

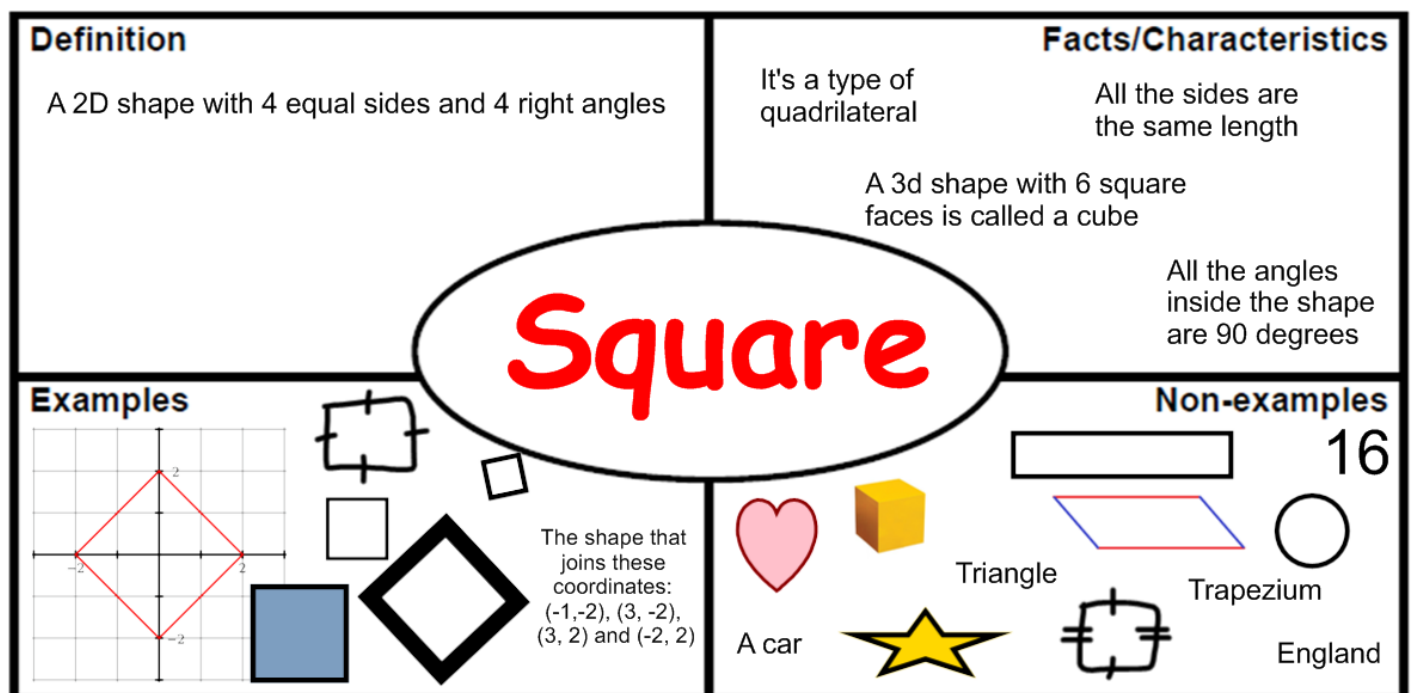
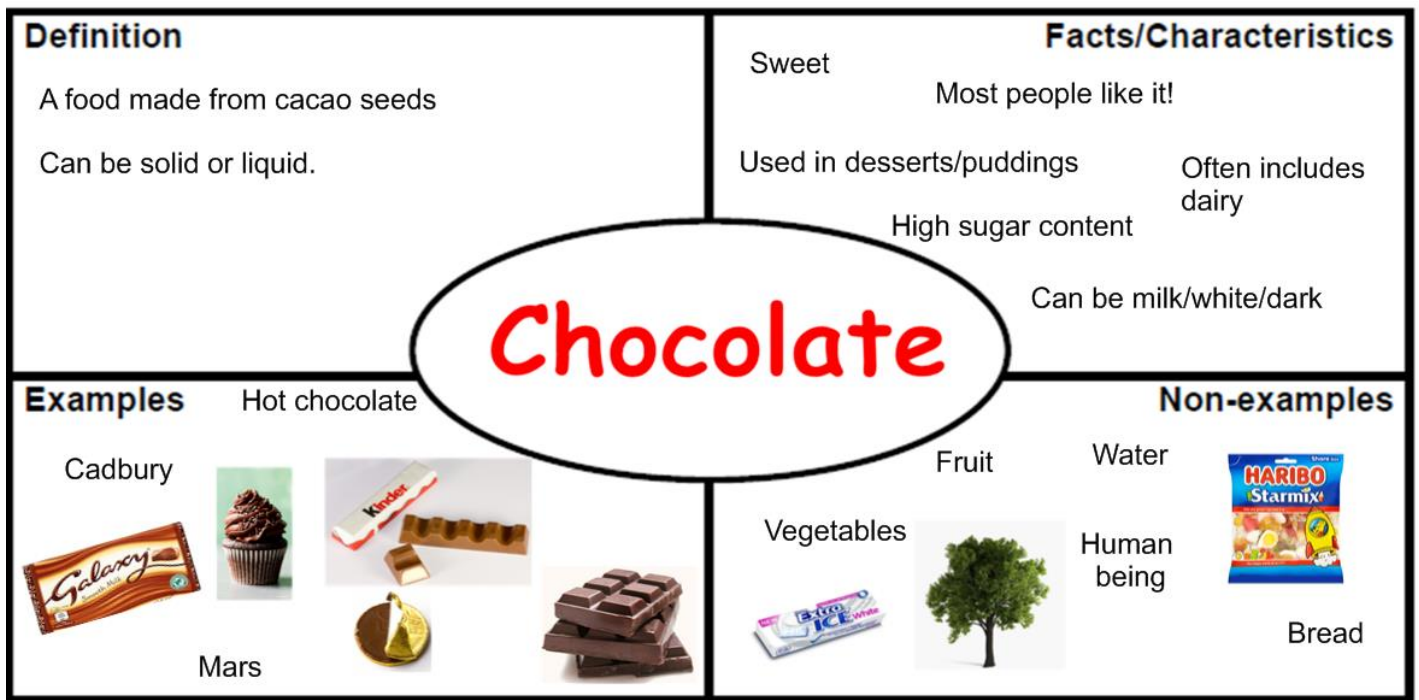
Maths

