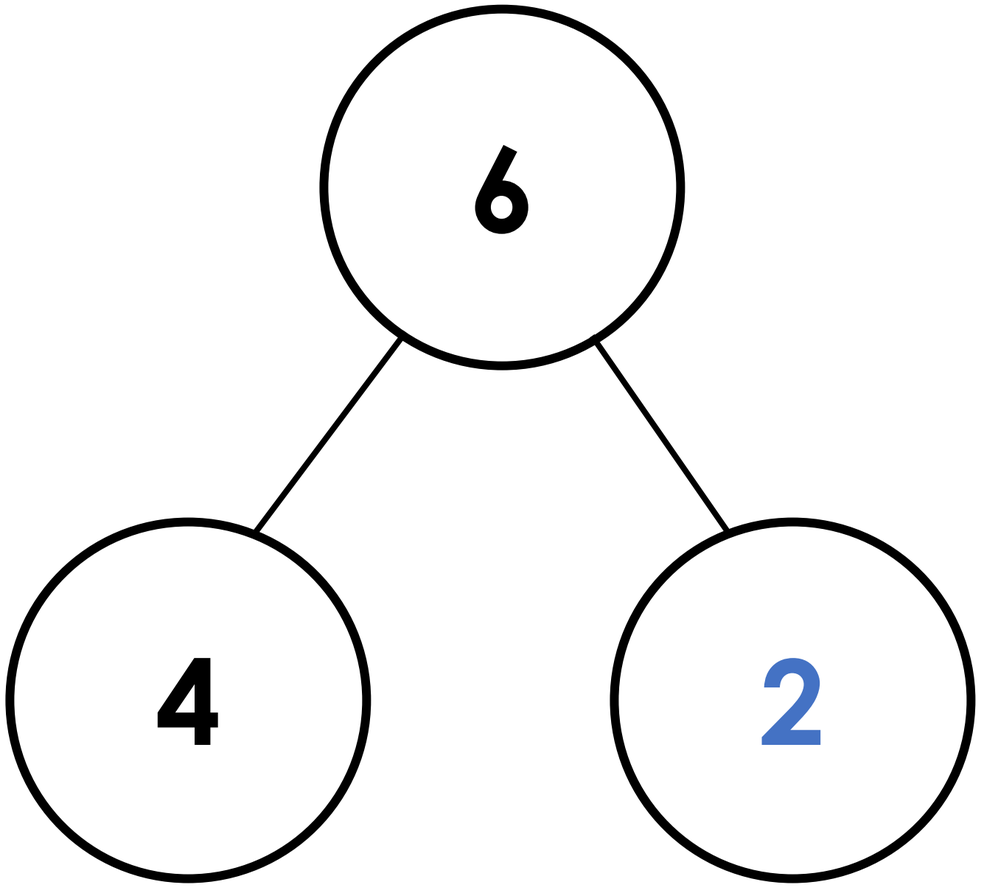
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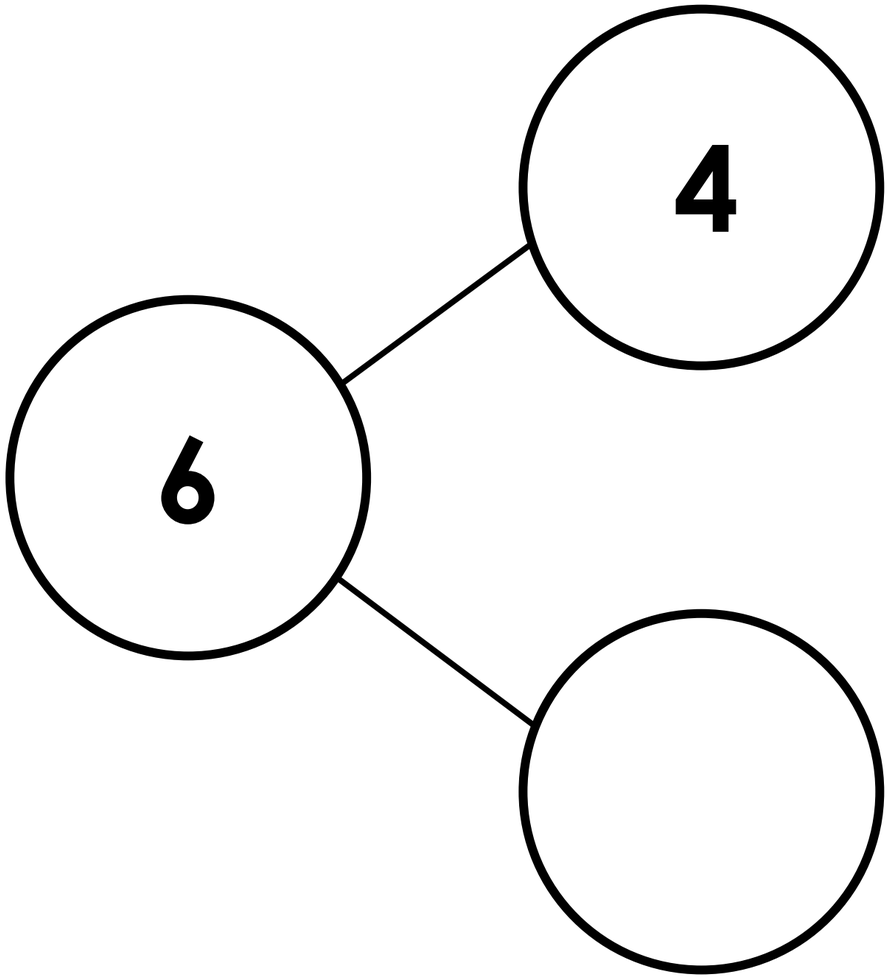
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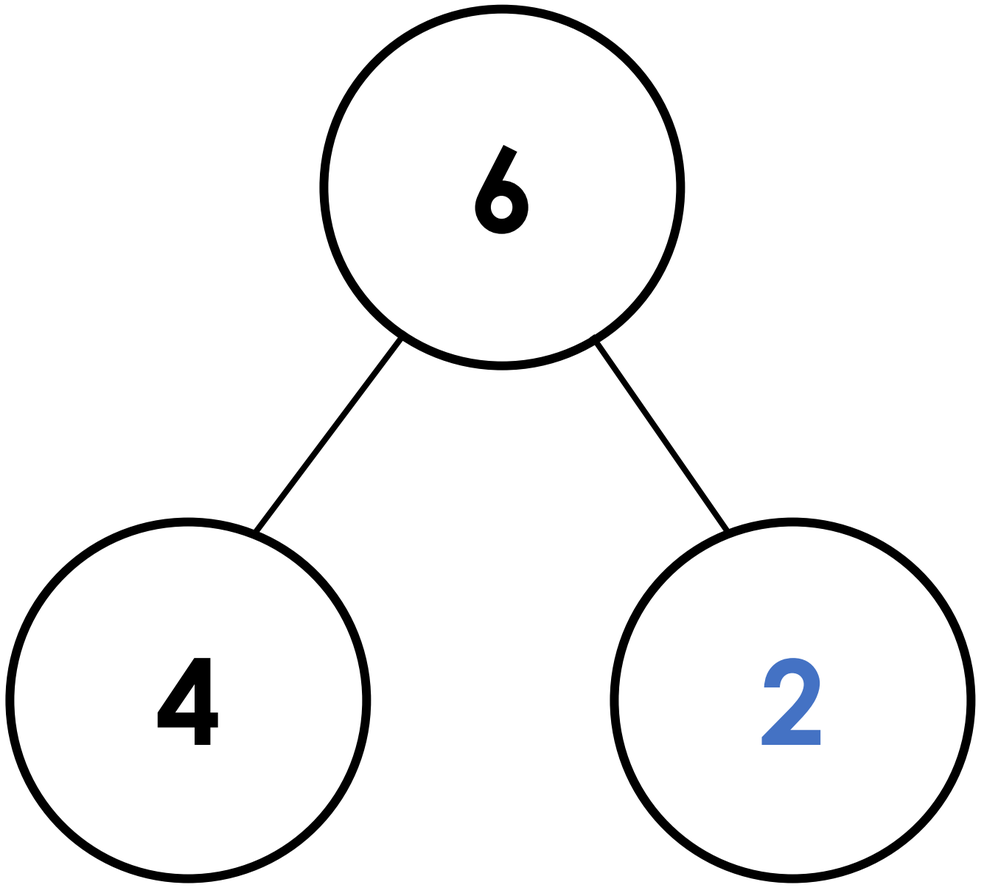
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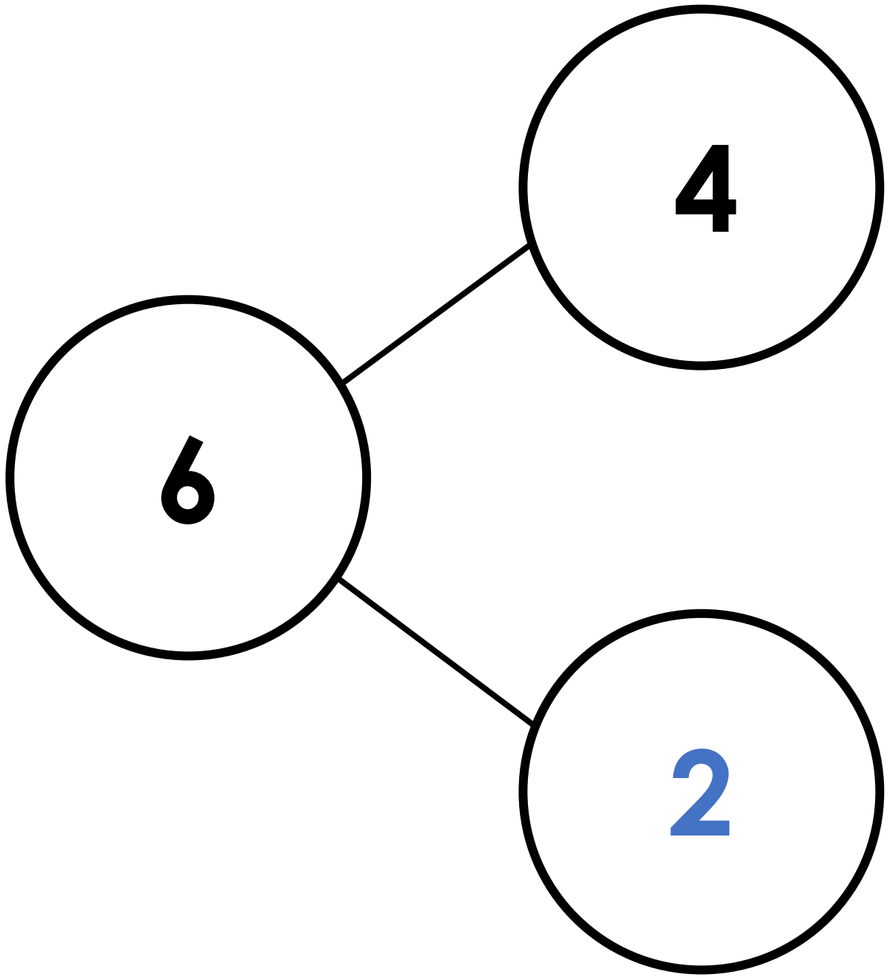
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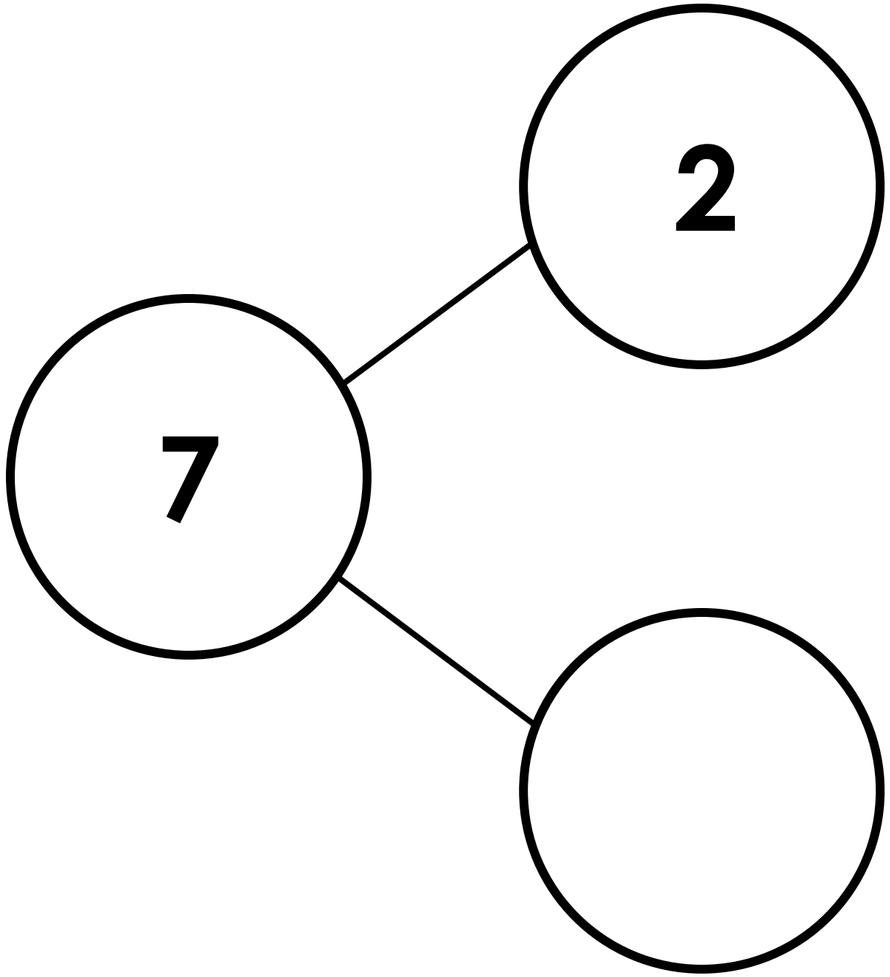
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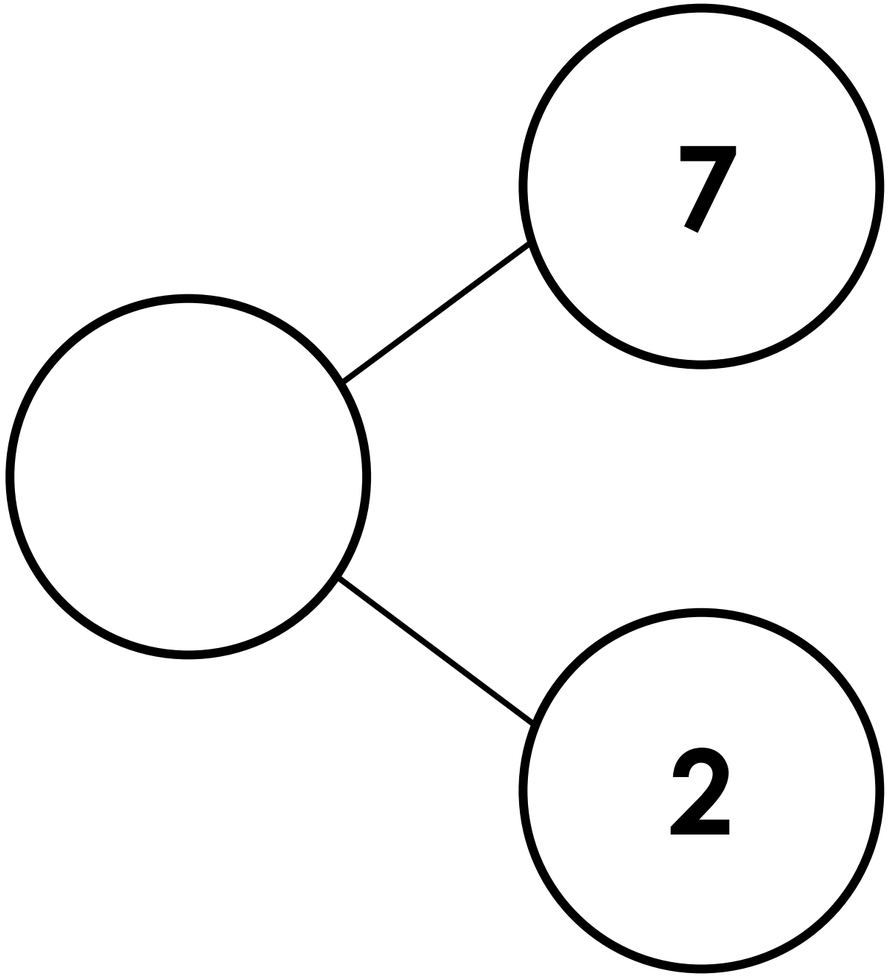
