

K-8 Non-Curricular Tasks

a compilation by Margie Pearse

Why should we do non-curricular tasks during the first week of school?

To get students thinking about curriculum tasks, they need to first be primed to do so using non-curricular tasks. Nothing in my research has shown a way to avoid this.

Thus, non-curricular tasks serve as a primer for deeper, more consistent mathematical thinking to happen when curricular based tasks begin.

Peter Liljedahl, Building Thinking Classrooms

I don't really like to attach one grade level to non-curricular tasks. So I listed these in somewhat of a progression of difficulty from Kindergarten to Grade 8. I believe, however, that many of the tasks can be used across grade levels.

Help yourself and have fun with them!

Margie Pearse

Old MacDonald Egg Counting Task for K-2

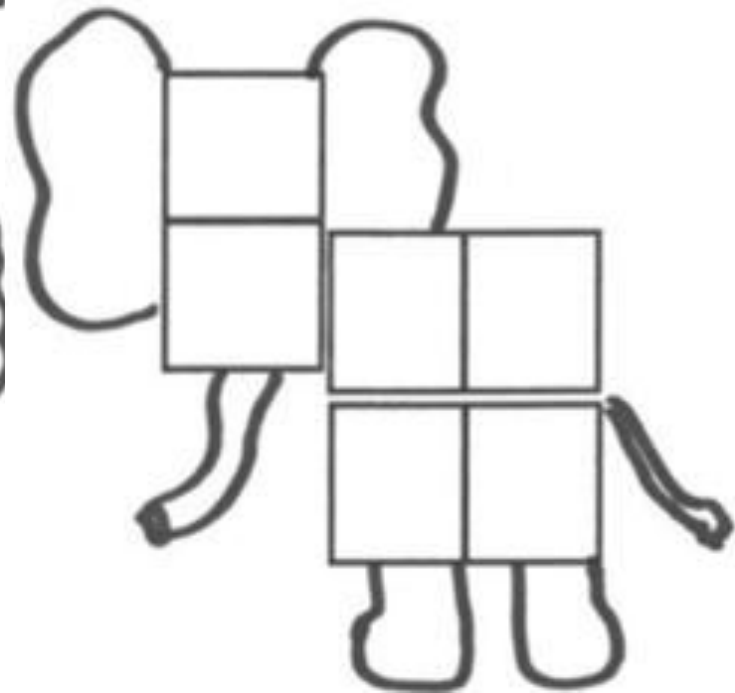
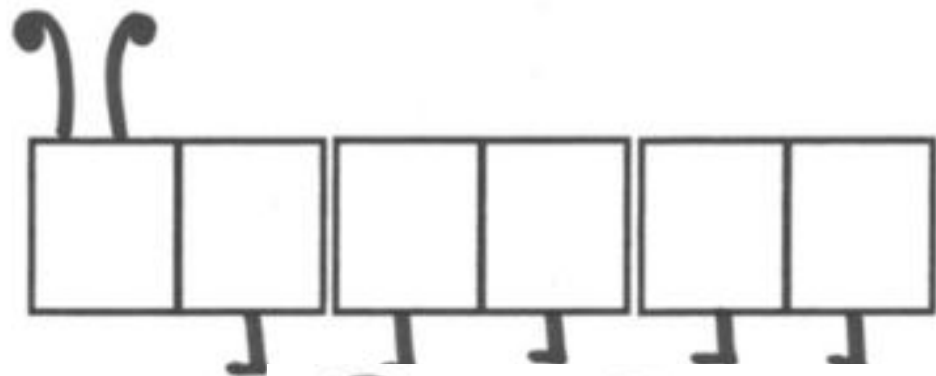
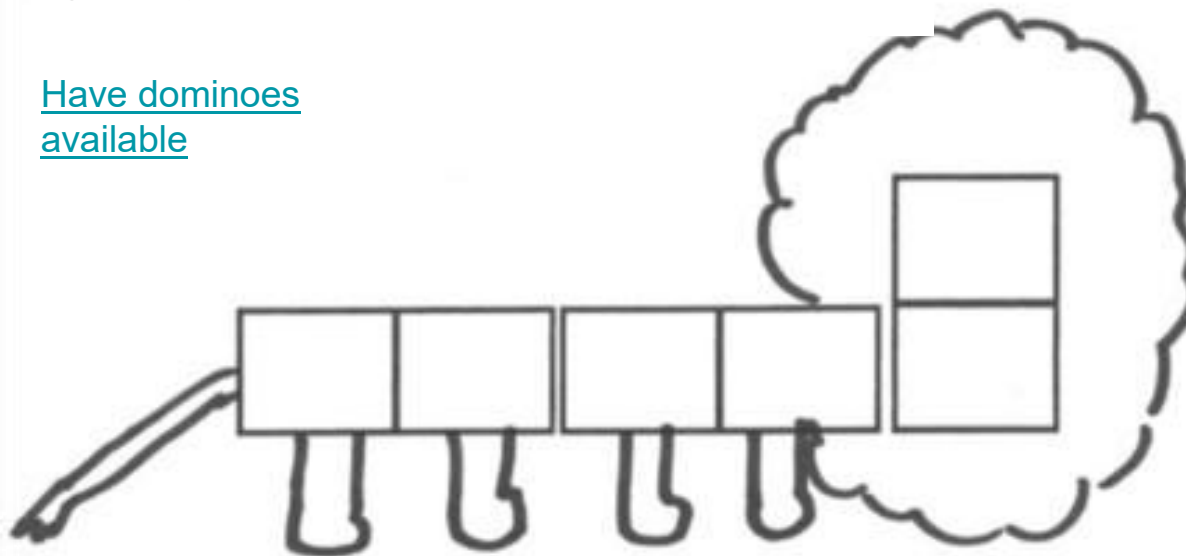
1. Open link above. Decide on the grade level you would like to use
2. Post Slide 1 of that grade level - Look super curious - ask students, "What do you notice?" Give a little wait time, then turn and talk whisper share. Have a few students share out
3. Post Slide 2 - Read the story aloud. What do you imagine? What are you curious about? When you are curious, you are wondering. What do you wonder about when you hear the story and see Old MacDonald's eggs? (From this point, if kiddos wonder how many brown eggs there are versus white eggs, you can change the task question on the next slide so they can follow their wonder.)
4. Post Slide 3 - Reread the story. Hmmm, this time there is a question to answer. (If this was one of the wonderings, take notice of that or just say a student you know was wondering how many eggs there are in all. Isn't that interesting!). Your challenge with your partner is to solve the problem. You can use the tools available if you'd like (have counters and five frames, ten frames, or twenty frames (depending on the grade level)).
5. Your challenge is to come up with at least one strategy to find the total number of eggs. Once you came up with one strategy, find a different way to count. Was it easier? Faster? Why or why not?
6. Be ready to share out with the group.

DOT ANIMALS OF 10

Make each animal using dominoes that make 10 dots in total.