PART A: Frayer Models

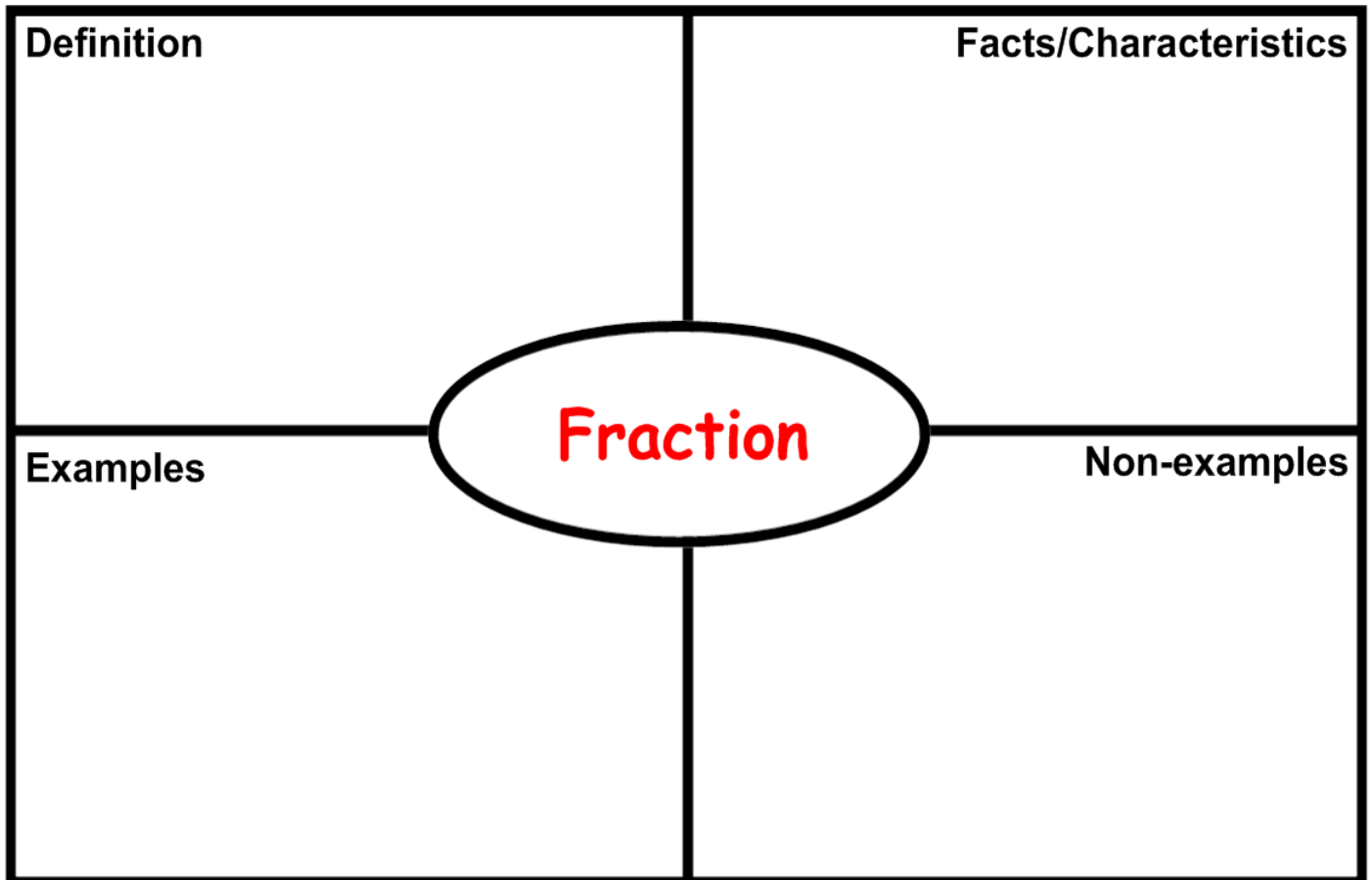
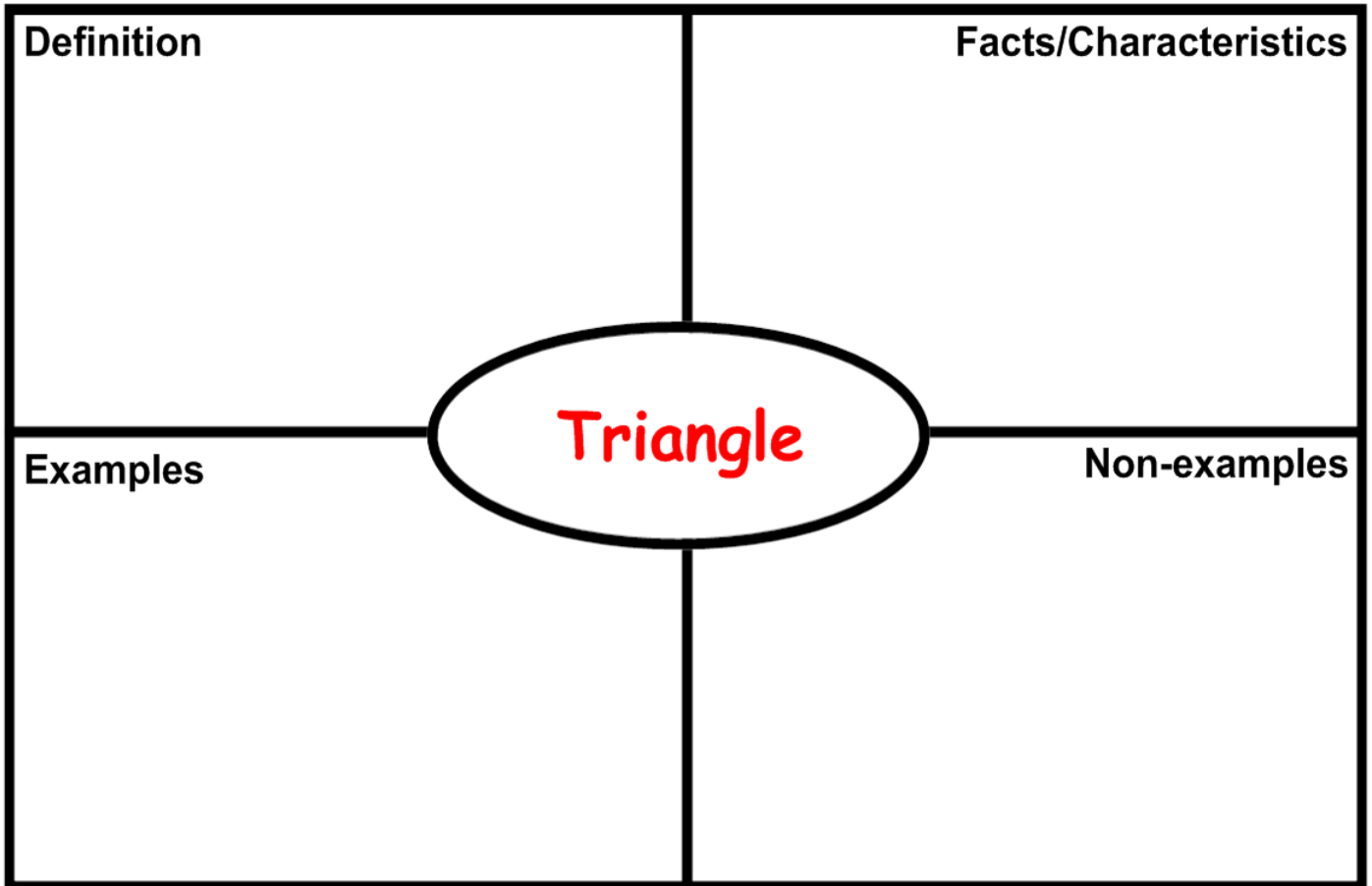
What is it? A Frayer Model helps us build our vocabulary and deepen our understanding of something. To use a Frayer Model, we describe something using 4 sections:

- 1) Definition
- 2) Facts/characteristics
- 3) Examples
- 4) Non-Examples

Below are two examples of Frayer Models. The first one might help someone explain what **chocolate** is, while the second one describes what a **square** is.



Use these examples to complete your own Frayer Models below. Try to be as **creative** as you can!

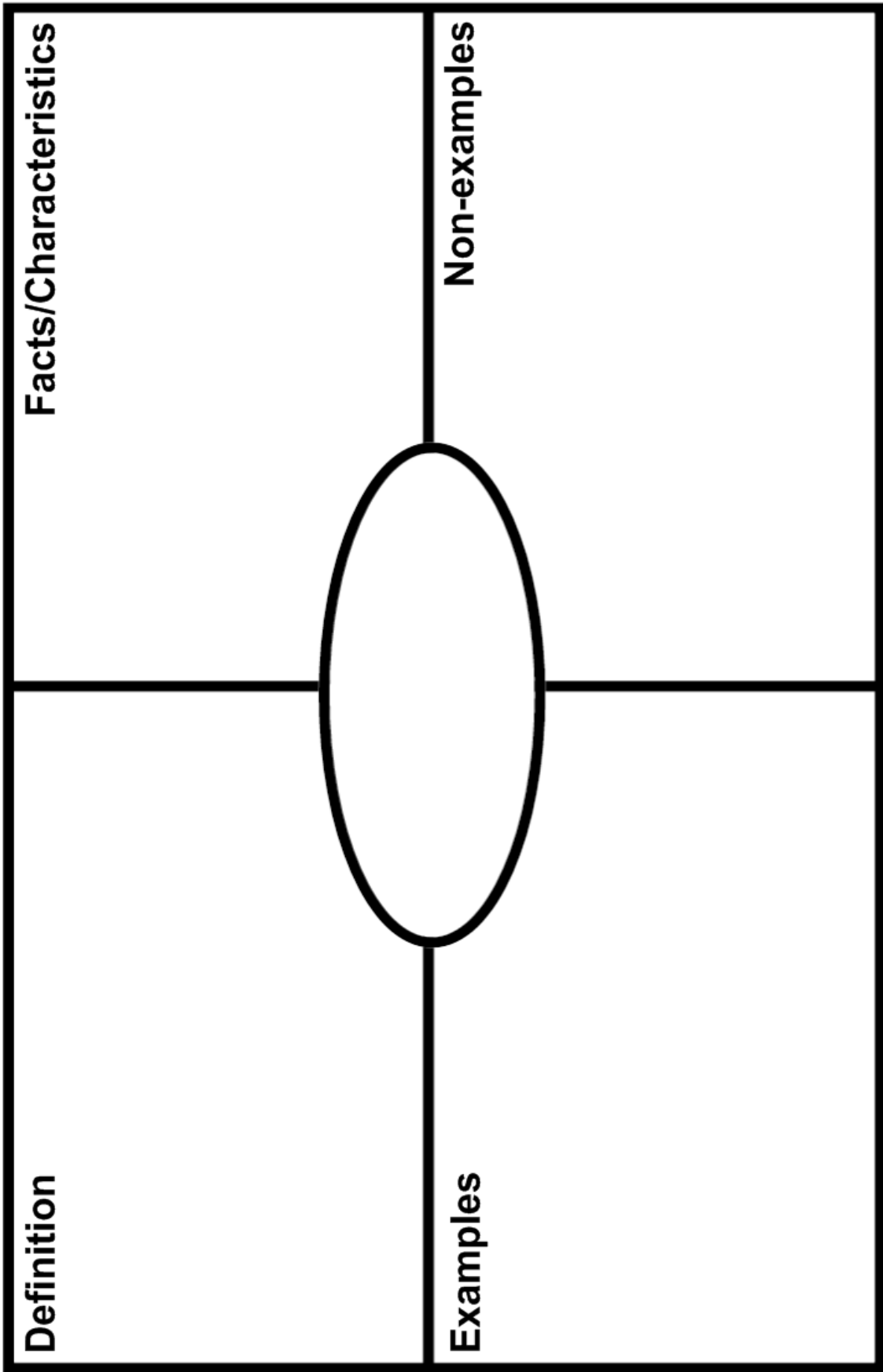


Discipline

Hard work

Honesty

Humility



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PART B: Numeracy

Using any method you like, answer as many of these questions as you can. Please show any working out that you use.