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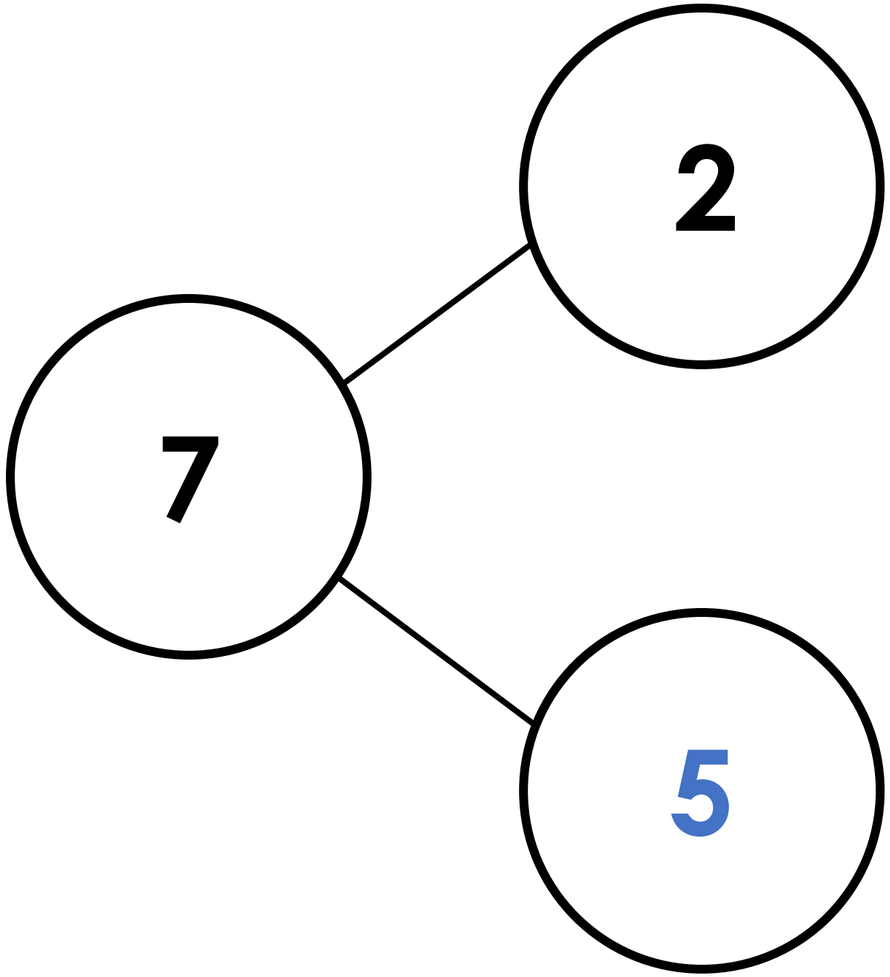
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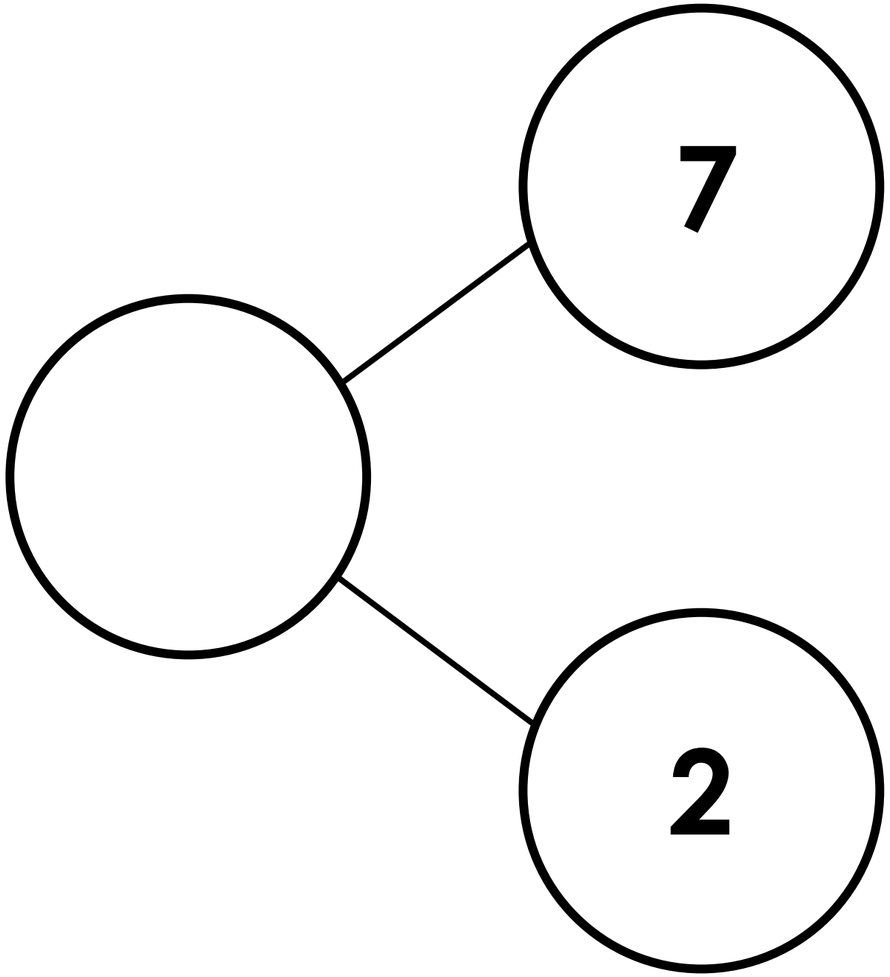
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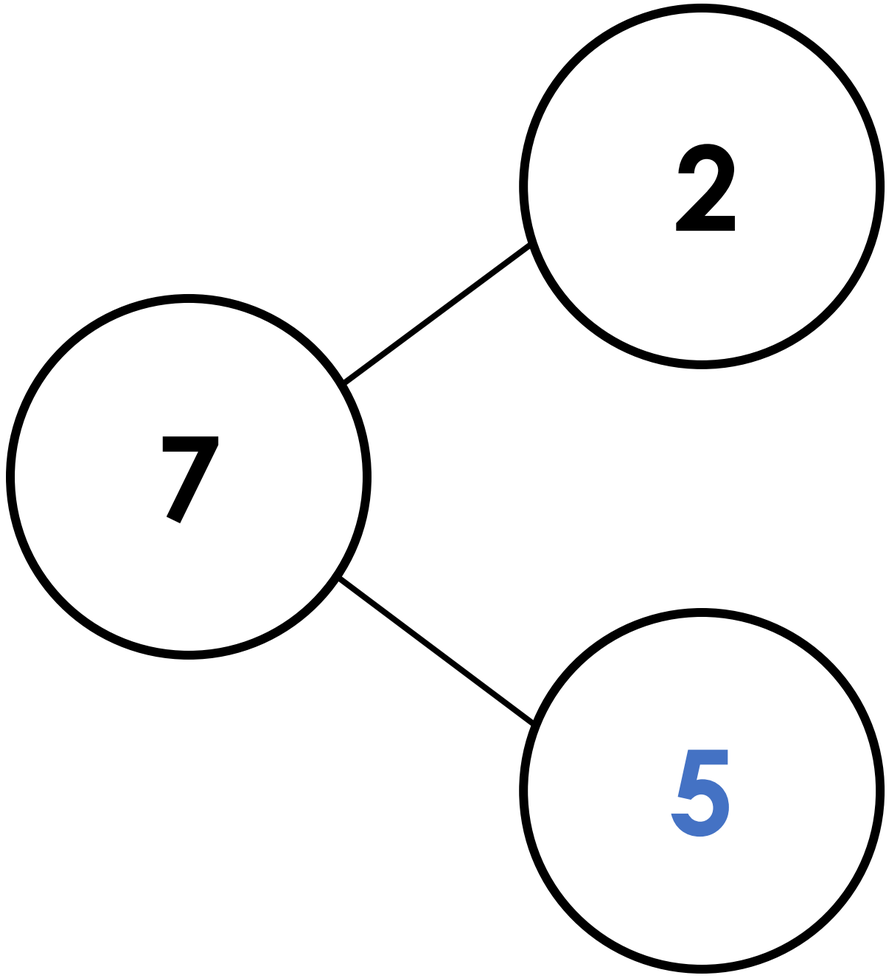
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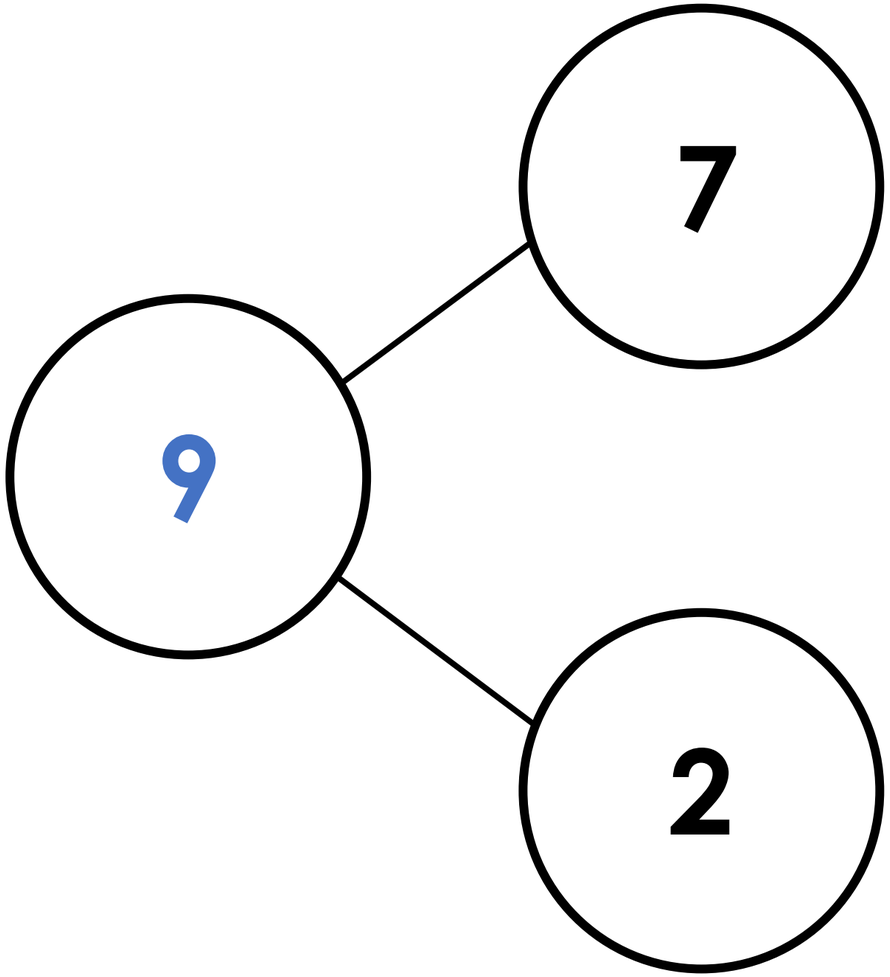
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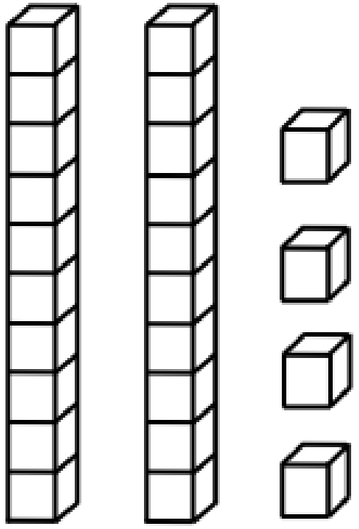
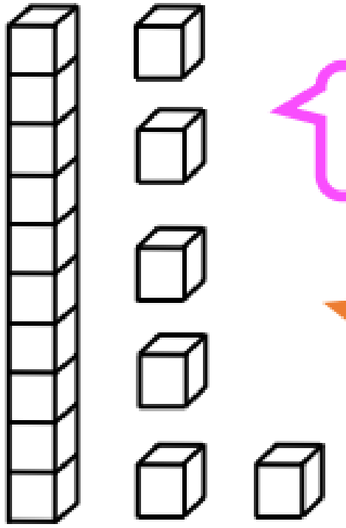
9
2