Use 9 different dominoes.

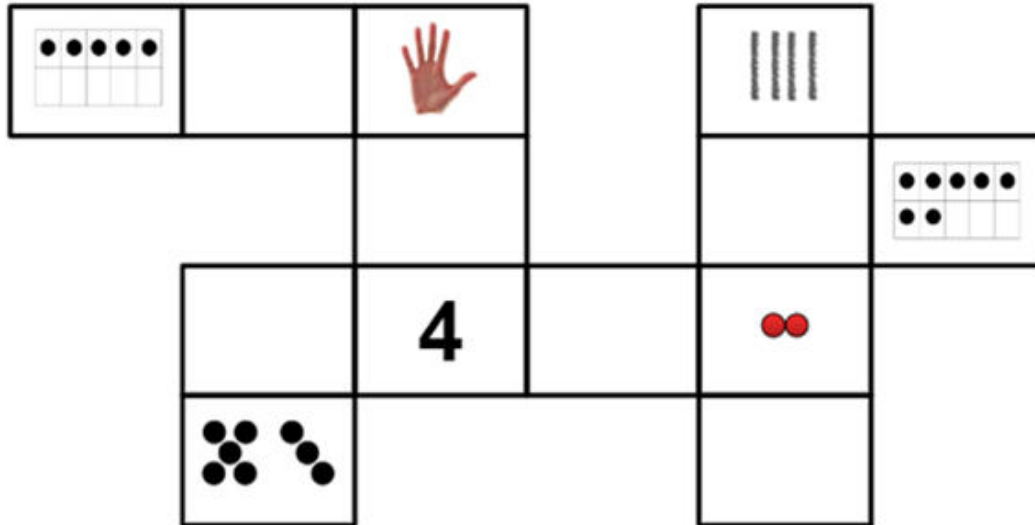
[Have dominoes available](#)



Cross Number Puzzle 1

In this Cross Number Puzzle, each row or column adds to 20.

What numbers go in the boxes so that every row and every column adds up to 20? Be ready to share your thinking.



Cross Number Puzzle 2

In this Cross Number Puzzle, each row or column adds to 20.

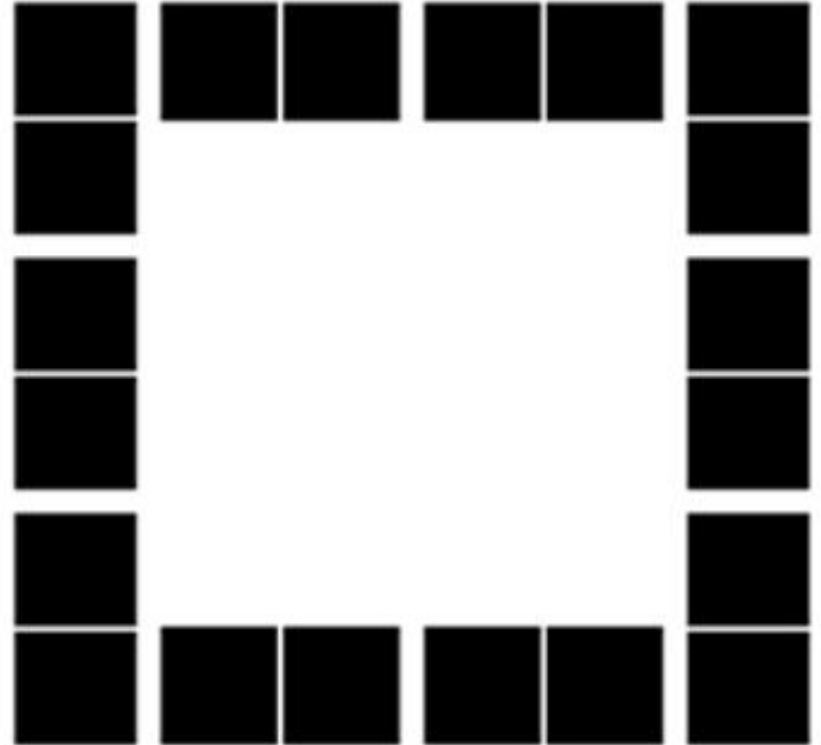
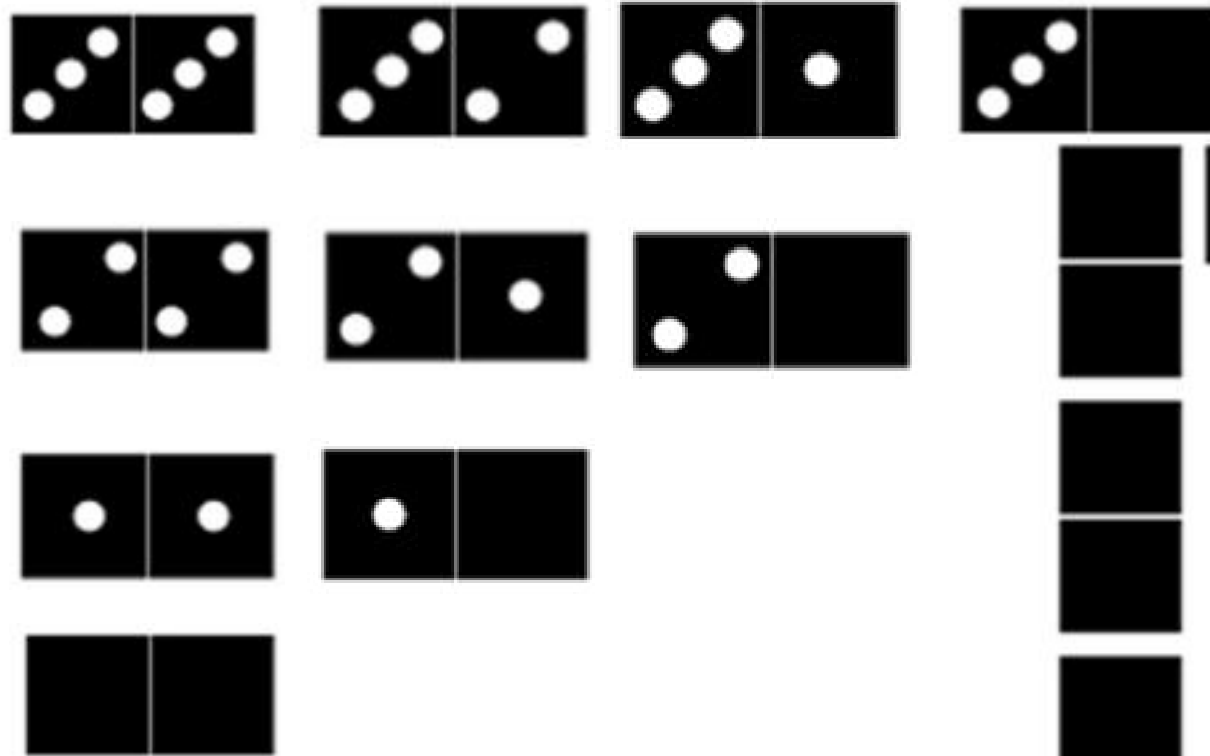
What numbers go in the boxes so that every row and every column adds up to 20? Be ready to share your thinking.