a) $5 + 7 =$

b) $12 + 5 =$

c) $5 + \dots = 7$

d) $\dots - 7 = 12$

e) $7 + \dots = 5$

f) $\dots + 12 = 7$

g) $5 \times 4 =$

h) $10 \times 2 =$

i) $100 \times 2 =$

j) $50 \times 4 =$

k) $0.5 \times 4 =$

l) $0.1 \times 2 =$

m) $0.1 \times 0.2 =$

n) $24 + 33 =$

o) $45 + 99 =$

p) $125 + 76 =$

q) $18 - 6 =$

r) $485 - 121 =$

s) $4562 - 188 =$

t) $45 \times 3 =$

u) $62 \times 8 =$

v) $45 \times 62 =$

w) $18 \div 3 =$

x) $25 \div 5 =$

y) $1521 \div 3 =$

z) $3415 \div 2 =$

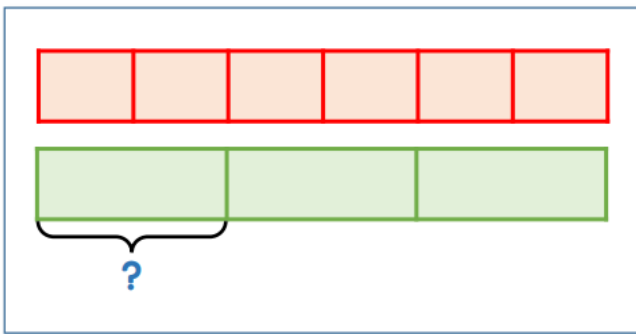
PART C: Bar Models

Have you used bar models before? Can you figure out how to use the bar models to answer each of these 4 questions?

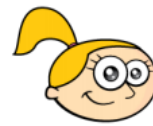
1 There are 5 oranges in a box. 6 boxes of oranges are shared equally between 3 classes.



How many oranges does each class get?



2 Eva and Mo each think of a number.

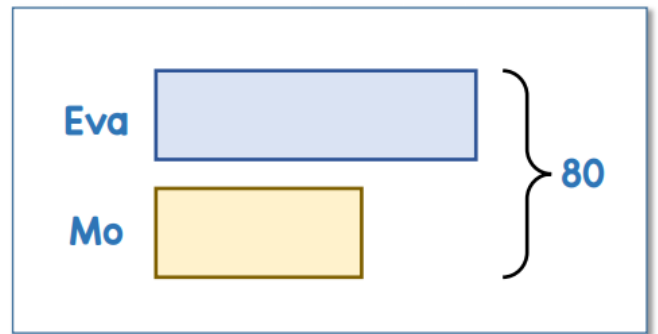


Our numbers sum to make 80

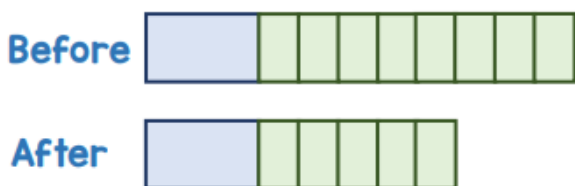


My number is 36 less than Eva's.

What numbers are the children thinking of?



3 A box contains 8 badges. The mass of the box and the badges is 160 g. 3 badges are removed from the box. The mass of the box and badges is now 121 g. What is the mass of the box?



4 Marty has £412 and Hannah has £1,162. Marty and Hannah are each given the same amount of money. Hannah now has twice as much as Marty. How much were they each given?