Which Answer?



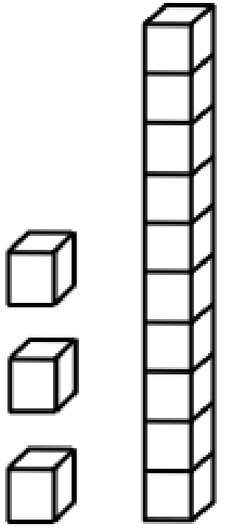
23

24



16

21

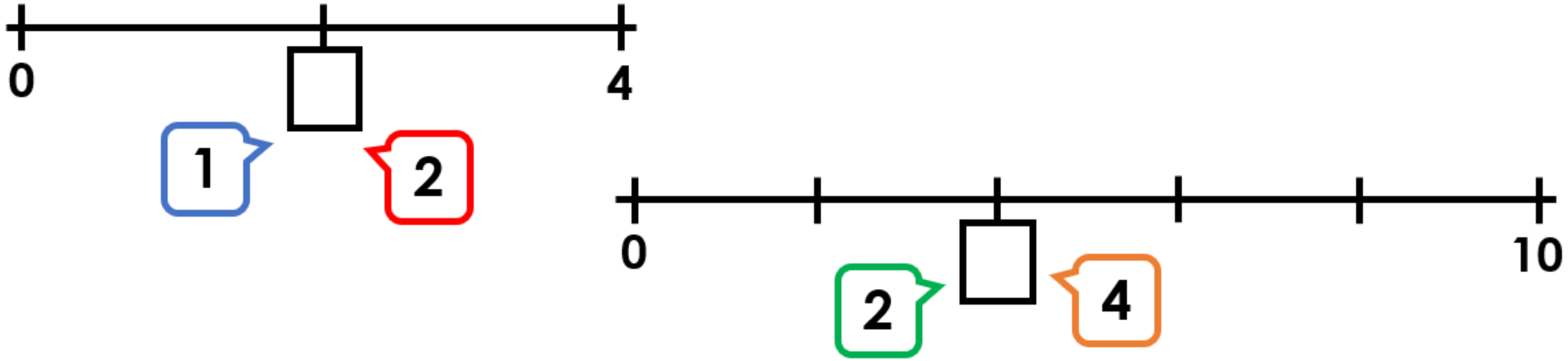


31

13

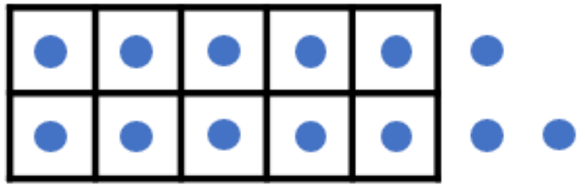
Explain the mistakes.

Which Answer?



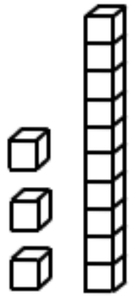
Correct or Not Correct?

✓ or ✗

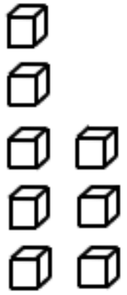


thirty

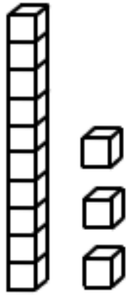
10 + 3



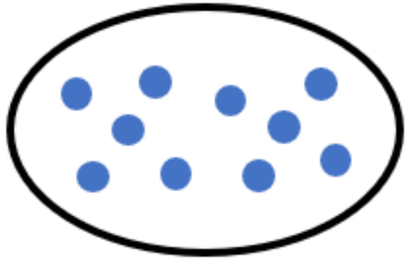
thirteen



Is it 13?