The puzzle grid consists of the following cells and clues:

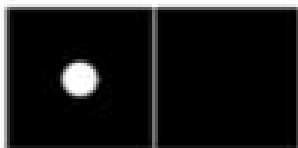
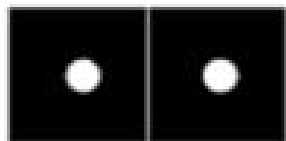
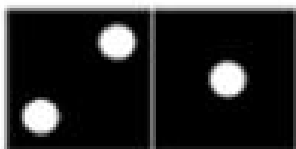
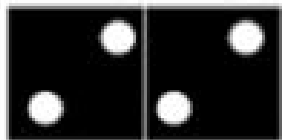
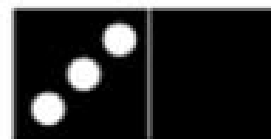
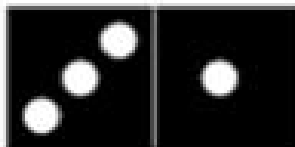
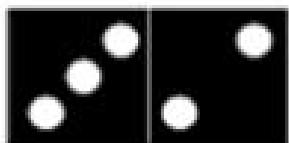
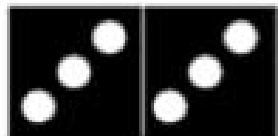
- Row 1: A hand icon (value 5), an empty box, four vertical lines (value 4), an empty box, three red dots (value 3).
- Row 2: An empty box, an empty box, an empty box, an empty box, five black dots in a pentagon pattern and one black dot (value 6).
- Row 3: An empty box, the number 7, an empty box, a 2x2 grid with one black dot in the top-left corner (value 1).
- Row 4: Five vertical lines with the top two crossed out (value 8), an empty box, an empty box, an empty box.

DOMINO SQUARE

Use these dominoes to make this square so that each side has eight dots.



DOMINO SQUARE (dominoes)



Print & cut these out for partners as a tool to solve the Domino Square

SOLVE EMOJI PUZZLE

You need to find the value of each of the Emojis that make each equation true. Each Emoji has a different number value:

Snail = _____

Caterpillar = _____

Butterfly = _____

And what is the solution to the last equation? _____

Be ready to share your strategies!

$$\text{Snail} + \text{Snail} = 6$$

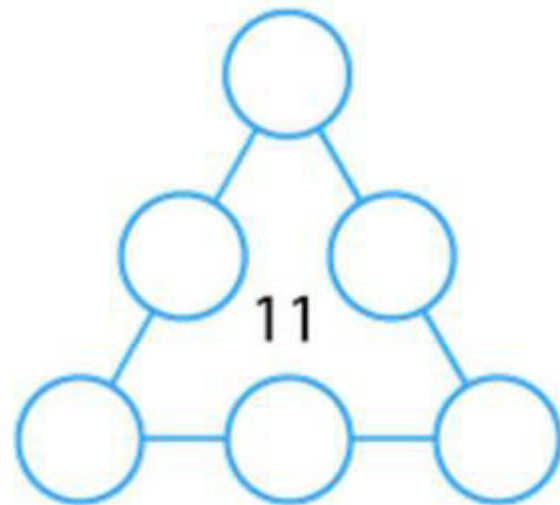
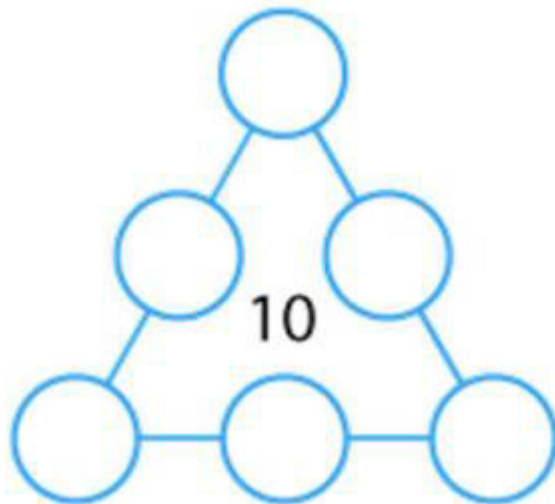
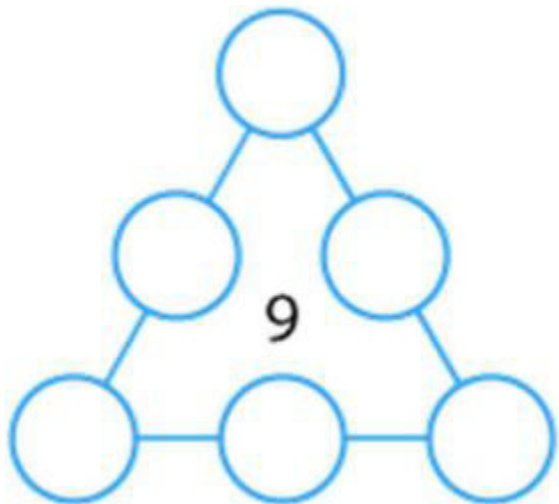
$$\text{Snail} + \text{Caterpillar} = 7$$

$$\text{Butterfly} + \text{Caterpillar} = 5$$

$$\text{Butterfly} + \text{Snail} = ?$$

TRIANGLE PUZZLES

Arrange the numbers 1 to 6 in each set of circles below so that the sum of each side of the triangle equals the number in the center.