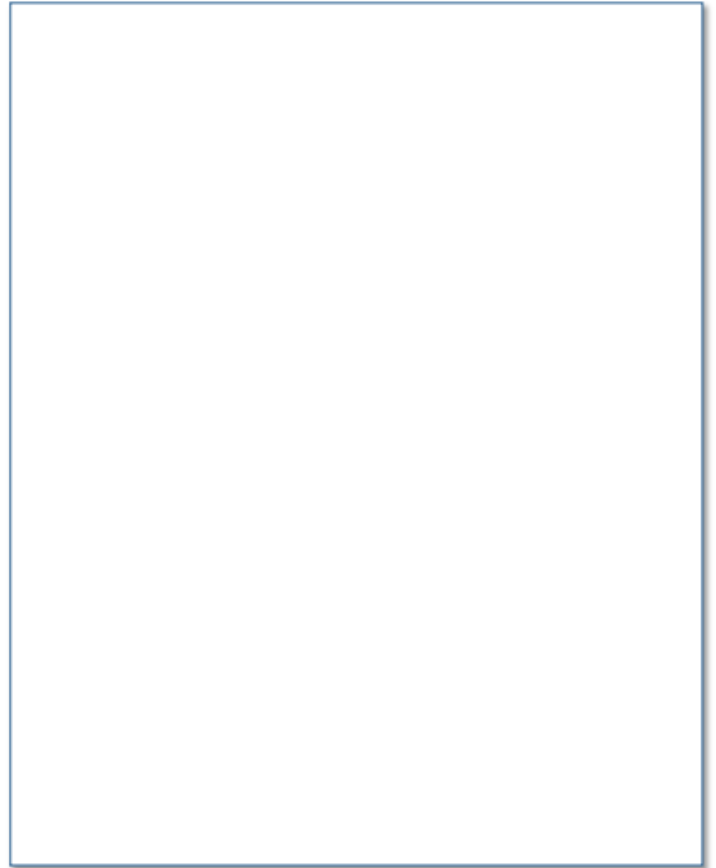


Feeling brave? Try this **challenge question!**

5 Sarah is doing a coast to coast walk. She is doing it over 7 days.

- At the end of the first day the ratio of the distance travelled to the distance remaining is 1 : 5
- On the second day Sarah walks 15.5 miles.
- At the end of the second day she has completed 25% of the walk.

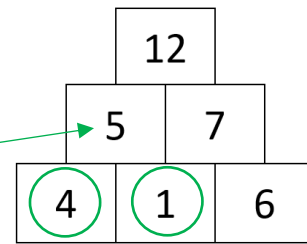
How long is the coast to coast walk?



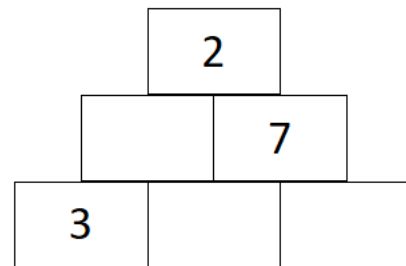
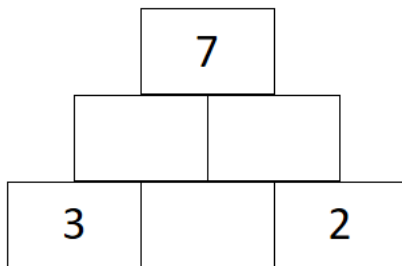
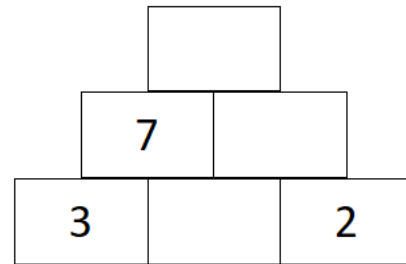
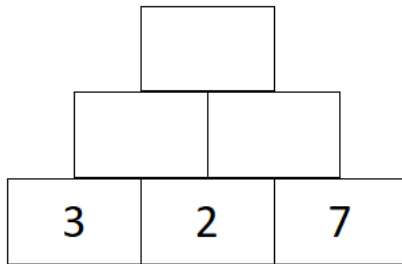
PART D: Addition Pyramids

What is an addition pyramid? A pyramid in which two adjacent blocks (blocks that are next to each other) add together to give the block above. For example:

You can see that the 4 and 1 are next to each other, and they add together to give 5, which is above them.



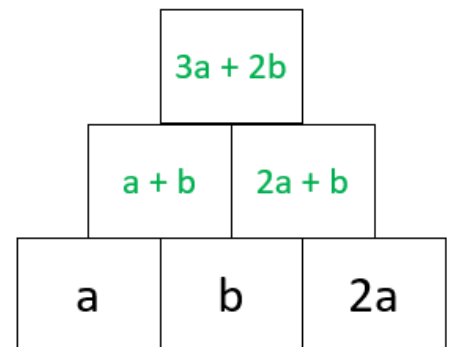
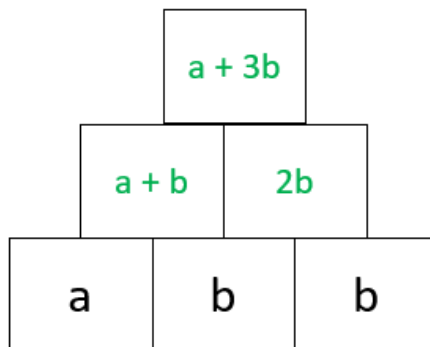
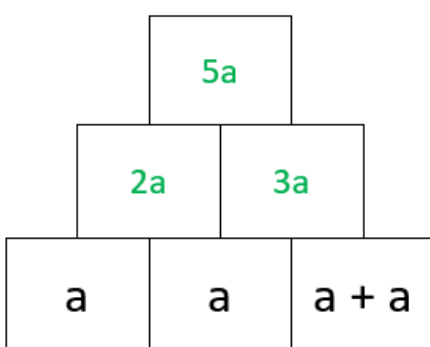
1. How many of these pyramids can you solve?