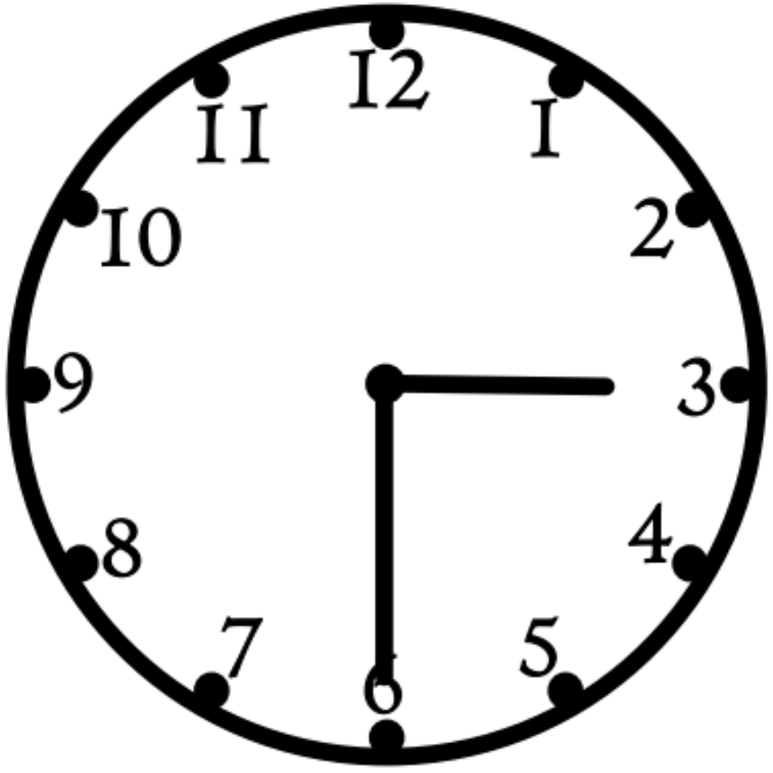


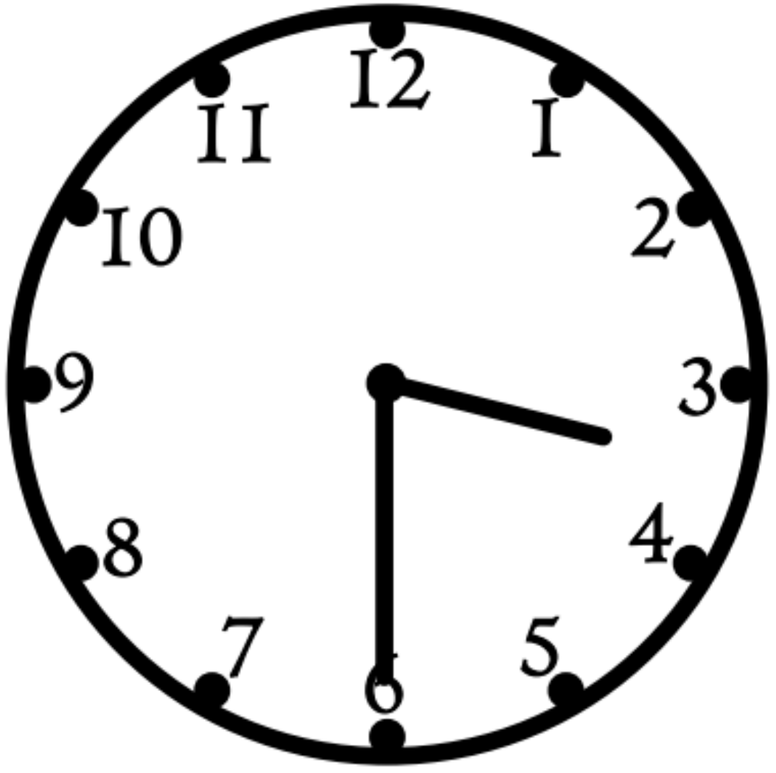
1 + 3



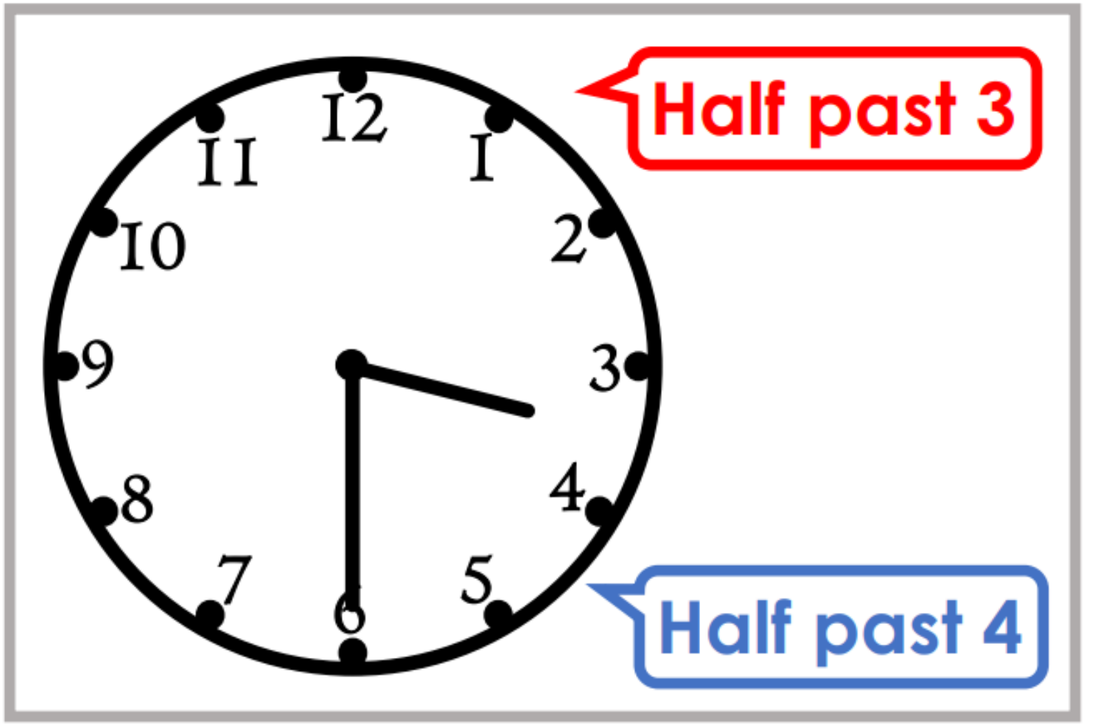
3 + 10

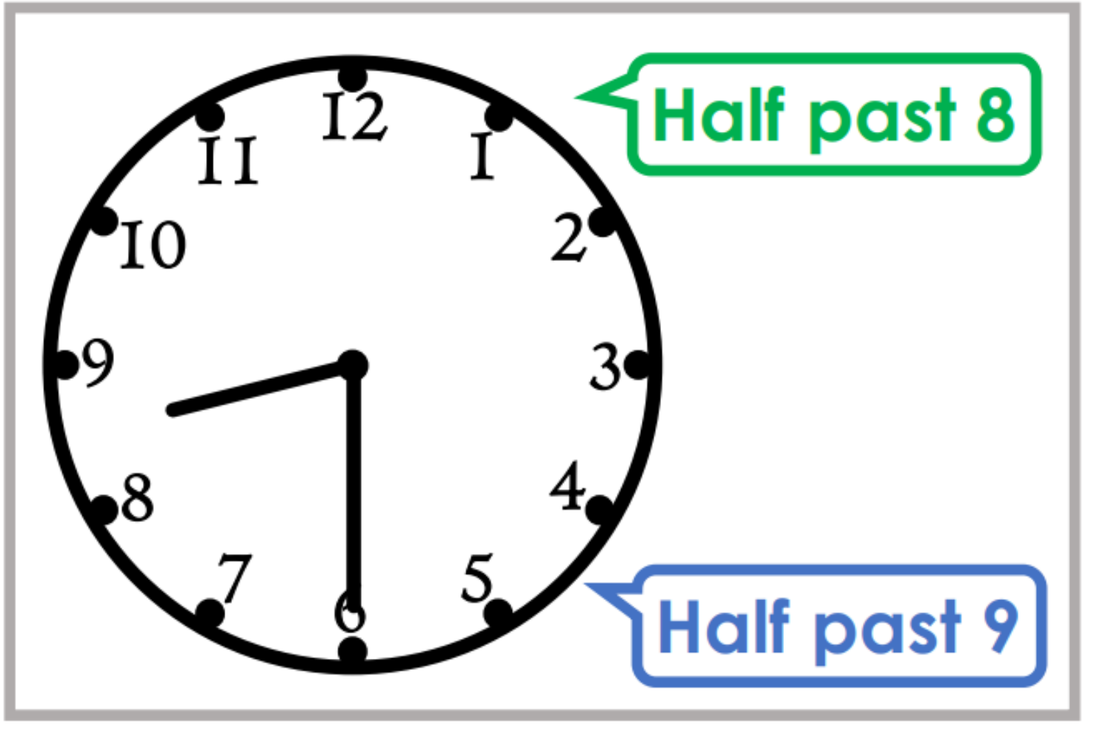
Spot the difference



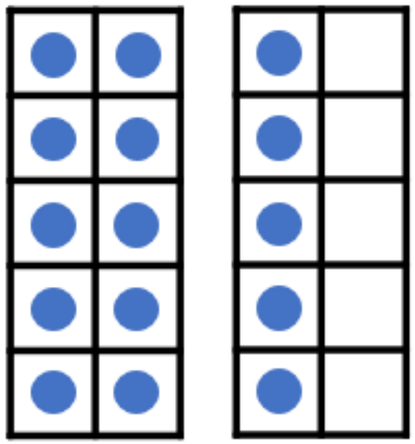
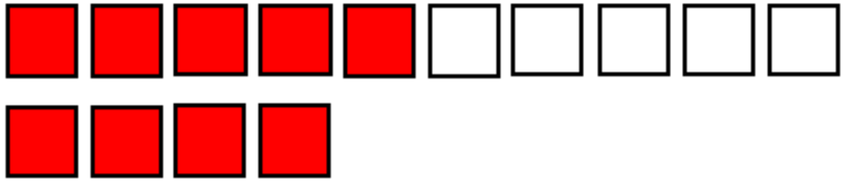


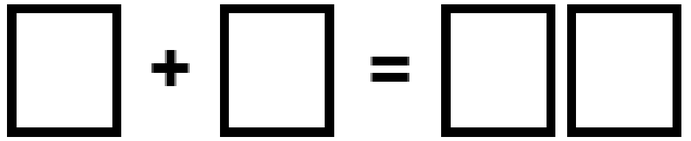
Which answer?



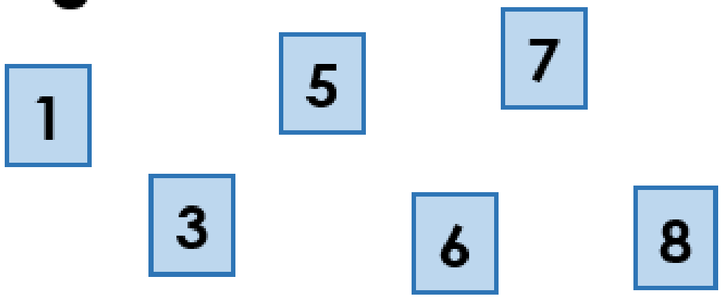


Odd One Out

15		
		fifteen



Answer using four of the digits:



Answers:

Level 1: *I can find an answer*

Level 2: *I can find different answers*

Level 3: *I know how many answers there are*

Different ways

Make 6p

2 coins

3 coins

4 coins

5 coins

How many ways?