1

2

3

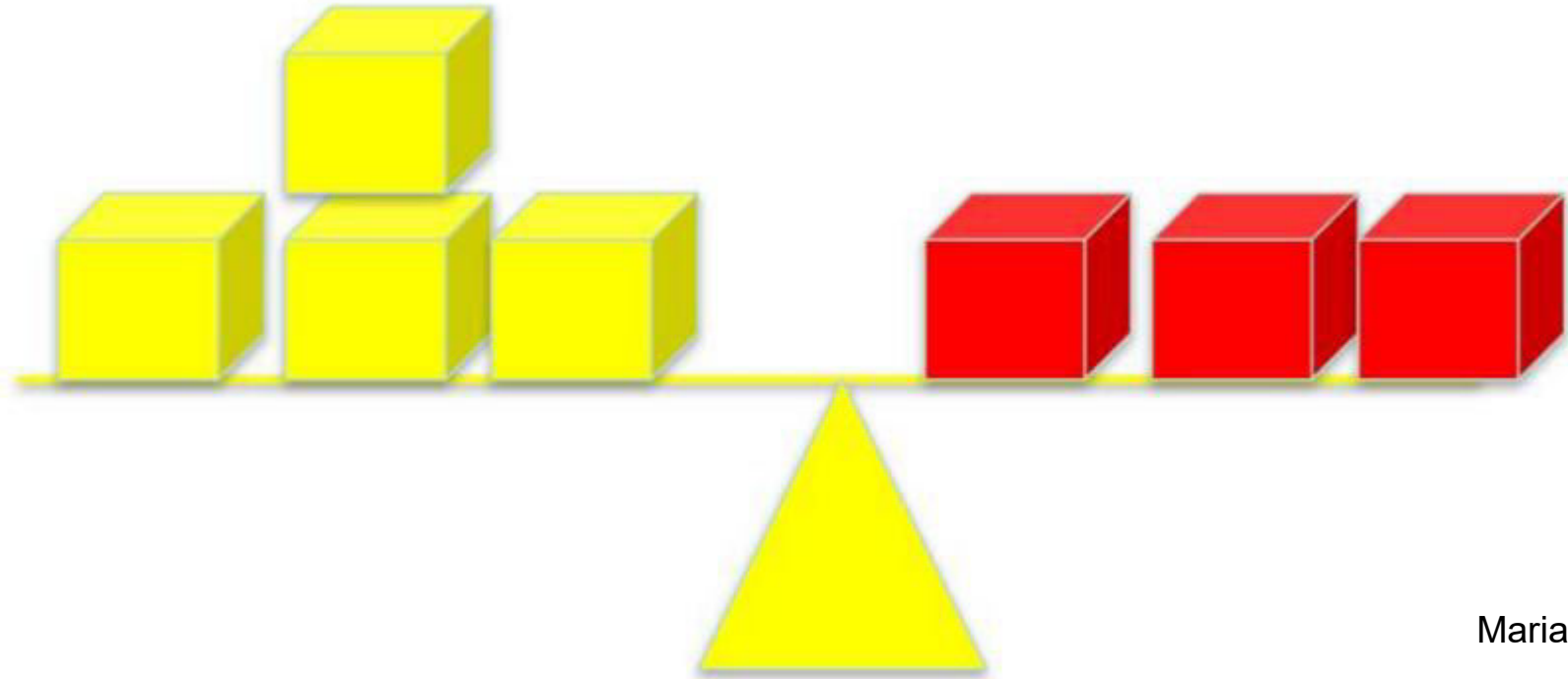
4

5

6

How Many?

How many might be in each yellow box so the scale is balanced? How many in each red?

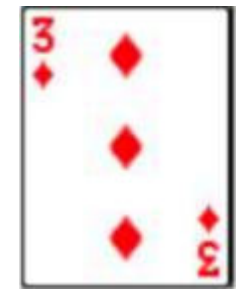
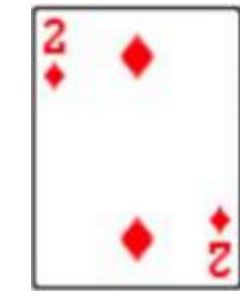
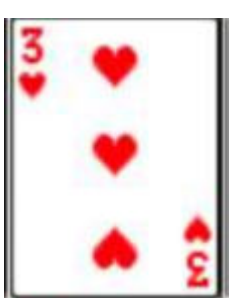
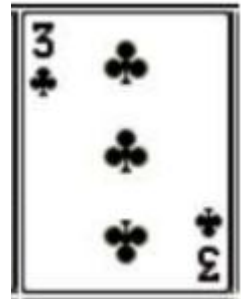
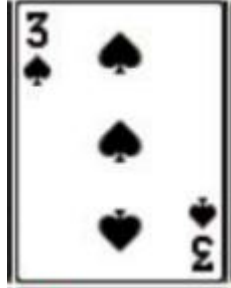


CAN YOU MAKE THE NUMBERS FROM 1-10 USING THESE PLAYING CARDS?

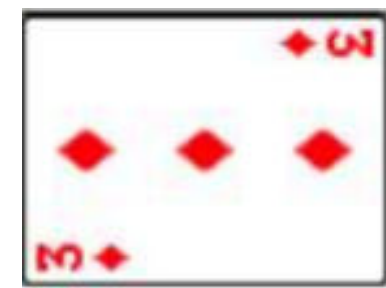
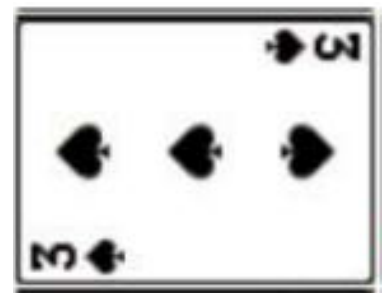
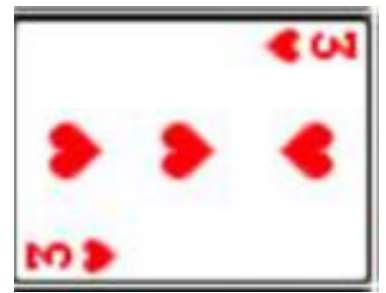
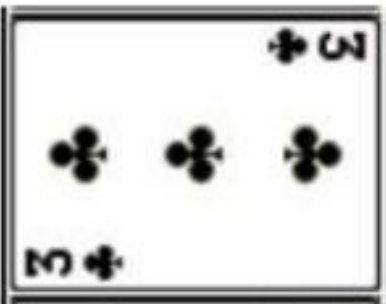
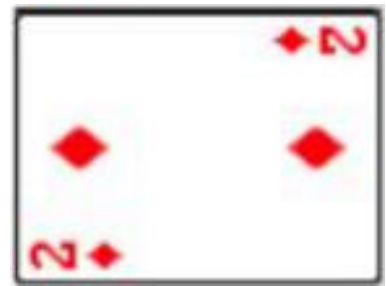
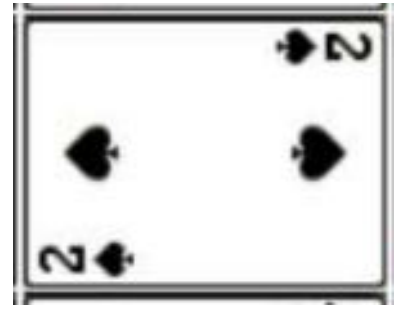
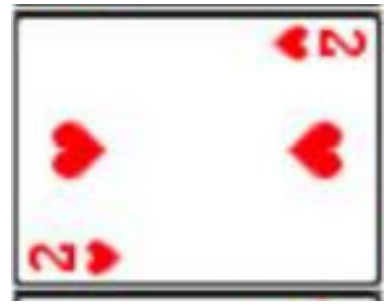
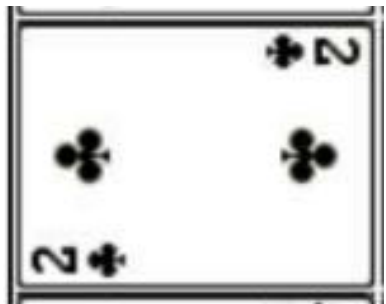
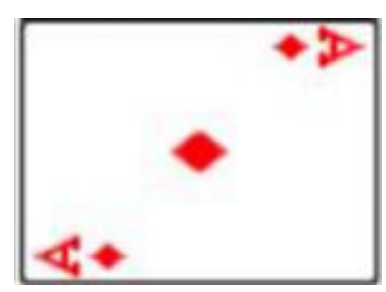
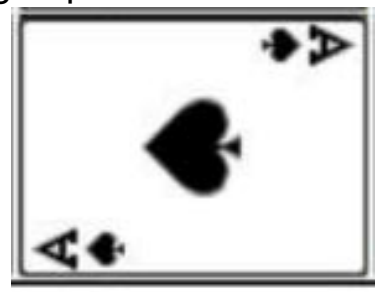
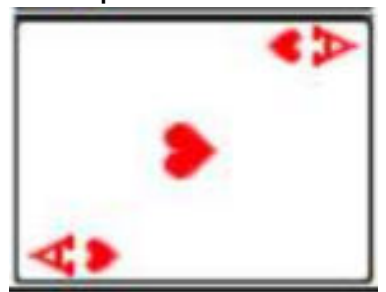
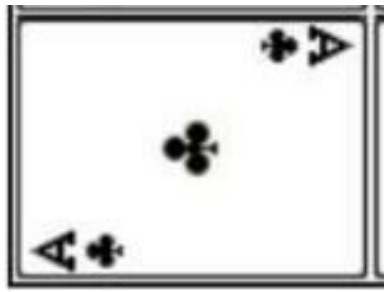
Give each group a set of playing cards from Ace to three.
(Ace has a value of 1).

