

Foundational Numeracy

MATH 1903

Addition

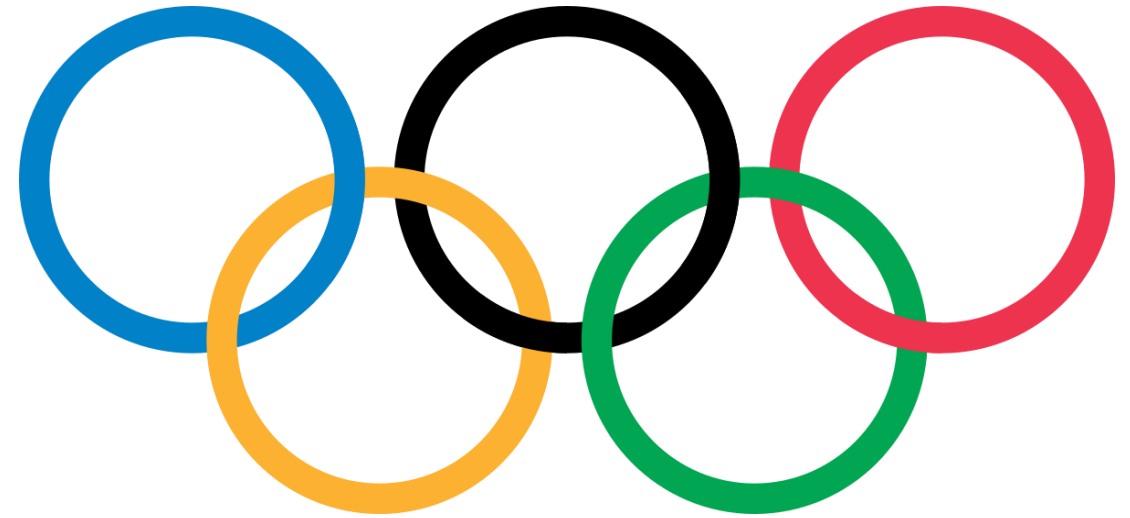
Lesson 3



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The Ancient Olympics

- The history of the Olympics dates back **2,300** years ago
 - Origins lie in the Olympian games held in Olympia, an area of ancient Greece
 - First recorded Olympics dates back to **776** BC
 - “A festival of art and sport to worship the gods”
 - Held every **4** years, or what ancient Greeks called an *Olympiad* (unit of time)
- ‘Olympic Truce’ was implemented so that athletes from surrounding areas could travel to the games safely
- Victors at the Olympics were honored, and their feats were chronicled for future generations
 - Olive leaf crowns and food were awarded instead of medals



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The Modern Olympic Games



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- The Olympic Games are an *international* sports festival held at a different host city/country every four years
- The ultimate goals are to cultivate human beings through sport and fair competition, while promoting and contributing to world peace
- Over **200** nations compete across the Summer and Winter Games
 - **339** events within **33** different sports (2020 Tokyo Summer Olympics *PPD)
 - **102** events within **7** different sports (2018 Pyeongchang Winter Olympics; First Winter Olympics to ever surpass 100 medal events)

The 2 Most Recent Winter Olympics

2018 Winter Olympics Medal Table (Pyeongchang, South Korea)

		GOLD	SILVER	BRONZE
Canada		11	8	10
Germany		14	10	7
France		5	4	6
Japan		4	5	4
USA		9	8	6
South Korea		5	8	4
OAR*		2	6	9





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OAR*: "Olympic Athletes from Russia" – how Russian athletes were identified in the 2018 Winter Games as a punishment for the **Russian** government's massive doping scheme (the use of banned substances for performance enhancement) that allowed it to cheat in the prior two Olympics

The 2 Most Recent Winter Olympics

2014 Winter Olympics Medal Table (Sochi, Russia)








		GOLD	SILVER	BRONZE
Canada		10	10	5
Germany		8	6	5
France		4	4	7
Japan		1	4	3
USA		9	9	10
South Korea		3	3	2
Russia		11	10	9



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PyeongChang 2018, Winter Olympics

		GOLD	SILVER	BRONZE
Canada		11	8	10
Germany		14	10	7
France		5	4	6
Japan		4	5	4
USA		9	8	6
South Korea		5	8	4
OAR ('Russia')		2	6	9



Sochi 2014, Winter Olympics

		GOLD	SILVER	BRONZE
Canada		10	10	5
Germany		8	6	5
France		4	4	7
Japan		1	4	3
USA		9	9	10
South Korea		3	3	2
Russia		11	10	9

Addition +

Dictionary

Search for a word



ad·di·tion

/ə'diSH(ə)n/

noun

1. the action or process of adding something to something else.
"the hotel has been extended with the addition of more rooms"

Similar: inclusion adding adding in incorporation introduction insertion

2. the process or skill of calculating the total of two or more numbers or amounts.
"she began with simple arithmetic, addition and then subtraction"

Similar: adding up counting totaling computation calculation reckoning

Key Terms

- Total
- Add
- Plus
- Increased by
- Sum
- In all
- Combined; all together

Discuss:

How often do we encounter 'addition' in our everyday lives?

Standard Form	3	+	2	=	5
Spoken	<i>“three</i>	<i>plus</i>	<i>two</i>	<i>equals</i>	<i>five”</i>
Terms	addend		addend		sum

1) How many **total GOLD** medals did Germany win from both Olympics?



PyeongChang 2018, Winter Olympics

		GOLD	SILVER	BRONZE
Canada		11	8	10
Germany		14	10	7
France		5	4	6
Japan		4	5	4
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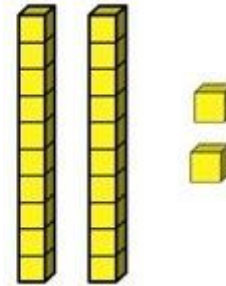
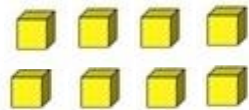
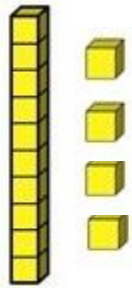


Sochi 2014, Winter Olympics

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France		4	4	7
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Russia		11	10	9

1) How many **total GOLD** medals did Germany win from both Olympics?

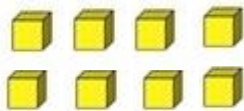
$$14 + 8$$



22

$$\therefore 14 + 8 = 22$$

Germany won a total of 22 gold medals from both Olympics.



- Exceeding 9 in any position initiates counting in the next highest position

Is there a way to 'organize' this better?

Vertical Addition

What is it?

- A method of adding where the numbers are lined up in columns according to their place value

When do you use it?

- All the time; it is the most commonly used form of addition without the use of technology

Why is it helpful?

- Keeps everything in line and organized
- Shows place value
- Gives you a visual of **carrying** to another place value
- Picture Form & Standard Number Form