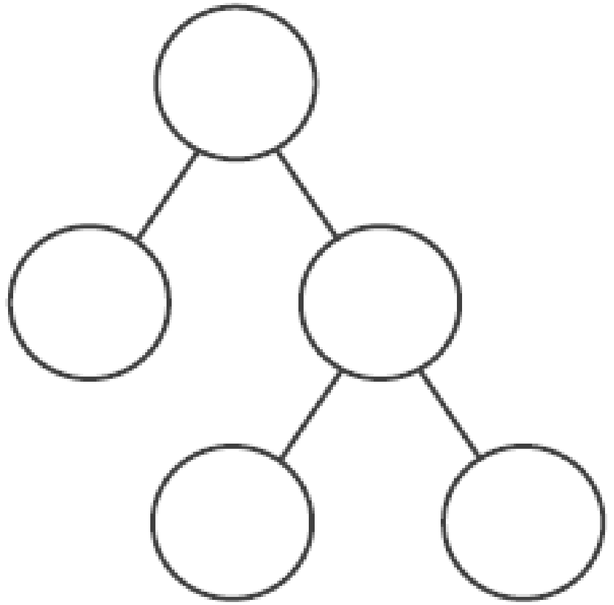
Make 60p

Use 5 coins

Digit cards game

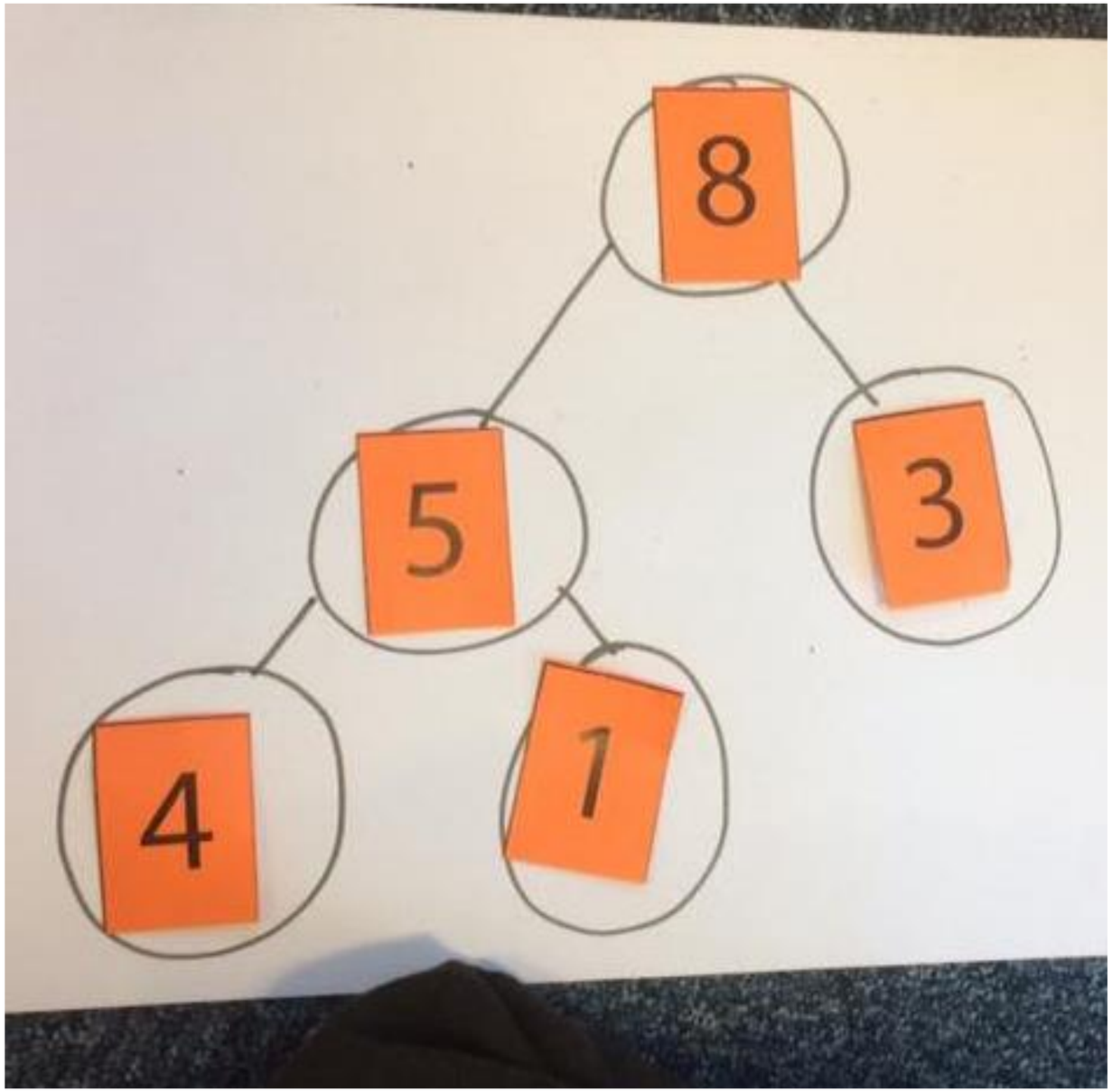
You need digit cards 0 to 9

The two numbers in the circles below add to make the number in the circle above.



Do in different ways.

What is the smallest number that can go in the top circle?



I think of 3 numbers (not 0).

They have a sum of 7.

Answer: ☐ ☐ ☐

I think of 3 numbers (not 0).

They are all different.

They have a sum of 7.

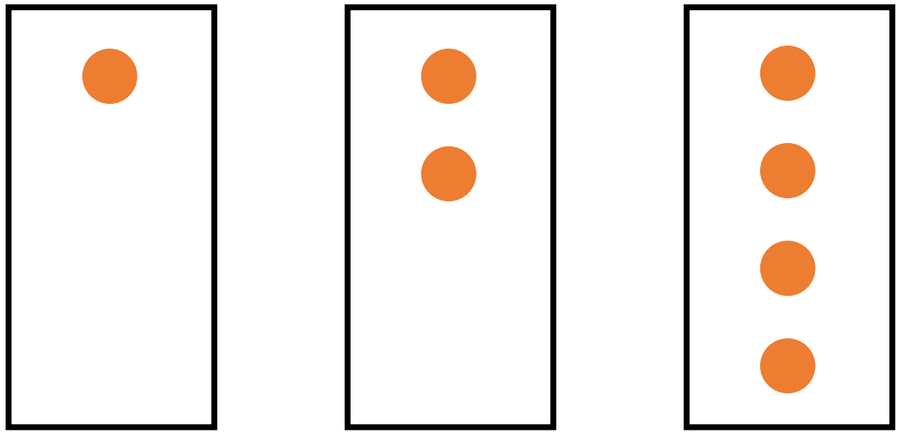
Answer: 

I think of 3 numbers (not 0).

They are all different.

They have a sum of 7.

Answer: ☐ ☐ ☐

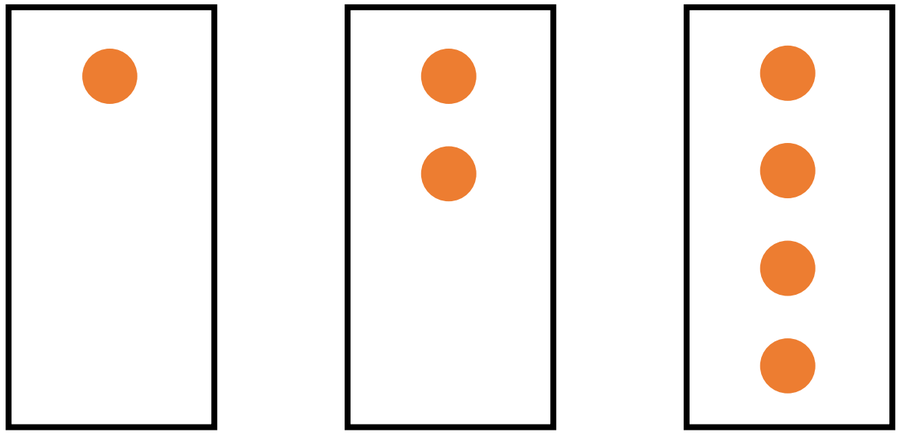


I think of 3 numbers (not 0).

They are all different.

They have a sum of 7.

Answer: ☐ ☐ ☐



I think of 3 numbers (not 0).

They are all different.

They have a sum of 10.

Answer: ☐ ☐ ☐

Subtraction Bordering Tens

Task B

Question A:

9 − 5 = 4

Complete using the digits 0→9

0	3	7
1	5	8
2	6	9

There are different answers.

Answers:

9−5=4
7−3=4
6−2=4
5−1=4

Question B:

9 − 2 = 7

Complete using the digits 0→9

0	3	6
1	4	8
2	5	9

There are different answers.

Answers:

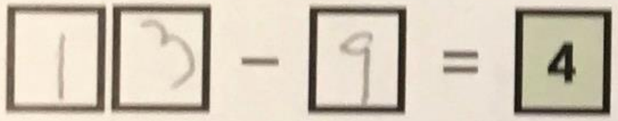
9−2=7
8−1=7

Extension: *Which question can be answered in more ways?* A

Subtraction Bordering Tens

Task C

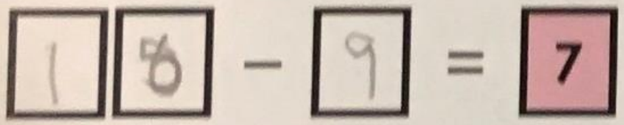
Question X:



Complete using the digits 0→9

0 5 1 6 2 7 8 3 9

Question Y:



Complete using the digits 0→9

0 4 1 5 2 6 3 8 9

Extension: *Which question can be answered in more ways?* Y

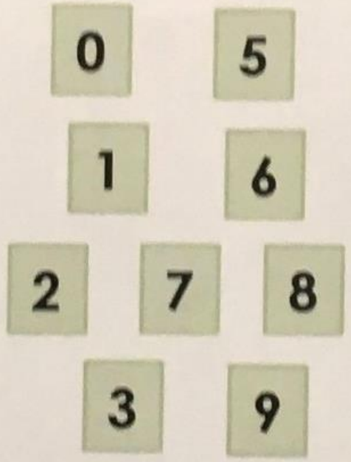
Subtraction Bordering Tens

Task C

Question X:

13 − 9 = 4

Complete using the digits 0→9



There are different answers.

Answers:

13 − 9 = 4

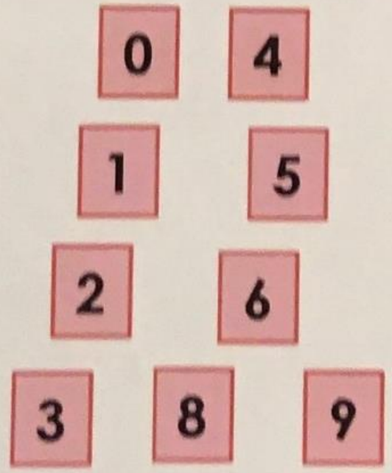
12 − 8 = 4

10 − 6 = 4

Question Y:

16 − 9 = 7

Complete using the digits 0→9



There are different answers.