Your challenge is to use these 12 cards to make the numbers from 1 – 10 in a variety of ways. (A template to print is on the next page.)

How many different ways can you come up with for each number?



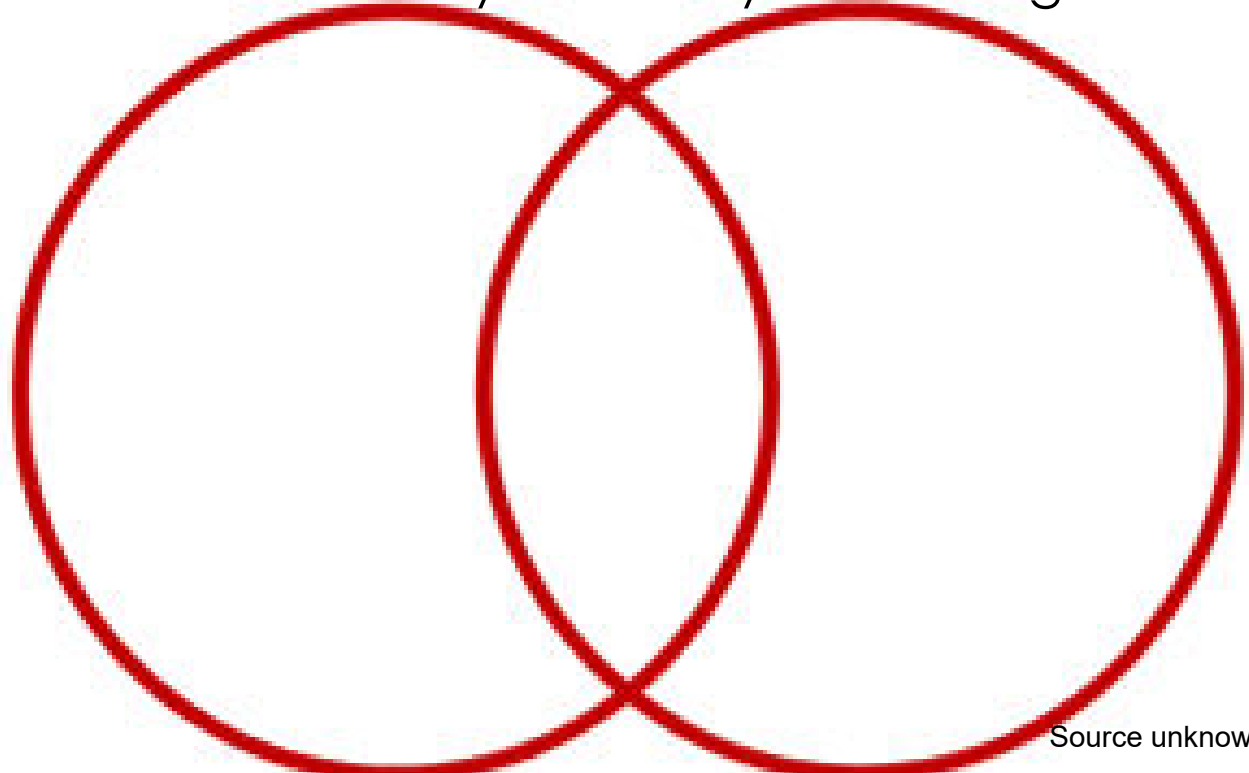
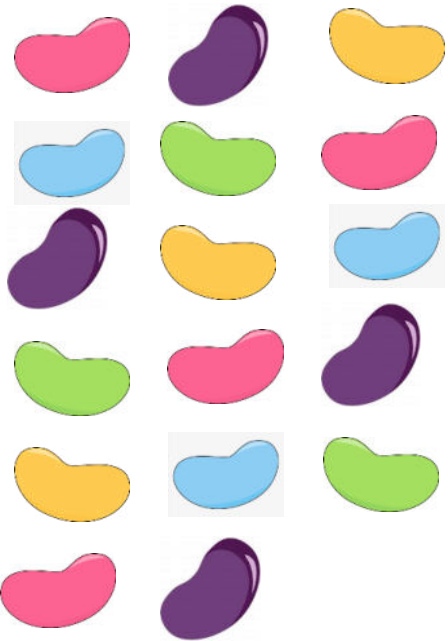
PLAYING CARDS SUMS OF 10 - print out in color for each group



JELLY BEANS

Place 17 jelly beans into the two circles below so that each circle contains the same number of jelly beans.

How many ways can you do this? Be ready to share your thinking.



HUNDRED CHART COVER UP

Cover 4 numbers that make a square on the 100 chart where the greatest number you cover is 11 more than the smallest number you cover. How many can you find?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Silver Coins

You have a combination of 6 coins in your pocket that consists of quarters, dimes or nickels.

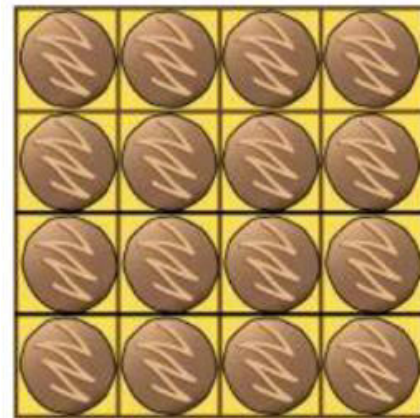
How many different amounts of money could you have?