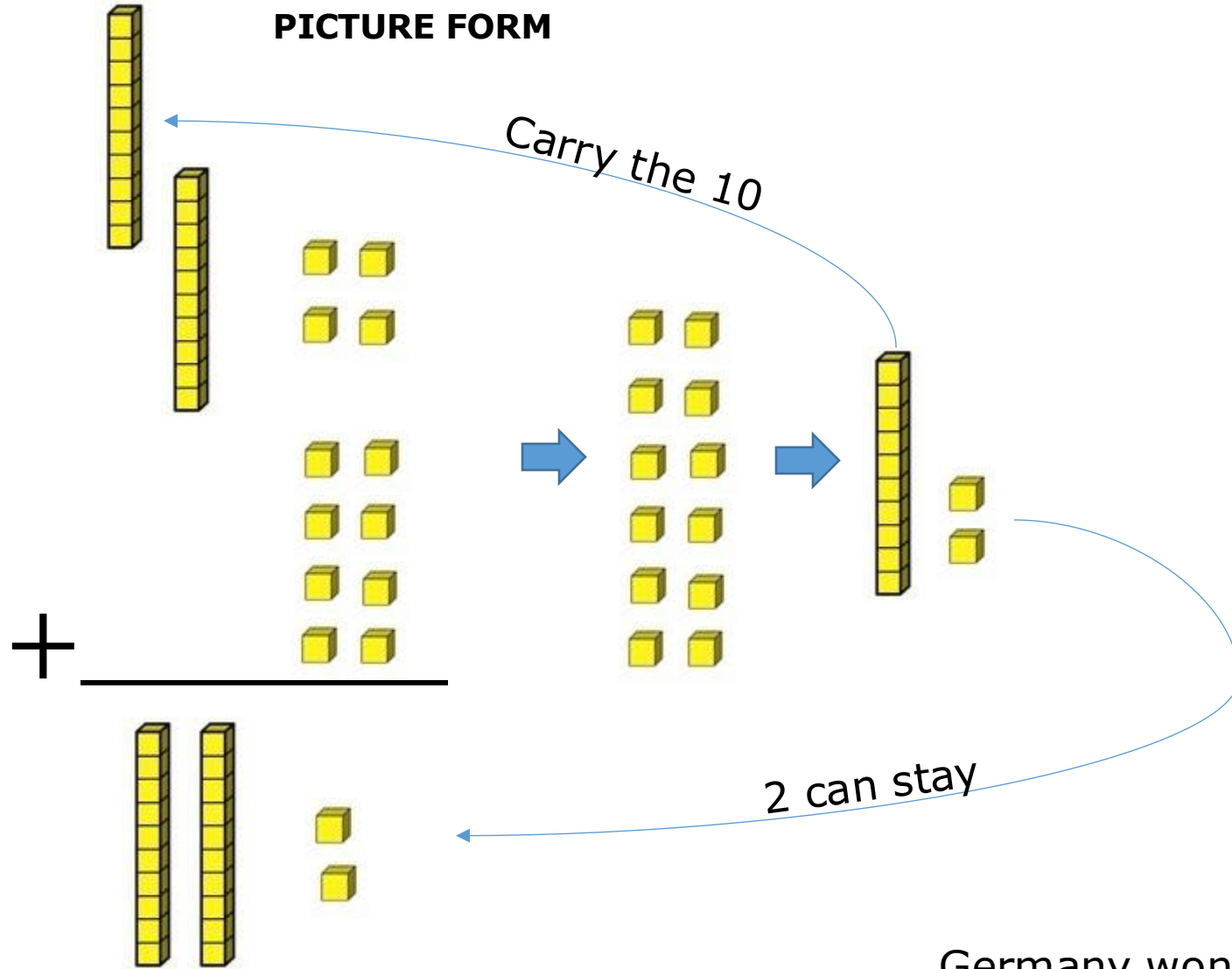
How do I do it?

1. Arrange numbers vertically
2. Line up numbers by place value
3. Start at the ones place value at the very right; Add

$$\begin{array}{r} 118 \\ + 75 \\ \hline 193 \end{array}$$

Vertical Addition

PICTURE FORM



STANDARD NUMBER FORM

$$\begin{array}{r} 1 \\ 14 \\ + 8 \\ \hline 22 \end{array}$$

Germany won a total of 22 gold medals from both Olympics.

2) How many **total** medals did Canada win in both Olympics?



PyeongChang 2018, Winter Olympics

		GOLD	SILVER	BRONZE
Canada		11	8	10
Germany		14	10	7
France		5	4	6
Japan		4	5	4
USA		9	8	6
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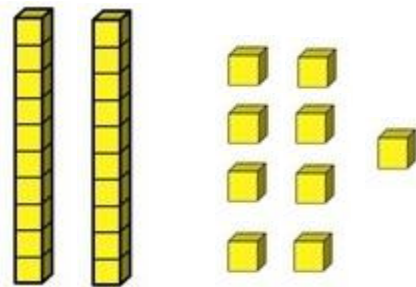
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PyeongChang 2018, Winter Olympics


	GOLD	SILVER	BRONZE
Canada 	11	8	10

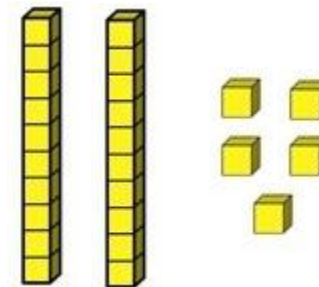
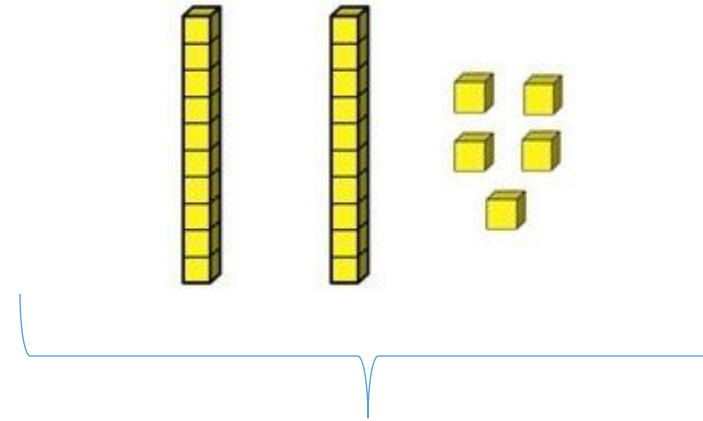


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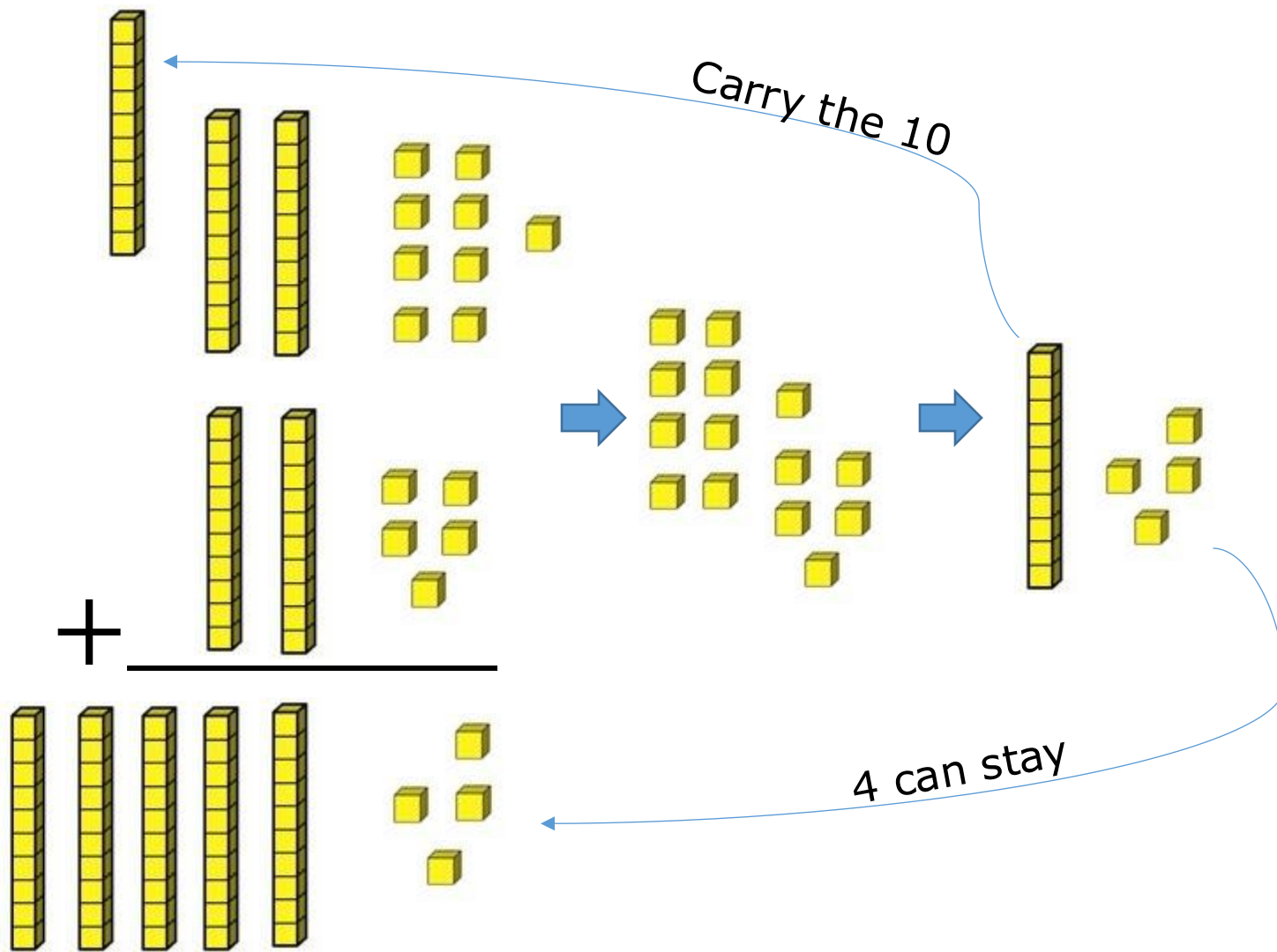


Sochi 2014, Winter Olympics

	GOLD	SILVER	BRONZE
Canada 	10	10	5



(25)



$$\begin{array}{r}
 1 \\
 29 \\
 + 25 \\
 \hline
 54
 \end{array}$$

Canada won a total of 54 medals from both Olympics.