Answers:

16 − 9 = 7

15 − 8 = 7

~~14 − 7 = 7~~

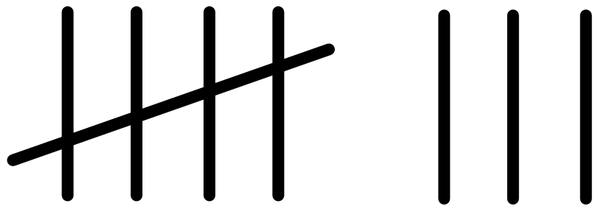
13 − 6 = 7

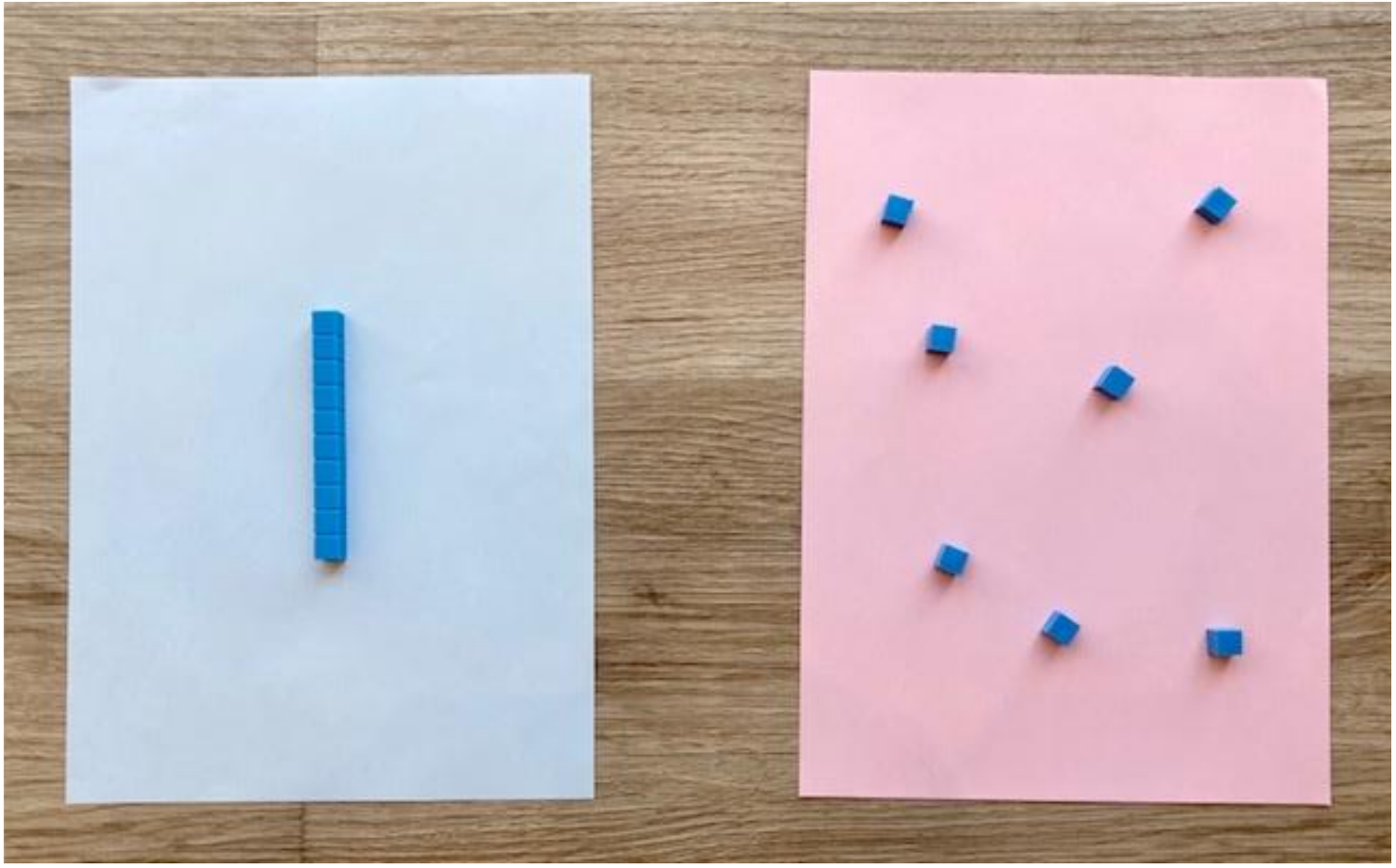
12 − 5 = 7

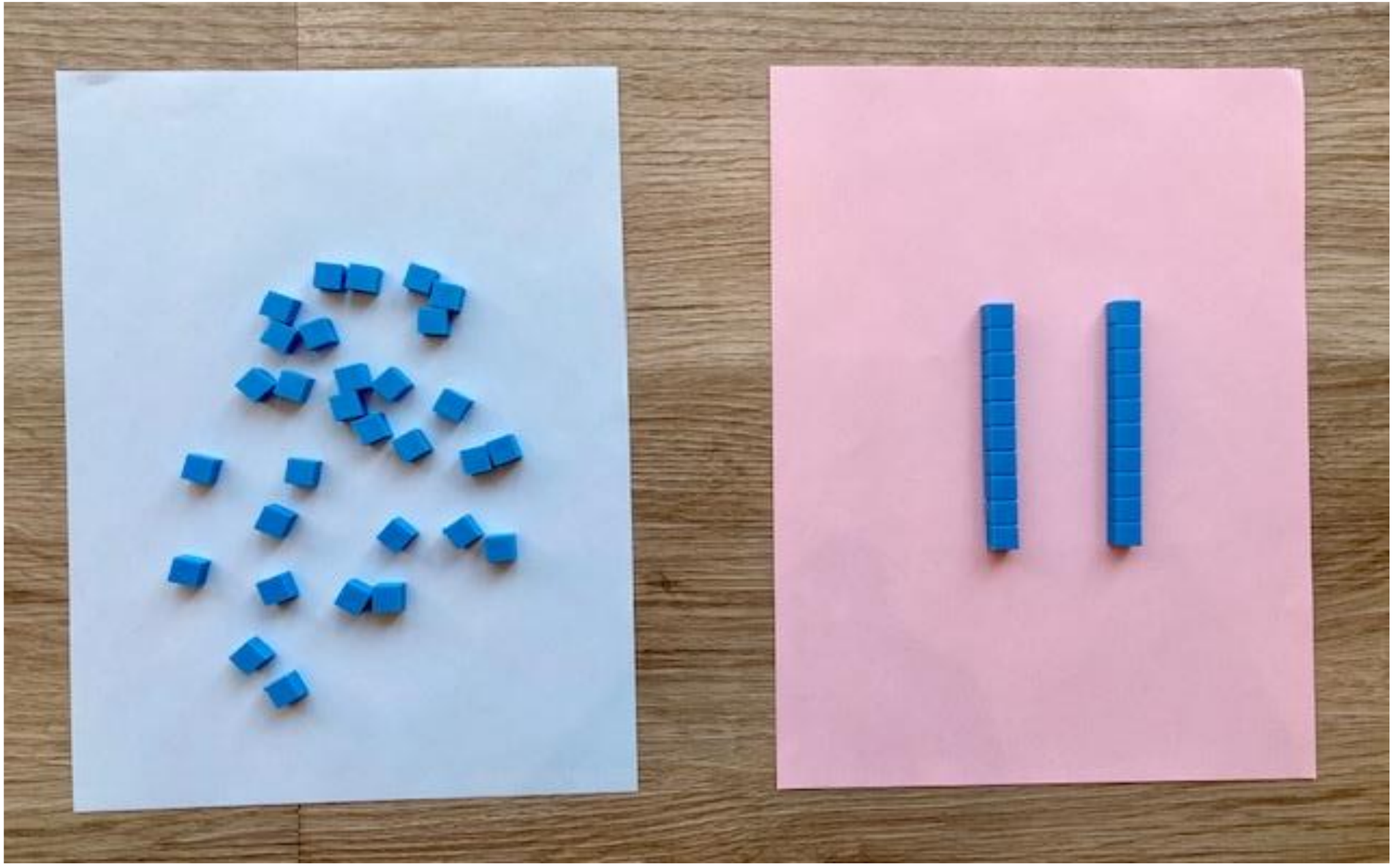
10 − 3 = 7

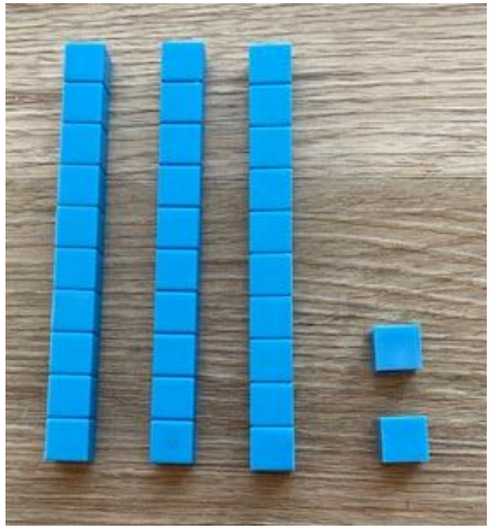
Extension: *Which question can be answered in more ways?* Y

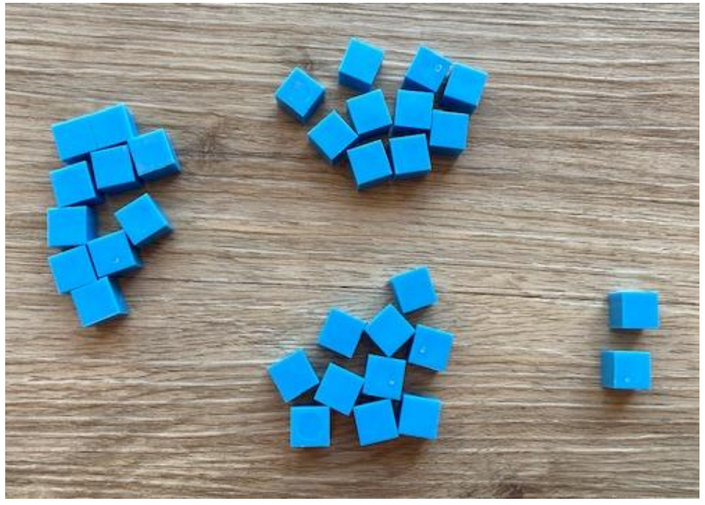

ONE PENNY
2004

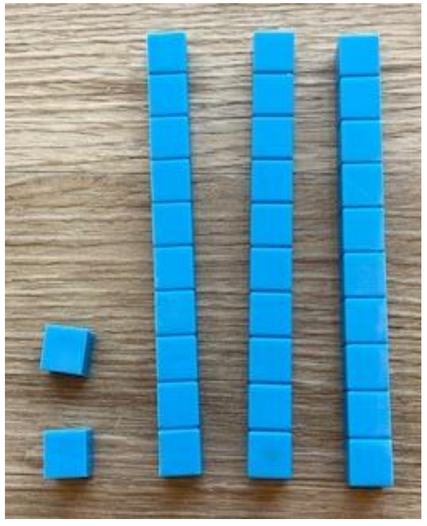


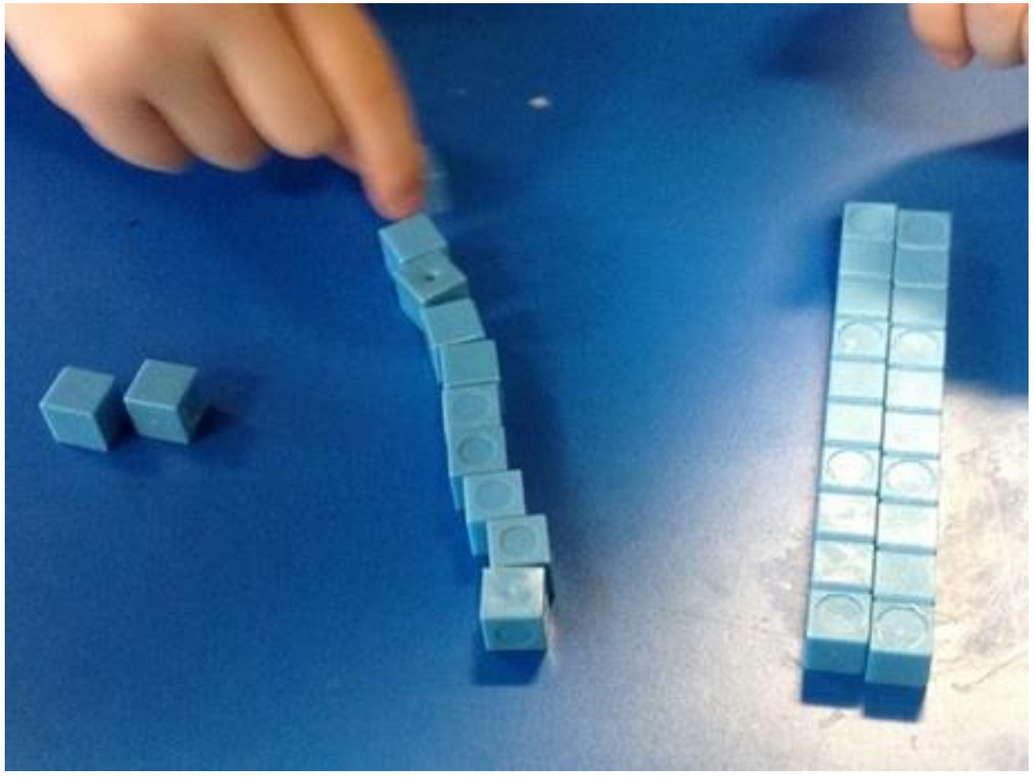








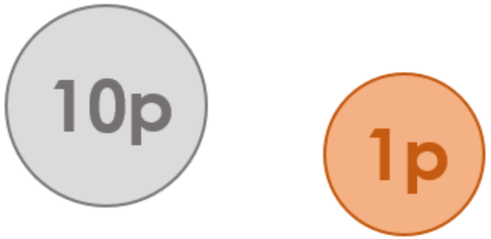




Use **10p** and **1p** coins.