Feel free to use the coins above to help you.
They have been cloned

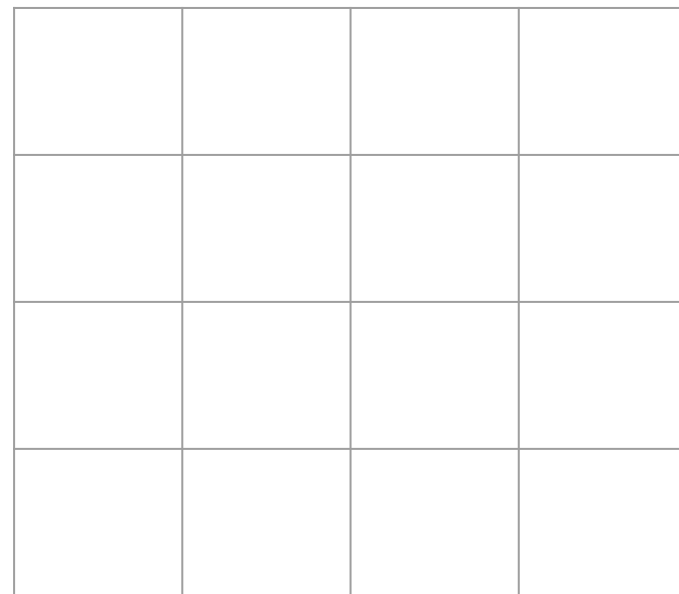
KEEP IT EVEN

Erica doesn't like odd numbers, so the box of chocolates shown to the right meets with her approval. The problem is that she has to remove six chocolates from the box in such a way that she leaves an even number of chocolates in each row and each column.



Make a 4 by 4 grid, and using pennies or other tokens as chocolates, show how she can do this.

There is more than one solution.



(Boris Kordemsky's Moscow Puzzles.)

SOLVE EMOJI PUZZLE

You need to find the value of each of the Emojis that make each equation true. Each Emoji has a different number value:

Panda = _____

Owl = _____

Dragon = _____

And what is the solution to the last equation? _____

Be ready to share your strategies!

$$\text{Panda} + \text{Panda} = 16$$

$$\text{Panda} + \text{Owl} = 18$$

$$\text{Dragon} \times \text{Owl} = 10$$

$$\text{Dragon} + \text{Panda} = ?$$

NUMBER PATTERN MIX-UP

I used digit cards to create a 2-digit number pattern. The wind blew the cards and mixed them up. How might you place the loose digit cards into the following to complete a pattern? How do you know? How might you extend the pattern?

<input type="text"/>	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	,	<input type="text"/>	<input type="text"/>	,	<input type="text"/>	<input type="text"/>
_____	_____	,	3	_____	,	_____	9	,	4	_____	,	_____	_____

1

3

3

3

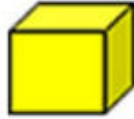
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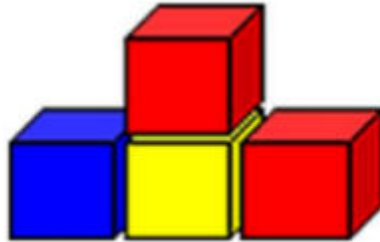
7

Up-and-Down Staircase

One block is needed to make an up-and-down staircase, with one step up and one step down.



4 blocks make an up-and-down staircase with 2 steps up and 2 steps down.



Now close your eyes and imagine the next staircase with three steps up and three steps down.
Can you see it?

Your challenge is to find out how many blocks would be needed to build an up-and-down staircase with 4 steps up and 4 steps down?

You may want to use blocks to physically make the staircase. You may want to draw it or you may be happy visualizing it and calculating to find out. But however you solve it, be ready to explain how you and your partner would work out the number of blocks needed to build a staircase with 4 steps up and 4 steps down.

(<https://nrich.maths.org/2283/note>)

MONEY Riddles

If you add labels to these numbers, how might you make these equations true.

for example

$$2 + 3 = 35 \rightarrow$$

$$2 \text{ dimes} + 3 \text{ nickels} = 35 \text{ pennies}$$

$$10 + 4 = 2$$

$$8 + 2 = 9$$

$$3 + 3 + 3 = 12$$

$$3 + 5 = 1$$

SOLVE ME MOBILES

How do these Mobile Puzzles work?

The Mobile is balanced which means each side of the mobile is the same value. You need to figure out what each shape is worth in order to get the total. Each shape is a different whole number.

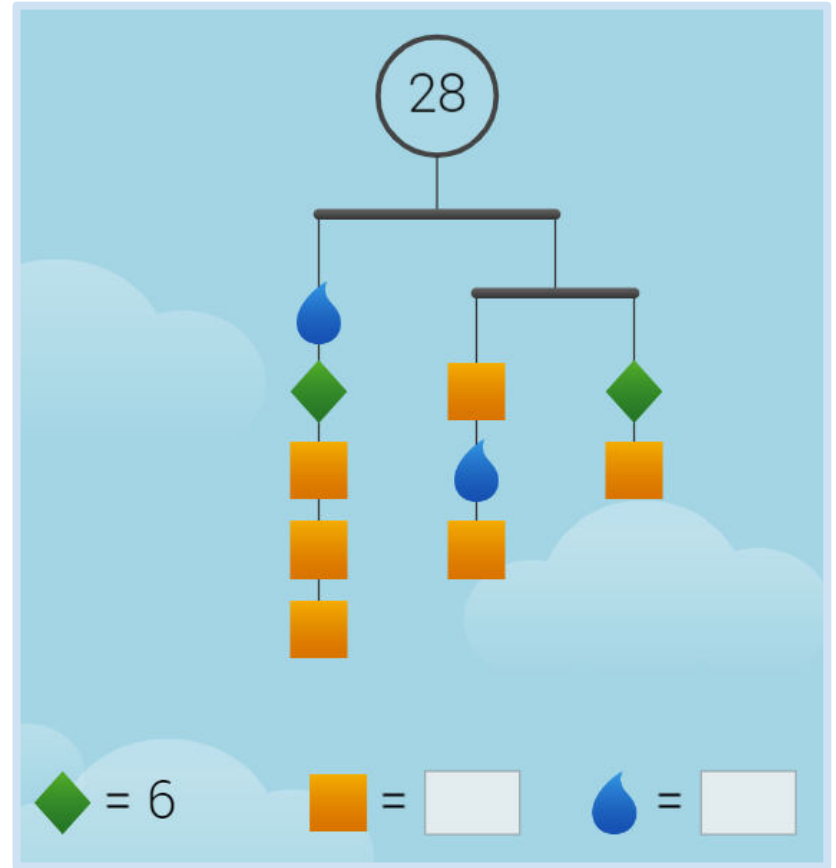
THERE IS ONLY 1 SOLUTION.

What is the value of the following:



Show your work.

<https://solveme.edc.org/Mobiles.html?toosmall=no>



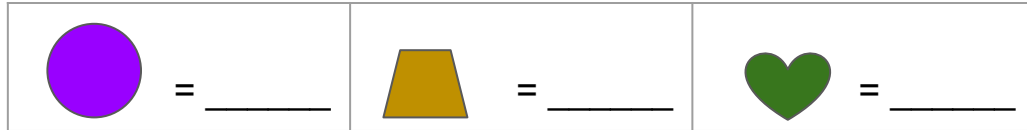
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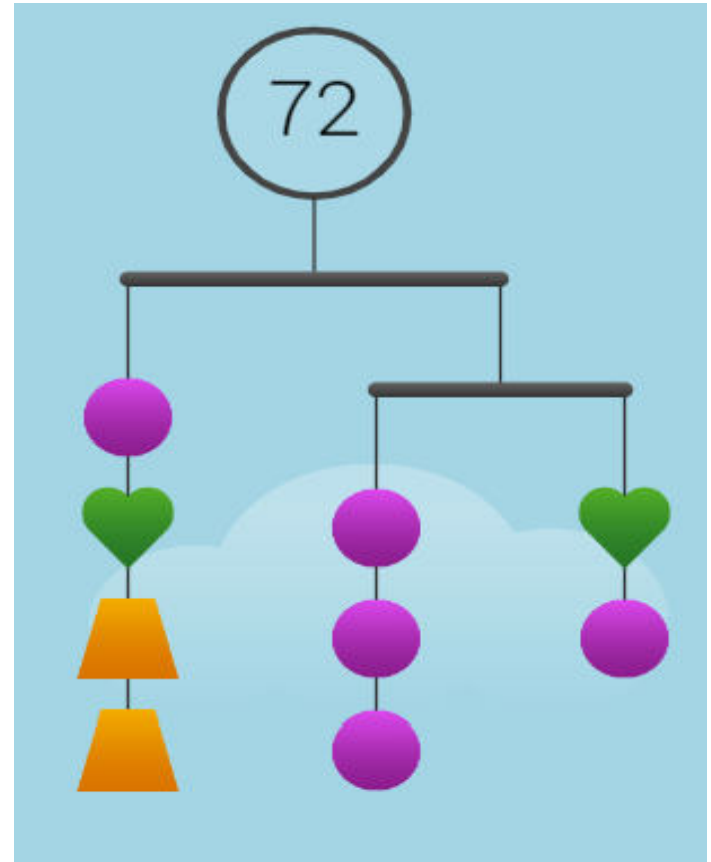
THERE IS ONLY 1 SOLUTION.

What is the value of the following:



Show your work.

<https://solveme.edc.org/Mobiles.html?toosmall=no>



YOHAKU PUZZLE

Today's puzzle is a little trickier, but you can do it!!

You will need three addends to make each sum. The top row must add up to 12, the second row adds up to 13 and the third row adds up to 11. The left column adds up to 10, the second adds up to 12 and the third column adds up to 14.

BUT THERE IS A CATCH WITH THIS ONE TOO!

You can only use the numbers 1, 2, 3, 4, 5, 6, 7, and 8.

So no 0 and NO numbers greater than 8 can be used.

So far I came up with 6 solutions to this one!

I dare you to come up with all 6!

			12
			13
			11
10	12	14	+






Money Marvels - What's for Lunch?

You have been given \$5.00 to spend on your lunch order.

What different combinations of items could you select within your \$5.00 price range?

Record all of the possible combinations you could order and then calculate how much change you would receive.

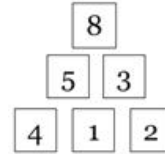
What combination gave you the least amount of change without going over \$5.00?

 apple 50c	 banana 60c	 quiche \$1.80	 hamburger \$2.20
 energy bar 90c	 hotdog \$1.50	 pizza \$1.40	 salad roll \$1.80
 juice \$1.30	 hot choco 90c	 meat pie \$2.10	 corn chips 70c

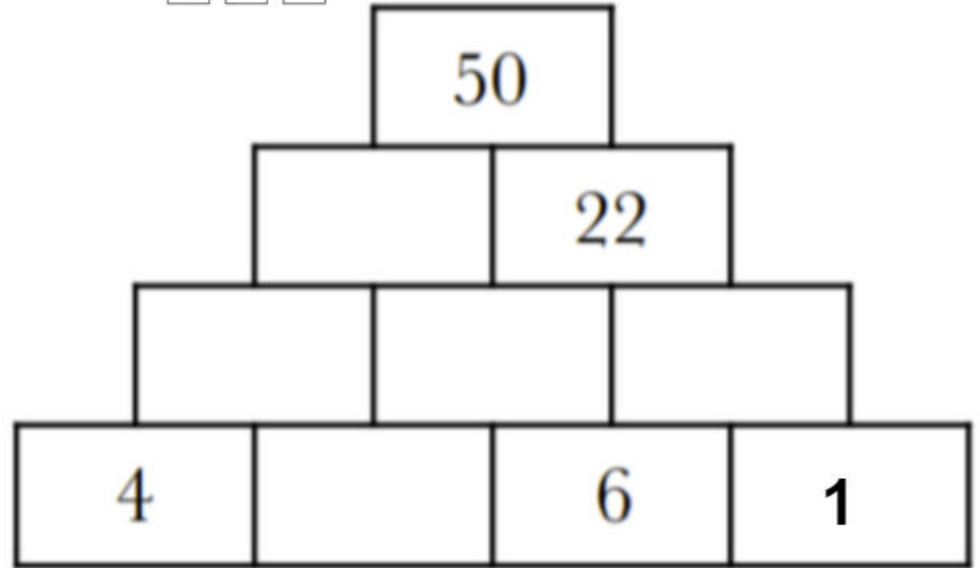
PYRAMID PUZZLE 1

Each number in a Pyramid Puzzle is the sum of the two numbers below it. You will need to fill in the missing numbers in the Pyramid so that every number is the sum of the two below it.

Here is an example of a Pyramid Puzzle that is done:



So here's your challenge:
Can you fill in the missing numbers in the pyramid so that each box is the sum of the two numbers below it?