2. What about addition pyramids that use letters instead of numbers? How does that work?

Here are a few examples. Can you figure out how they work?

Examples:



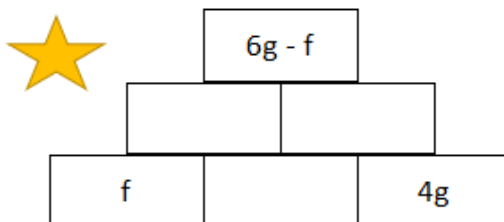
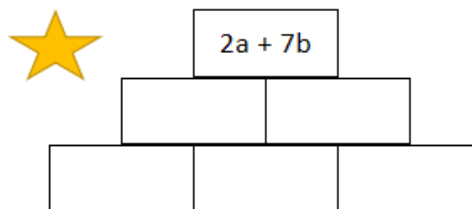
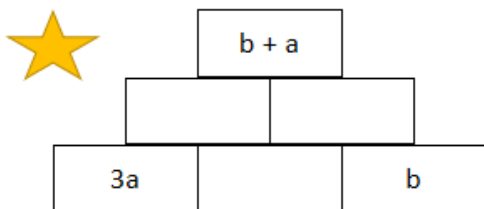
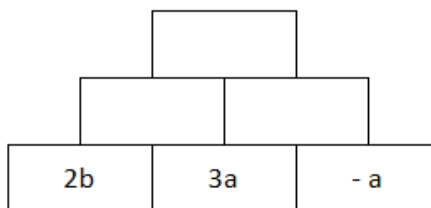
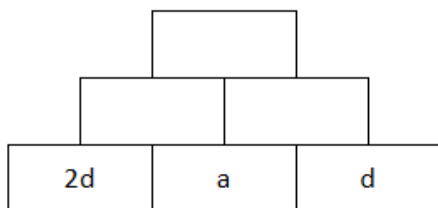
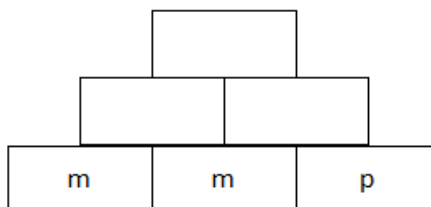
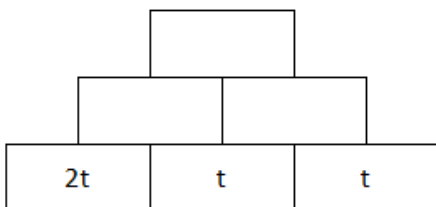
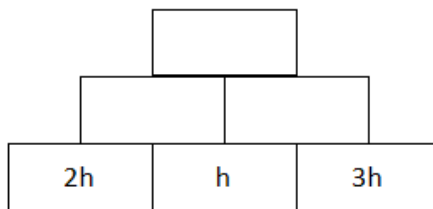
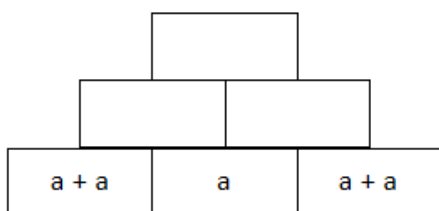
Discipline

Hard Work

Honesty

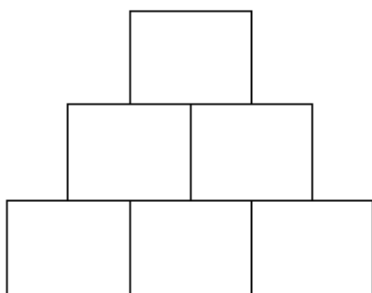
Humility

If you think you understand how these work, have a go at these!

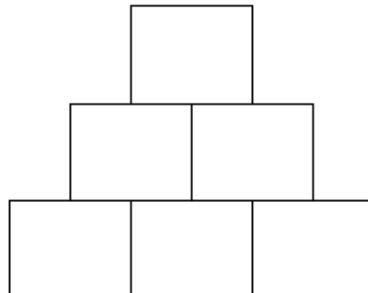


Create your own addition pyramids for someone else to try!

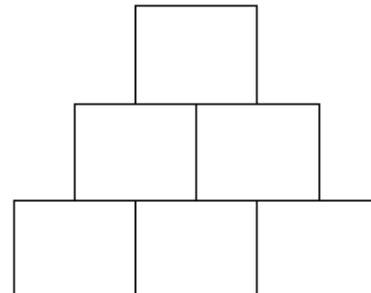
Easy:



Medium:



Challenge!



PART E: Puzzles & Problems!

How many of these problems and puzzles can you solve?

1. Using all of the digits 1 to 9 (no repeats), place them in this addition to get an answer as close to 1500 as possible. How close you can get? You have 3 attempts!

| | | | | | | | | | | | |
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| _____ | | | _____ | | | _____ | | | | | |
| _____ | | | _____ | | | _____ | | | | | |

2. I have five glasses in a row. The first three are full, and the other two are empty. How can I arrange them so that they are alternately full and empty. I can only move one glass.

Start like this:



End like this:



3. There are three Dalmatian puppies: Spot, Socks, and Patches. Spot has fewer spots than Socks, but more spots than Patches. Which puppy is the spottiest?
4. To make 7 even, what do you do?
5. You have run into the grocery store to pick up a few items for dinner. You have exactly £9 and no credit card. In your basket are a block of cheddar cheese (£3.59), a loaf of bread (£2.15), and a can of tomato soup (95p). Do you have enough cash?
What is the most efficient method to work this out?
6. When you roll a fair, 6-sided die, what is the probability of getting a 2?

7. When you roll two fair, 6 sided dice, what is the probability of getting two 2s?

8. There are five contestants in a pie-eating contest. Big Boy finished before Pie Man but behind Big Mama. Crusty finished before Ralph but behind Pie Man. In what order did the contestants finish?

9. Myrtle had 10 children. Each of her children also had 10 children, who each had 10 children, who each had 10 children. How many great-great-grandchildren did Myrtle have?

10. There are three people at the dinner table. Two are mothers, and two are daughters. How is this possible?

11. Alejandro's age plus 3 is a perfect square. (A perfect square is the result of a number multiplied by itself). His age minus 3 is the square root of that perfect square. (The square root "undoes" the perfect square. So, 81 is a perfect square, and 9 is its square root.) How old is Alejandro?

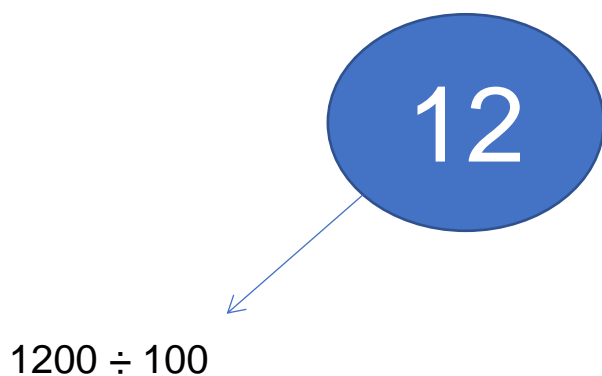
12. A number has 3 digits and is odd. Two digits are the same. The sum of the digits in the tens and ones places is odd. The sum of the digits is 4. What is the number?

Do you know any good puzzles? Write your favourite one(s) here:

PART F: Creative Maths!

The answer to a question is **12**.

How many mathematical questions can you design that give the answer 12?
Try to use as many of the different skills you've learnt in Primary School as you can!
(One example has been done for you)



| Can you include... | | |
|--------------------|------------------|-----------|
| multiplication | division | money |
| angles | negative numbers | decimals |
| ★ percentages | ★ fractions | ★ algebra |

Discipline

Hard Work

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Humility

Looking for more Maths to get in to over the summer?

Try this free website:

Transum Mathematics (https://www.transum.org/Software/SW/Starter_of_the_day/)
A free Maths puzzle for every day of the year!

Great books about Maths:

- 'This is Not a Maths Book: A Smart Art Activity Book' – Anna Weltman
- 'Think of a Number' – Jonny Ball
- 'Train Your Brain to be a Maths Genius' – DK
- 'Mathemagicians: How Maths Applies to Everything' – Jonny Ball
- 'Can You Solve My Problems?' – Alex Bellos
- 'Visions of Numberland: A Colouring Journey Through the Mysteries of Maths' – Alex Bellos