2) How many **total** BRONZE medals were awarded in 2018?



PyeongChang 2018, Winter Olympics

		GOLD	SILVER	BRONZE
Canada		11	8	10
Germany		14	10	7
France		5	4	6
Japan		4	5	4
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Sochi 2014, Winter Olympics

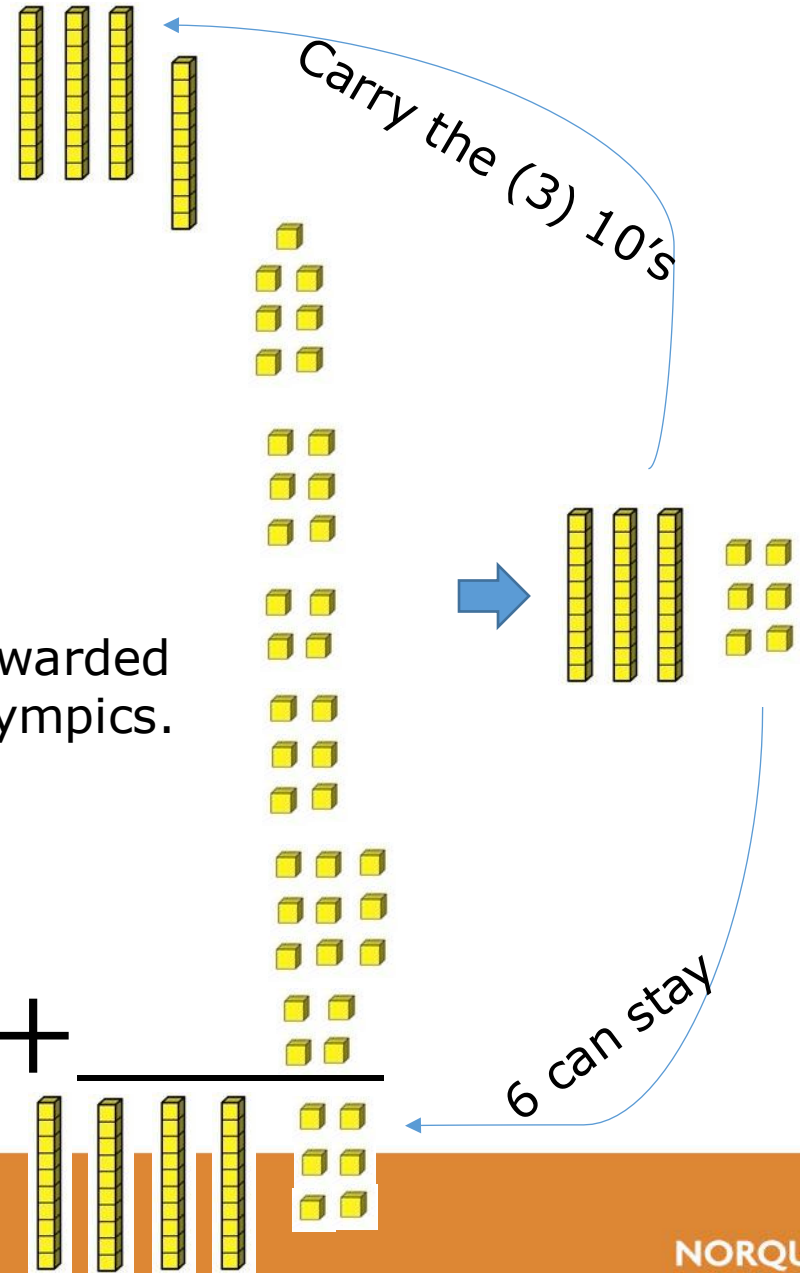
		GOLD	SILVER	BRONZE
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Germany		8	6	5
France		4	4	7
Japan		1	4	3
USA		9	9	10
South Korea		3	3	2
Russia		11	10	9

2) How many **total BRONZE** medals were awarded in 2018?

3
10
7
6
4
6
9
4
+

46

∴ There were 46 **BRONZE** medals awarded at the 2018 Pyeongchang Winter Olympics.



3) There were 145 medals awarded in 2018, and 133 medals awarded in 2014. How many total medals were awarded from both Olympics?



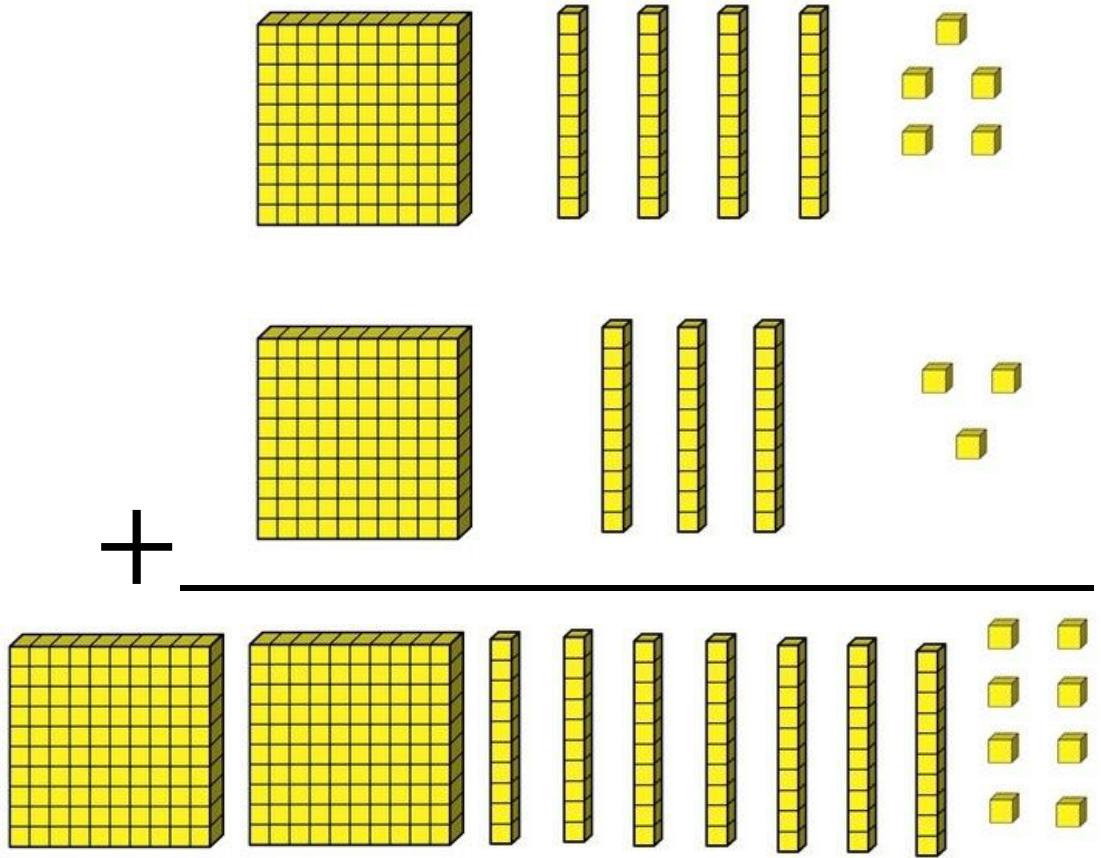
PyeongChang 2018, Winter Olympics

Sochi 2014, Winter Olympics

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Russia		11	10	9

3) There were 145 total medals awarded in 2018, and 133 total medals awarded in 2014. How many total medals were awarded from both Olympics?