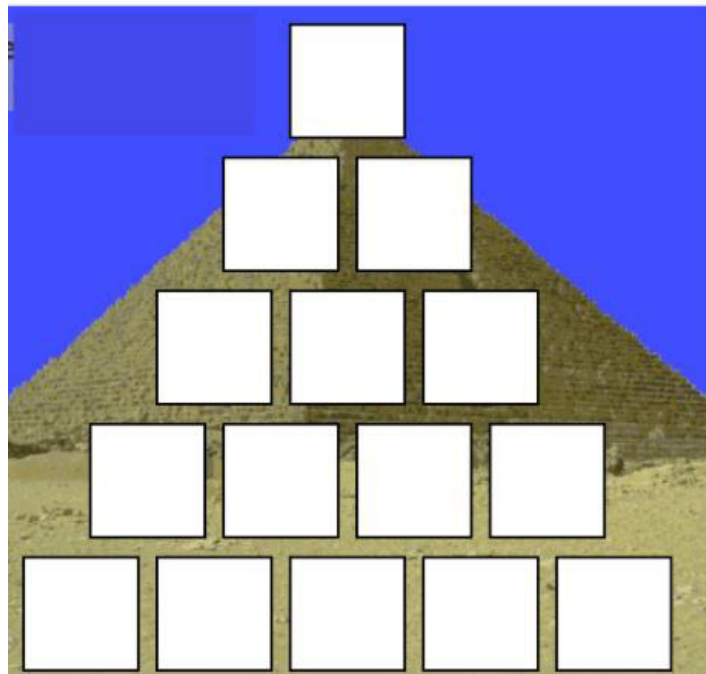


PYRAMID PUZZLE - BUILDING UP

Now [this Pyramid Puzzle](#) is a little different. You are going to put the numbers 1 to 5 in the bottom row of this pyramid. They can be arranged in any order. The numbers in the other bricks are found by adding the two bricks immediately below together. The object is to find which arrangement of the numbers 1-5 at the bottom row will give you the largest total in the top brick of the pyramid?

So here's your challenge:

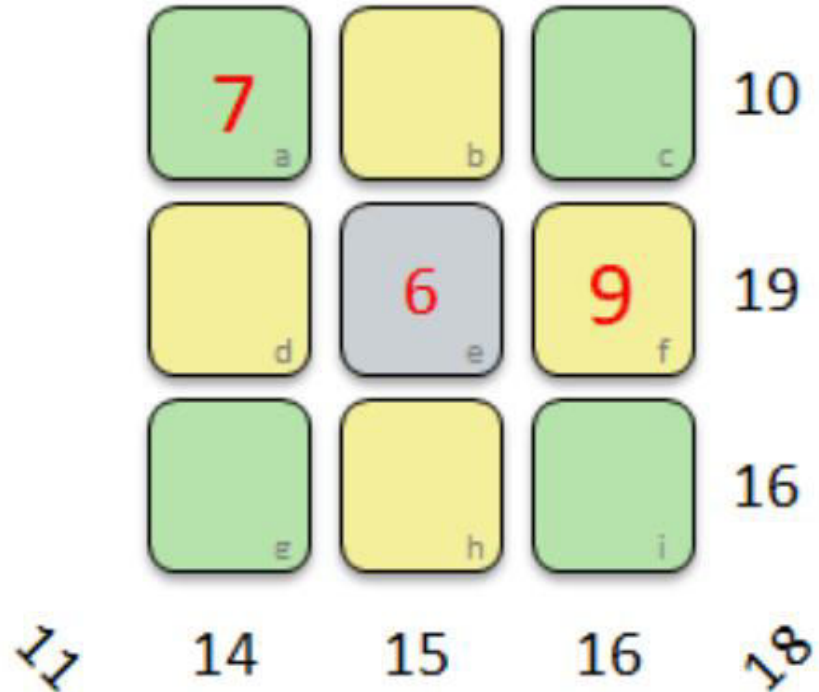
What arrangement of the numbers 1-5 in the bottom row gives the largest total in the top brick of the pyramid?



1 to 9 Puzzle

RULES FOR THIS PUZZLE:

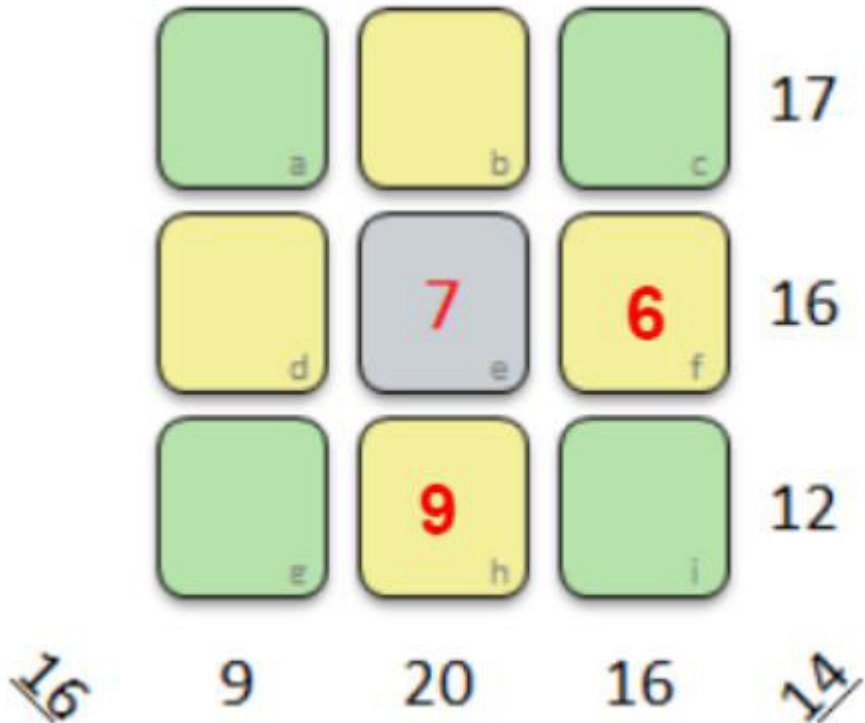
Fill each empty box with the digits **1, 2, 3, 4, 5,** and **8**, using each digit only once, to **match the given sums of the rows, columns and diagonals.**



1 to 9 Puzzle

RULES FOR THIS PUZZLE:

Fill each empty box with the digits **1, 2, 3, 4, 5,** and **8**, using each digit only once, to **match the given sums of the rows, columns and diagonals.**



Marching Band

Students in a marching band want to line up for their performance.

The problem is that...

When they line up in 2's there is 1 left over.

When they line up in 3's there are 2 left over.

When they line up in 4's there are 3 left over.

When they line up in 5's there are 4 left over.

When they line up in 6's there are 5 left over.

When they line up in 7's there are no students left over.

How many students are there?

Be ready to share your thinking!

ONLY 4s

CHALLENGE: Can your group find every number from 1 and 10 using *only 4's and any operation*? You can use up to but not more than four 4's in each equation and you can use any operation?

Here's an example $\sqrt{4} + \sqrt{4} + \frac{4}{4} =$

<https://www.youcubed.org/tasks/the-four-4s/>

NUMBER	Show how you used the 4s.
1	
2	
3	
4	
5	
6	
7	
8	
9	

SPLIT 25

Take the number **25**, and break it up into as many pieces as you want.

$$25 = 10 + 10 + 5$$

$$25 = 2 + 23$$

$$\begin{aligned} 25 = & 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 \\ & + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 \\ & + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 \end{aligned}$$

What is the biggest **product** you can make if you multiply those pieces together?

Consecutive Positive Integers that Make a Sum of 105

In how many ways can 105 be expressed as the sum of at least two consecutive positive integers?

https://www.cemc.uwaterloo.ca/contests/past_contests/2014/2014CTMCTeamProblems.pdf