Make 42p

Do in different ways.

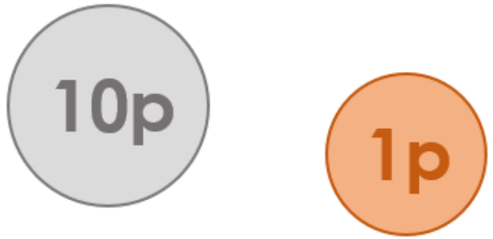


Use **10p** and **1p** coins.

Use 7 coins

Make less than 40p

Do in different ways.

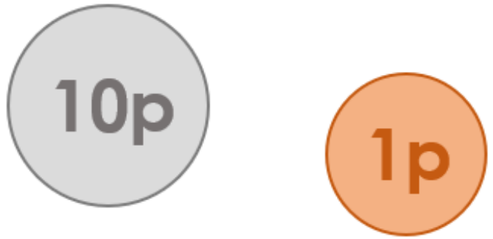


Use **10p** and **1p** coins.

Use 11 coins

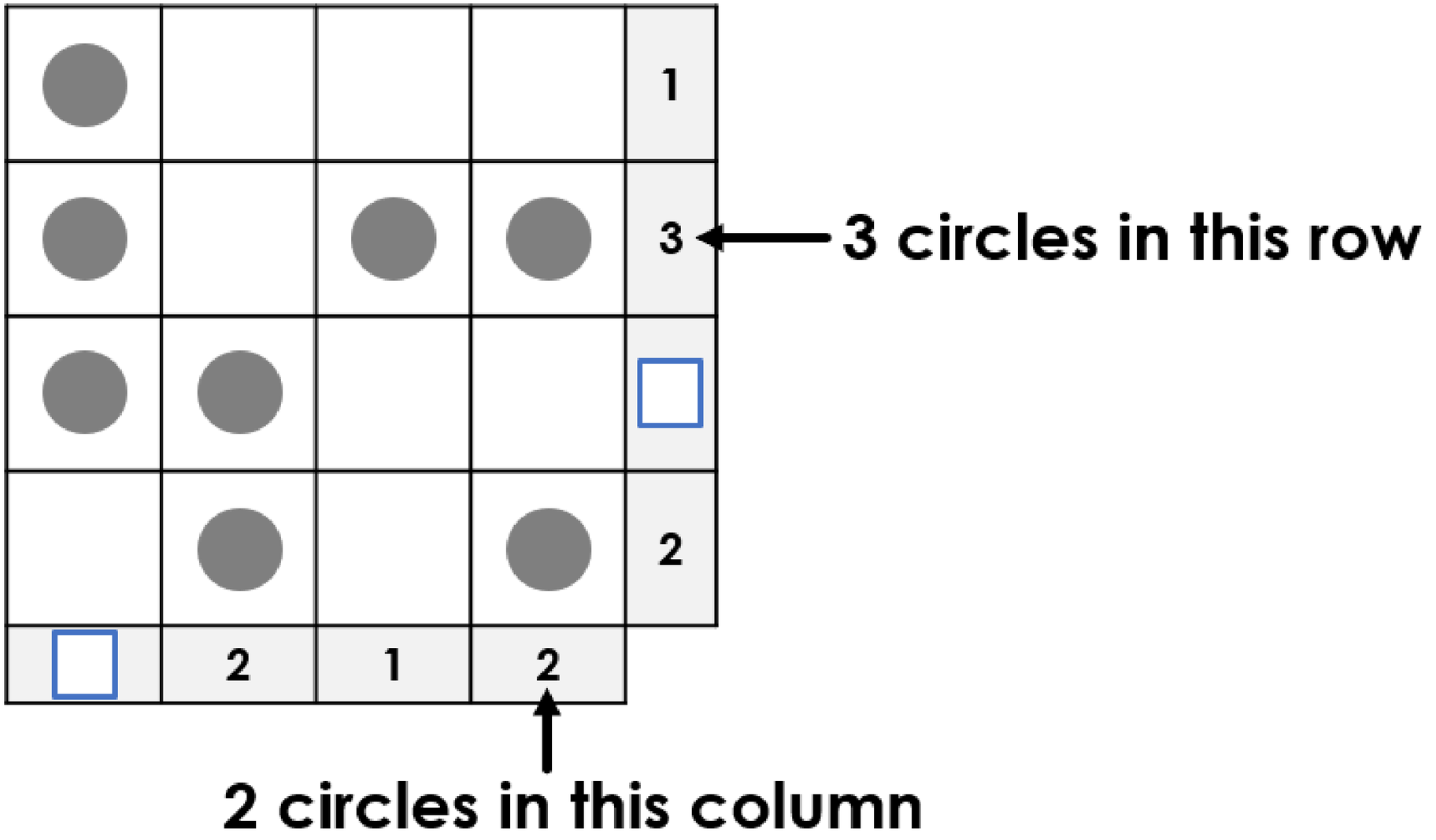
Make less than 50p

Do in different ways.



Counters on a Grid

Part 1

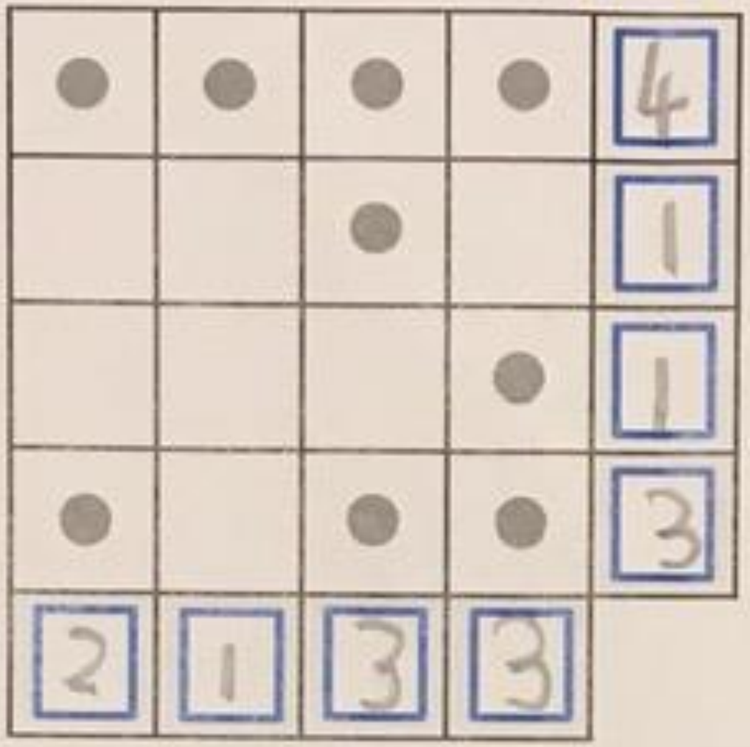


Counters on a Grid

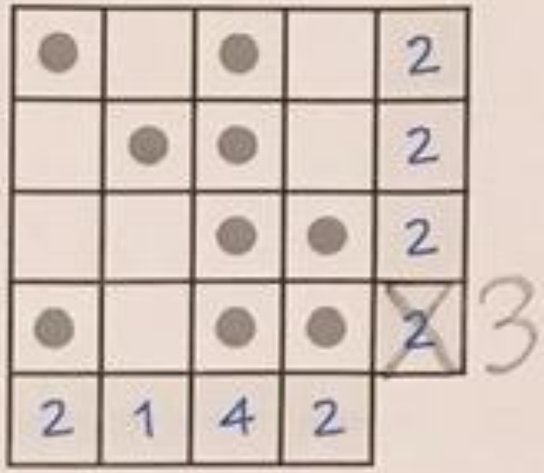
Task A

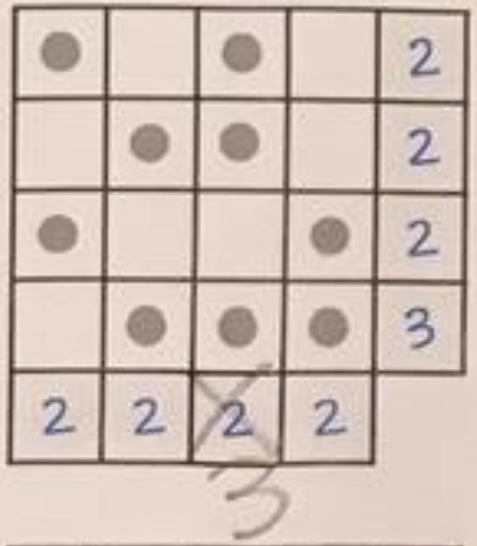
How many dots in each column and row?

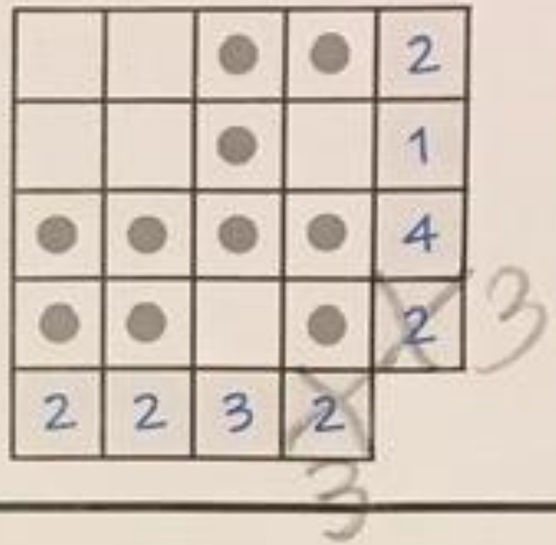
Fill the gaps.