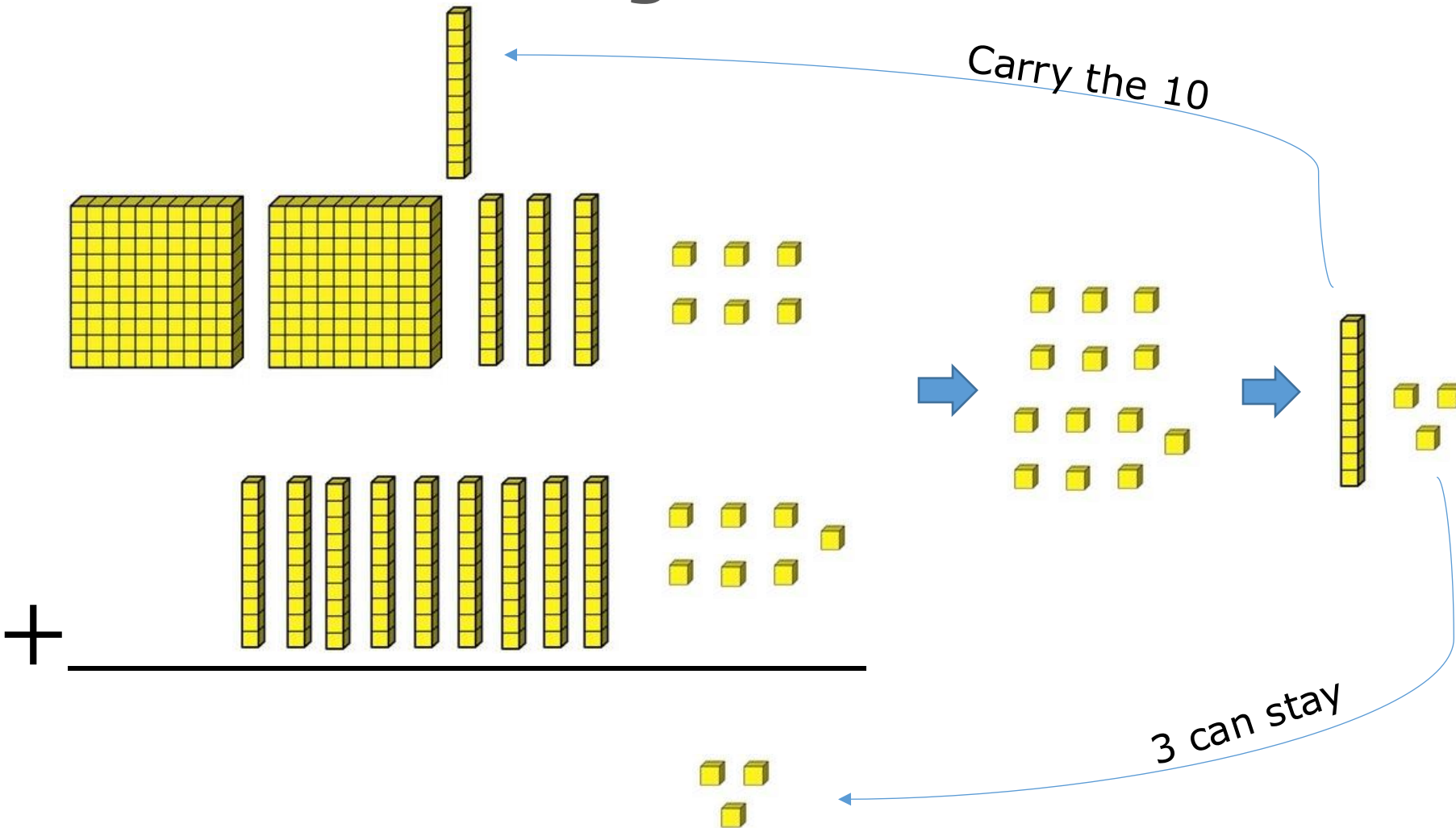


$$\begin{array}{r}
 145 \\
 + 133 \\
 \hline
 278
 \end{array}$$

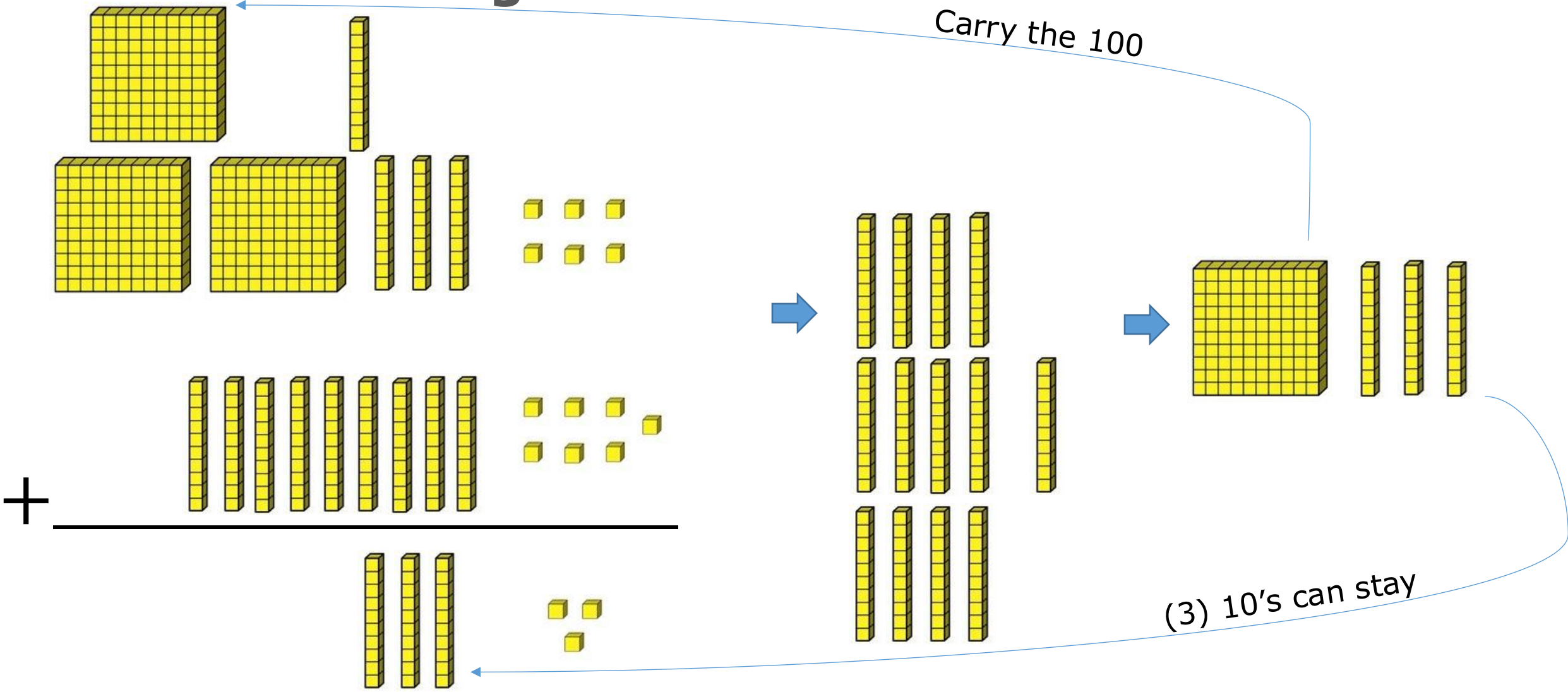
There was a total of 278 medals awarded in the past two Winter Olympics.

DISCUSS: Why did we not have to 'carry' ?

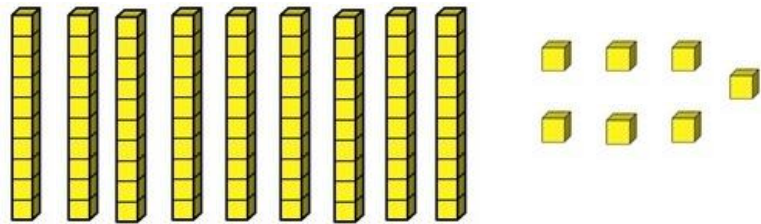
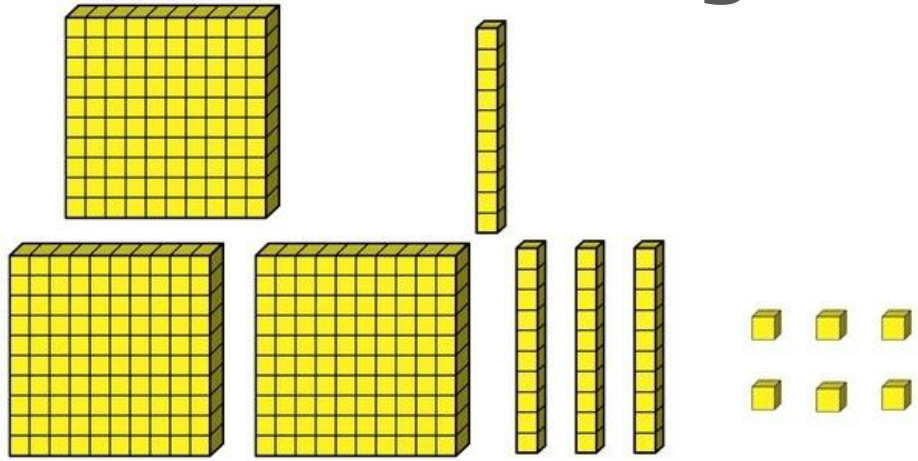
Add the following: $236 + 97$



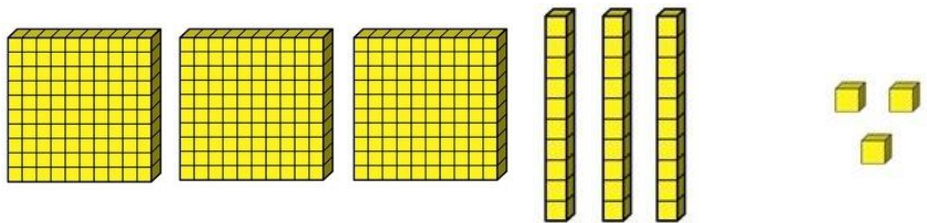
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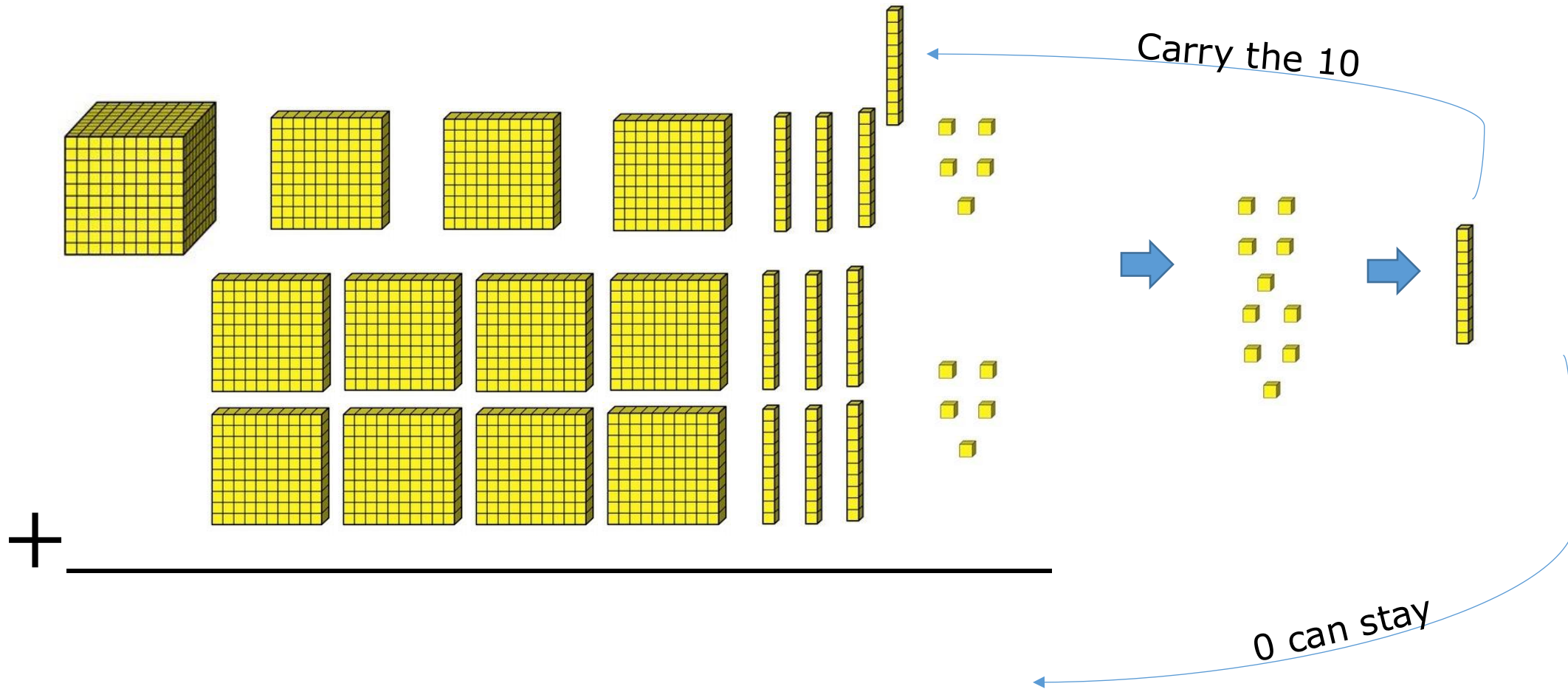
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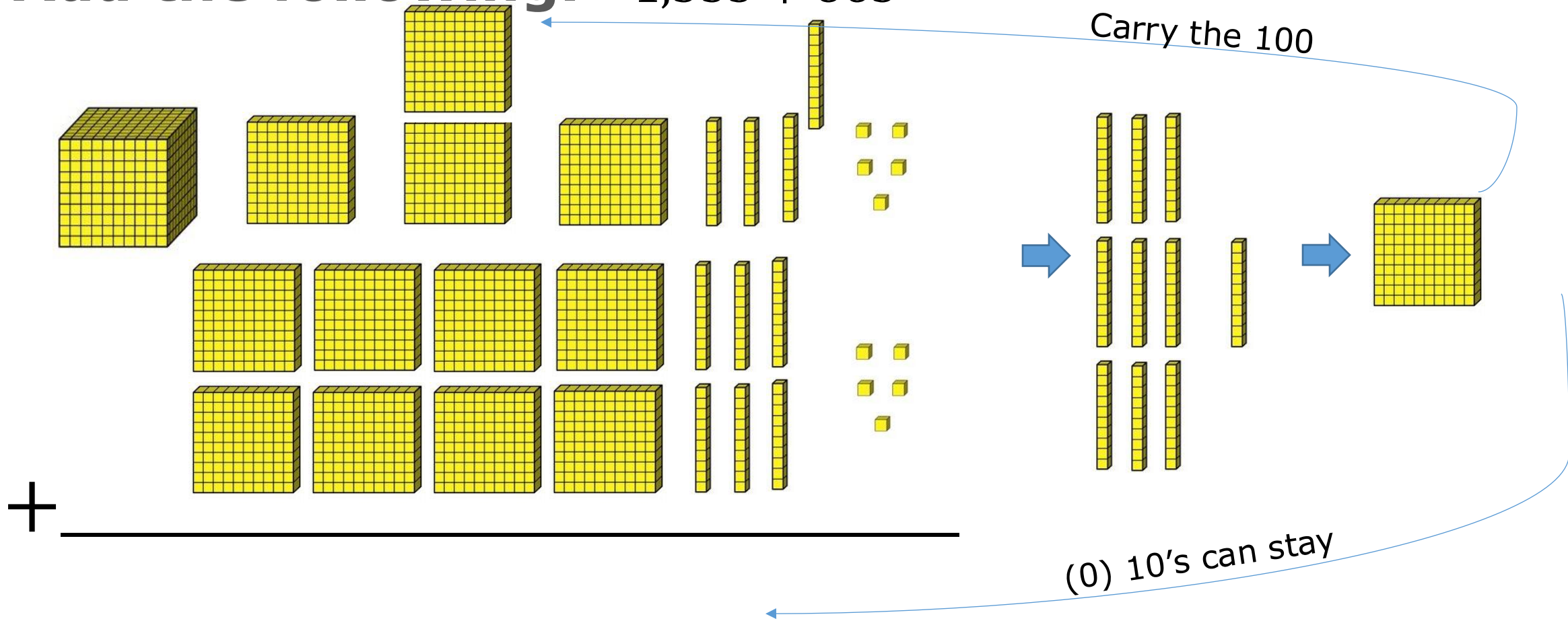
Add the following: $236 + 97$

$$\begin{array}{r} \\ 1 1 \\ 236 \\ + 97 \\ \hline 333 \end{array}$$

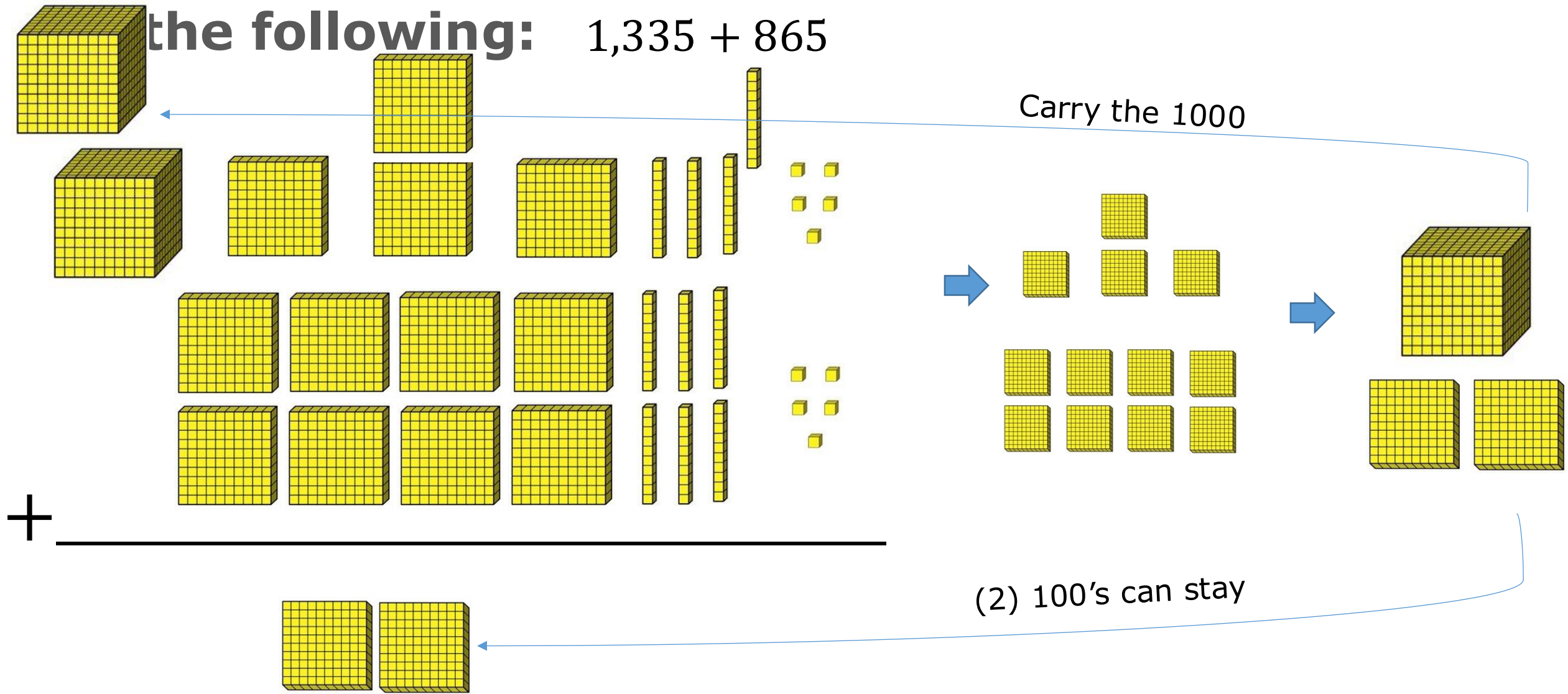
Add the following: $1,335 + 865$



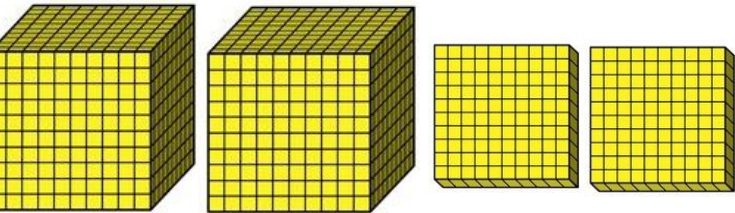
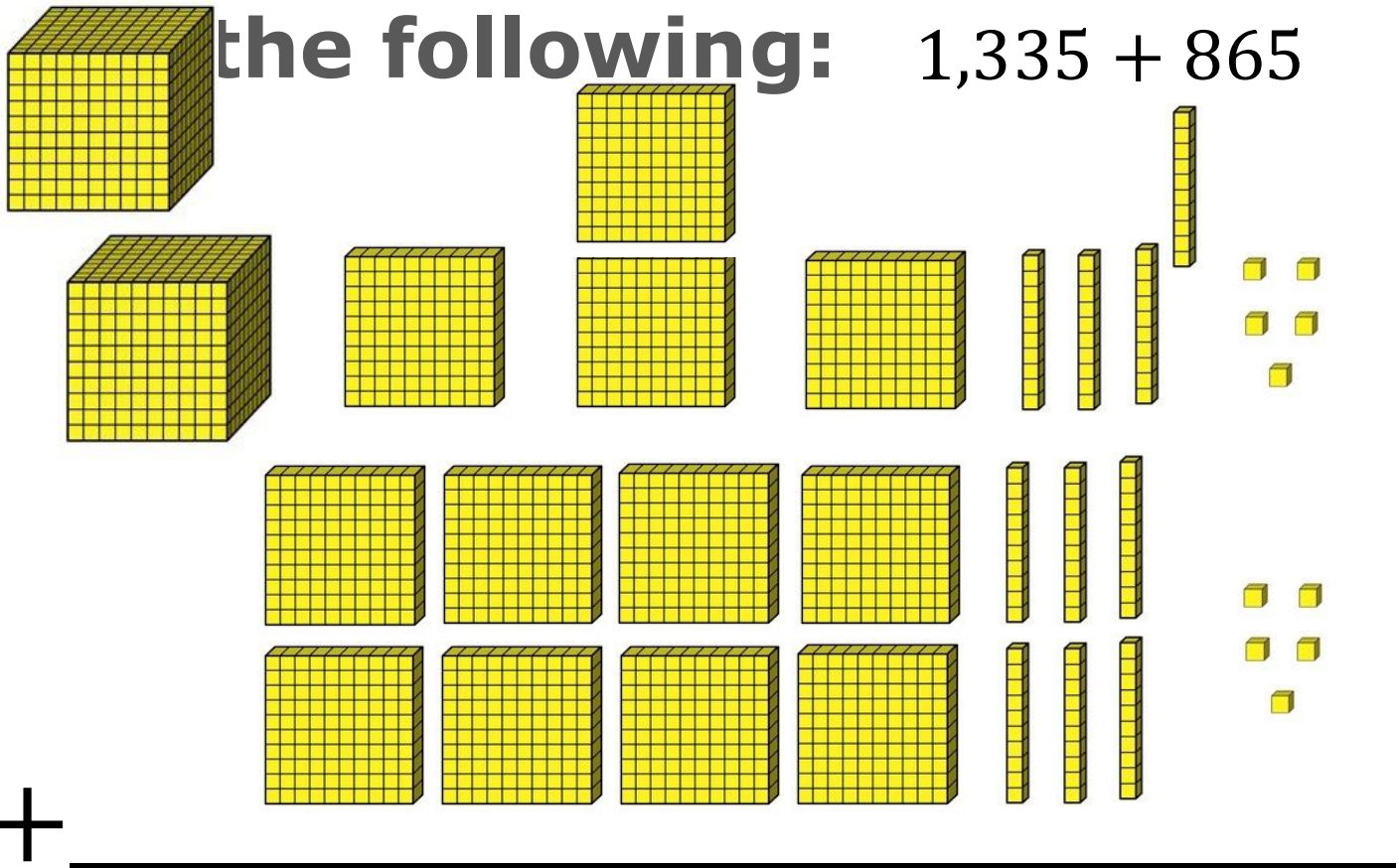
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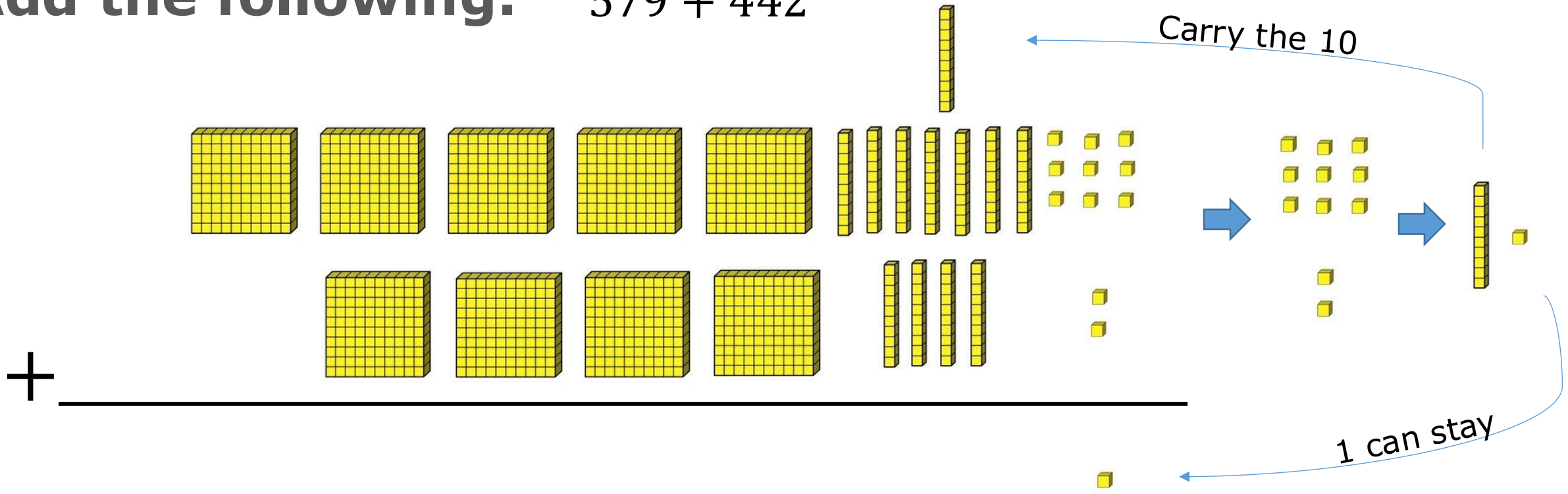
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Add the following: $1,335 + 865$

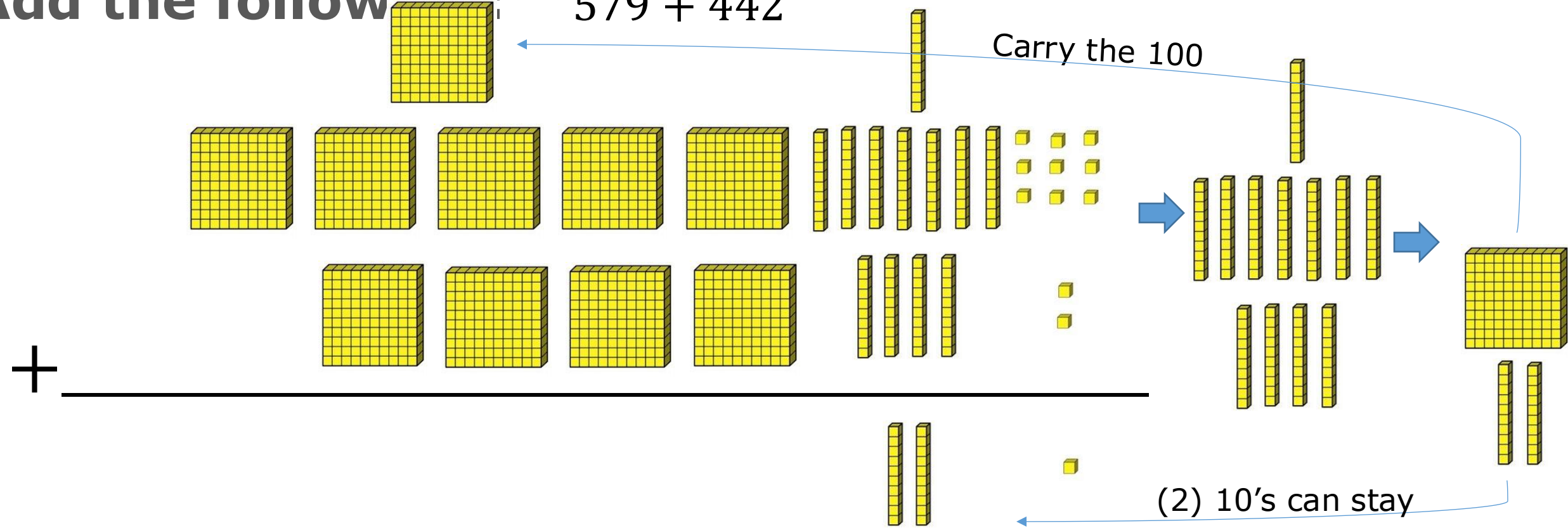
$$\begin{array}{r} \overset{1}{1}, \overset{1}{3} \overset{1}{3} 5 \\ + \quad 865 \\ \hline 2,200 \end{array}$$

Add the following: $579 + 442$

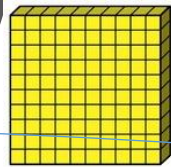
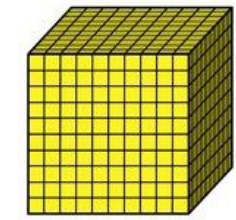


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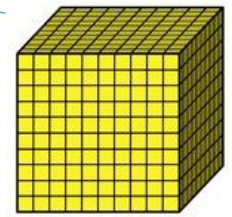
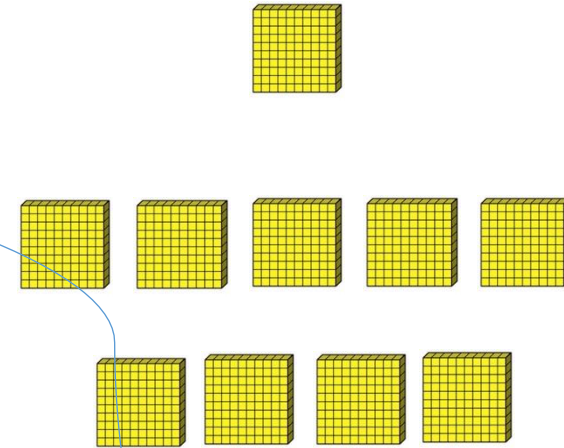
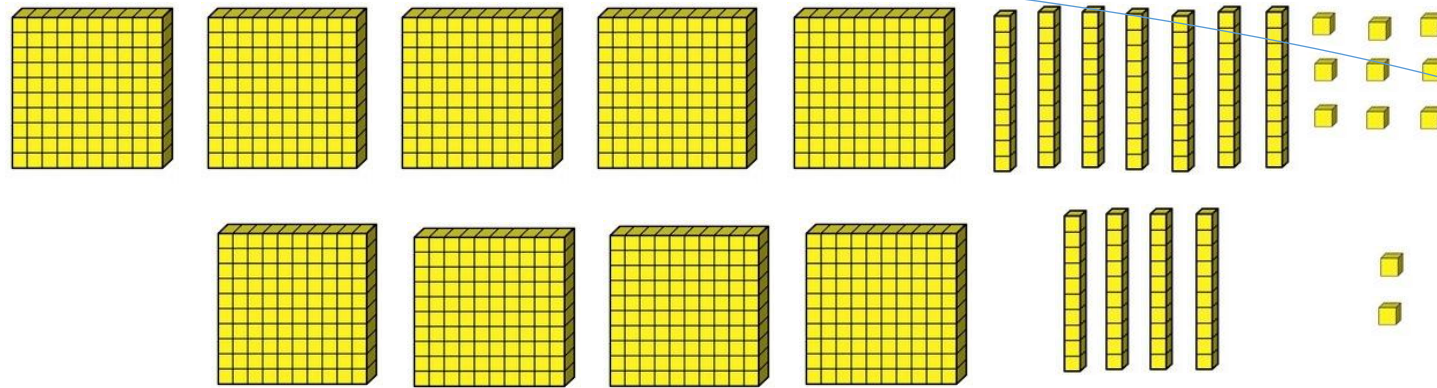
$$579 + 442$$



Add the following: $579 + 342$



Carry the 1000



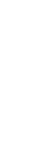
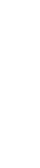
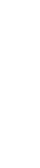
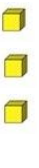
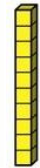
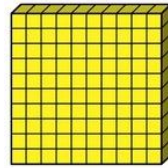
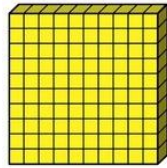
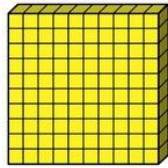
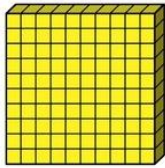
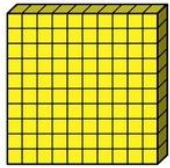
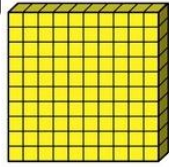
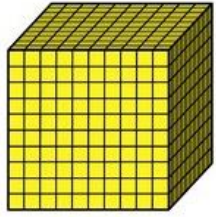
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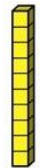
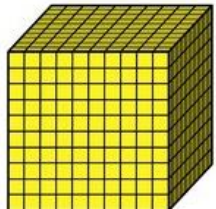
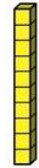
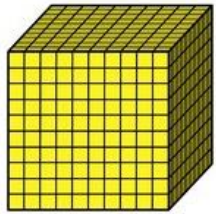
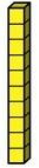
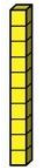
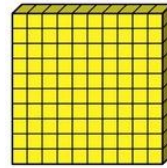
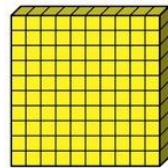
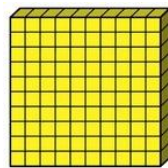
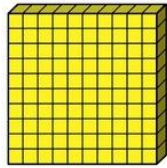
(0) 100's can stay

Add the following:

$$579 + 342$$



+



$$= 1,021$$

Geometry

Perimeter

Geometry

- Geometry is a branch of mathematics that studies the sizes, shapes, positions, angles, and dimensions of everyday things
- The world is made up of different shapes and spaces
 - Geometry helps us gain an understanding of spatial relationships between peoples, places, and things in the world
- One geometric concept that requires the use of adding:

Perimeter

- Perimeter is a measurement for the distance around an object



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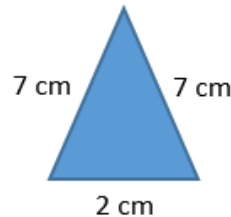

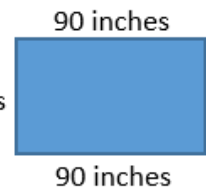
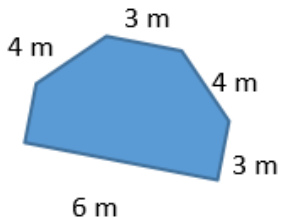


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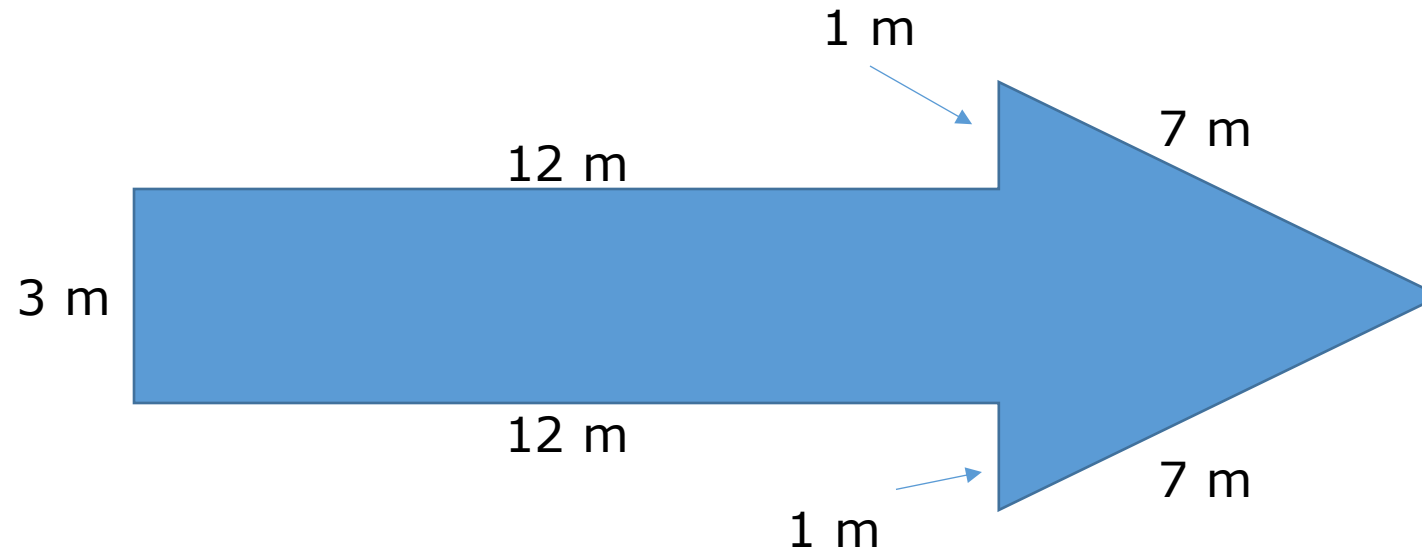
Perimeter

Polygon: a flat 2-dimensional figure formed by connected line segments

The perimeter is found by finding the **sum** of the lengths of all sides in polygon

SHAPE	SIDE LENGTHS	EQUATION
<i>Triangle</i>	 <p>7 cm 7 cm 2 cm</p>	$7\text{ cm} + 7\text{ cm} + 2\text{ cm} = 16\text{ cm}$ (centimeters) <i>The perimeter of this triangle is 16 cm.</i>
<i>Square</i>	 <p>45 km 45 km 45 km 45 km</p>	$45\text{ km} + 45\text{ km} + 45\text{ km} + 45\text{ km} = 180\text{ km}$ (kilometers) <i>The perimeter of this square is 180 km.</i>
<i>Rectangle</i>	 <p>90 inches 42 inches 42 inches 90 inches</p>	$90\text{ inches} + 42\text{ inches} + 90\text{ inches} + 42\text{ inches} = 264\text{ inches}$ <i>The perimeter of this rectangle is 264 inches.</i>
<i>Polygon</i>	 <p>3 m 3 m 4 m 4 m 3 m 6 m 3 m</p>	$3\text{ m} + 4\text{ m} + 3\text{ m} + 6\text{ m} + 3\text{ m} + 4\text{ m} = 23\text{ m}$ (meters) <i>The perimeter of this 6-sided polygon is 23 m.</i>

Calculate the perimeter of the following polygon:



$$3 + 12 + 1 + 7 + 7 + 1 + 12 = 43\text{m}$$

Example

Use front-end rounding to estimate the sum. After estimating, calculate the exact sum

$$1,678 + 62 + 472$$

$$1,678 \rightarrow 2,000$$

$$62 \rightarrow 60$$

$$472 \rightarrow 500$$

$$\begin{array}{r} 2,000 \\ 60 \\ 500 \\ + \hline 2,560 \end{array}$$

Example

Use front-end rounding to estimate the sum. After estimating, calculate the exact sum

$$1,678 + 62 + 472$$

$$\begin{array}{r} \overset{1}{6} \overset{2}{7} \overset{1}{8} \\ 62 \\ + 472 \\ \hline 2,212 \end{array}$$