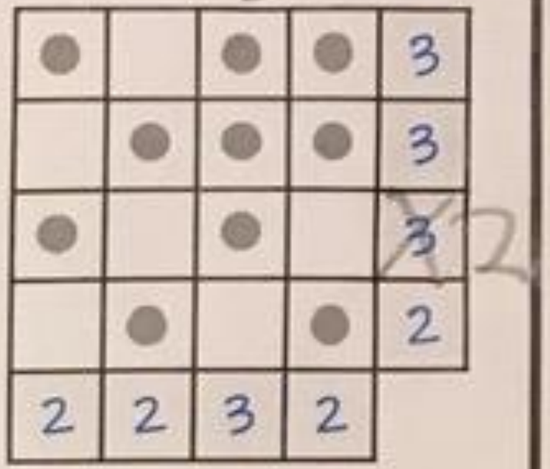


Spot the Mistakes:



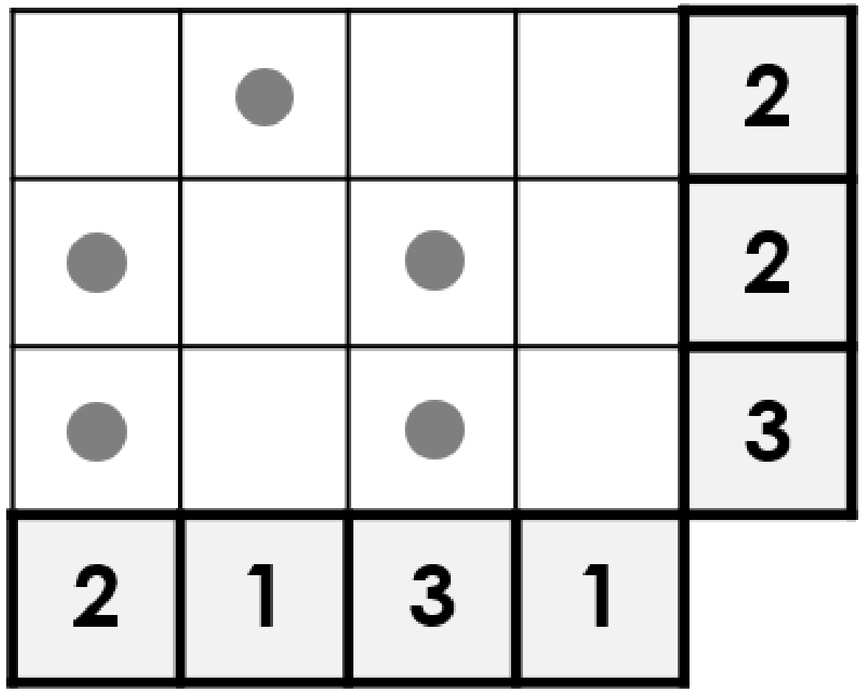


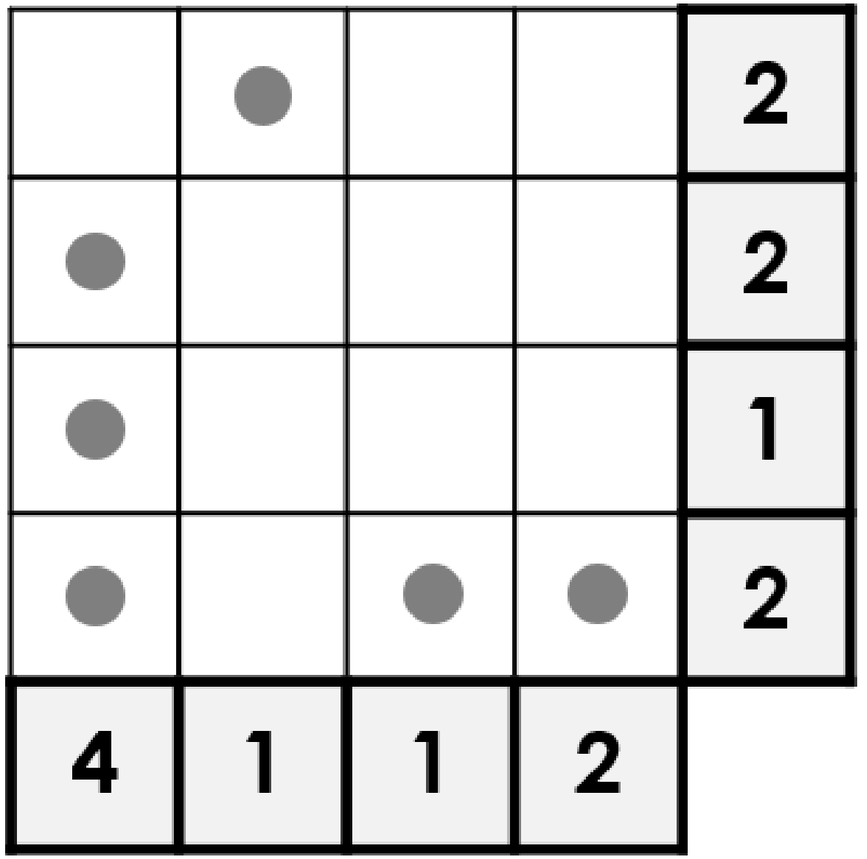




Read the Pictures

Draw the missing dots:

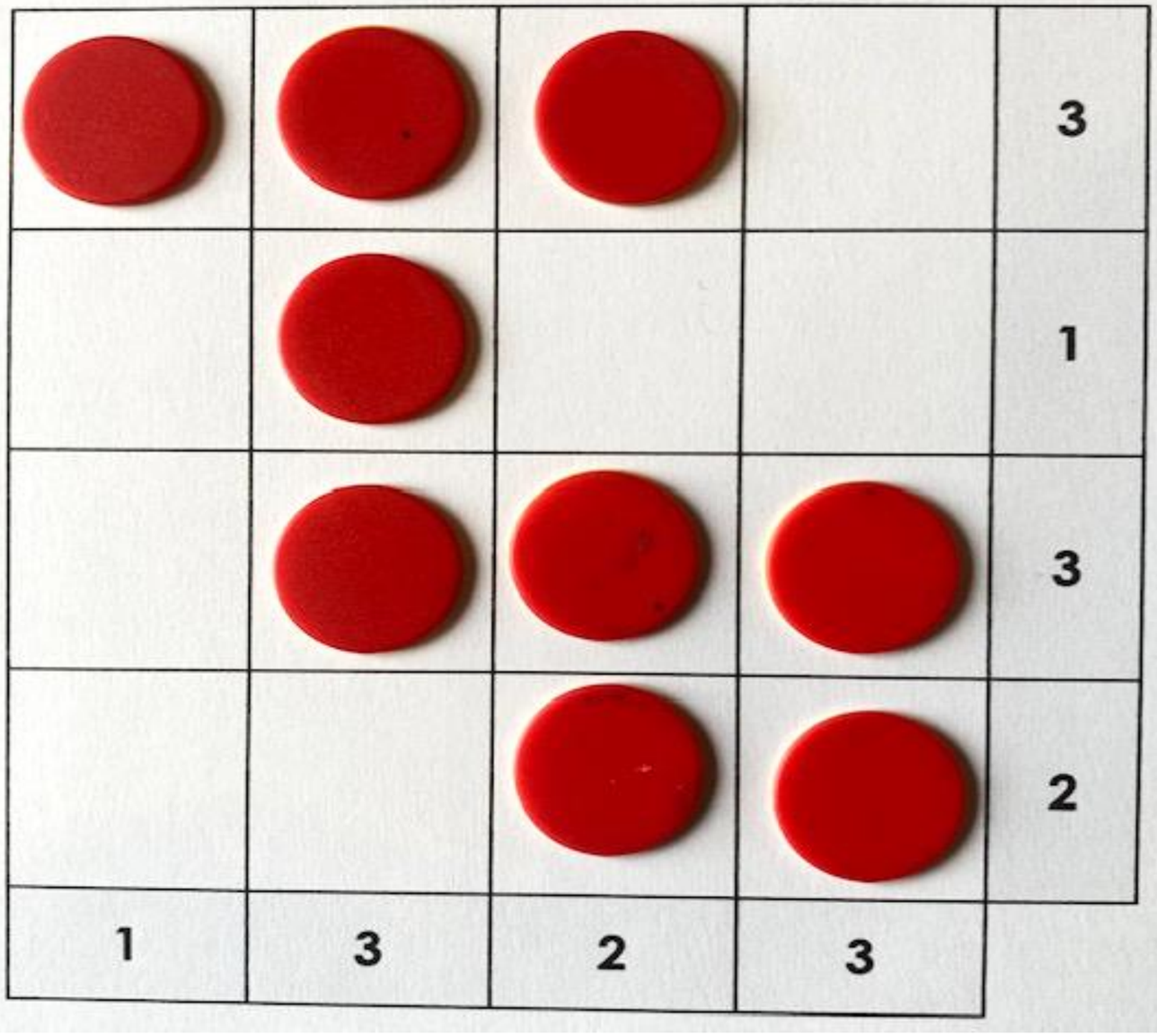




Dots in a Grid

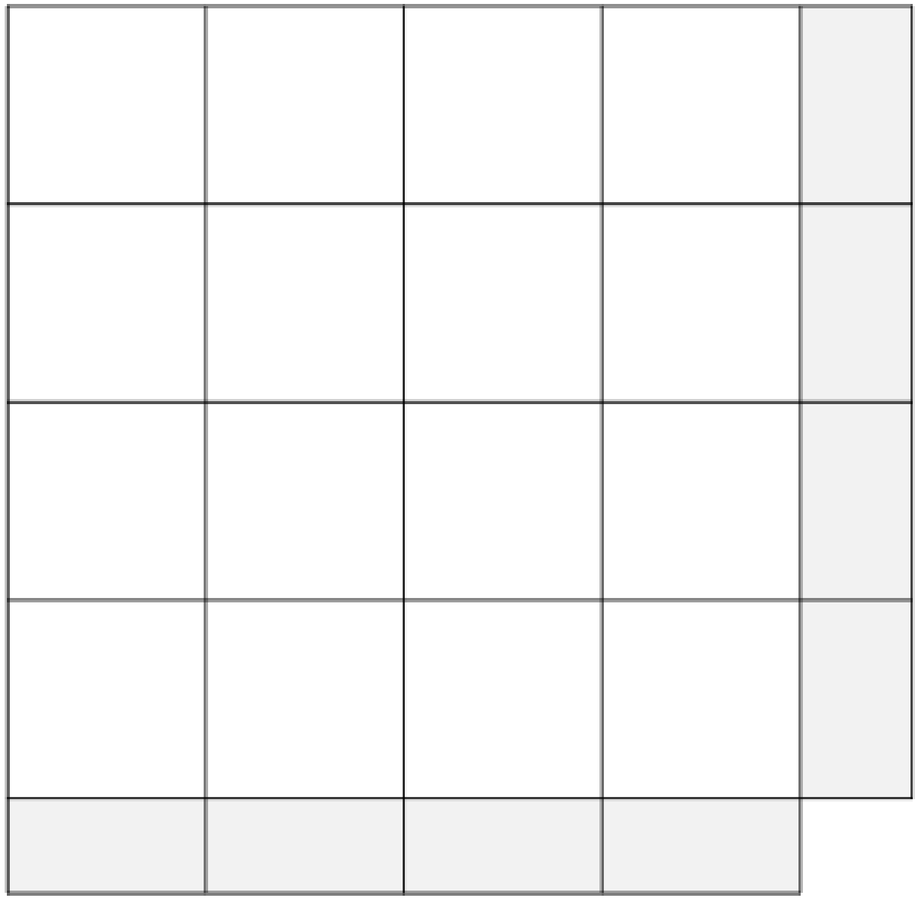
Task B

Put the correct number of counters in each column and row. *Do in two different ways.*



Explore

Make a question:



Drawings of answers: