

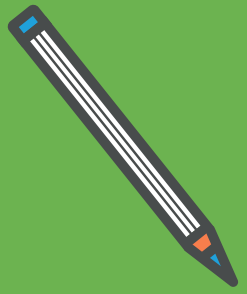
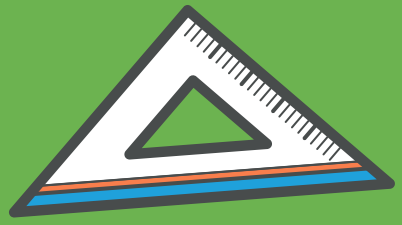
Mathvember

By Whizz Education


Daily challenges

Lower KS2

Questions 1 - 22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Day 1
Question

Ruby has 50p in her purse. What coins could she have?

What is the least number of coins?
What is the greatest number of coins?

What coins are definitely not in Ruby's purse?
Ruby has 6 coins. What could they be?
You may want to use some coins to help.

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Day 1
Answer

What is the least number of coins?

One, if you have a 50p

What is the greatest number of coins?

50, if you just have pennies

What coins would not be in Ruby's purse?

£1 and £2

Ruby has 6 coins. What could they be?

10p +10p + 10p + 10p + 5p + 5p

or

20p + 10p + 5p + 5p + 5p + 5p

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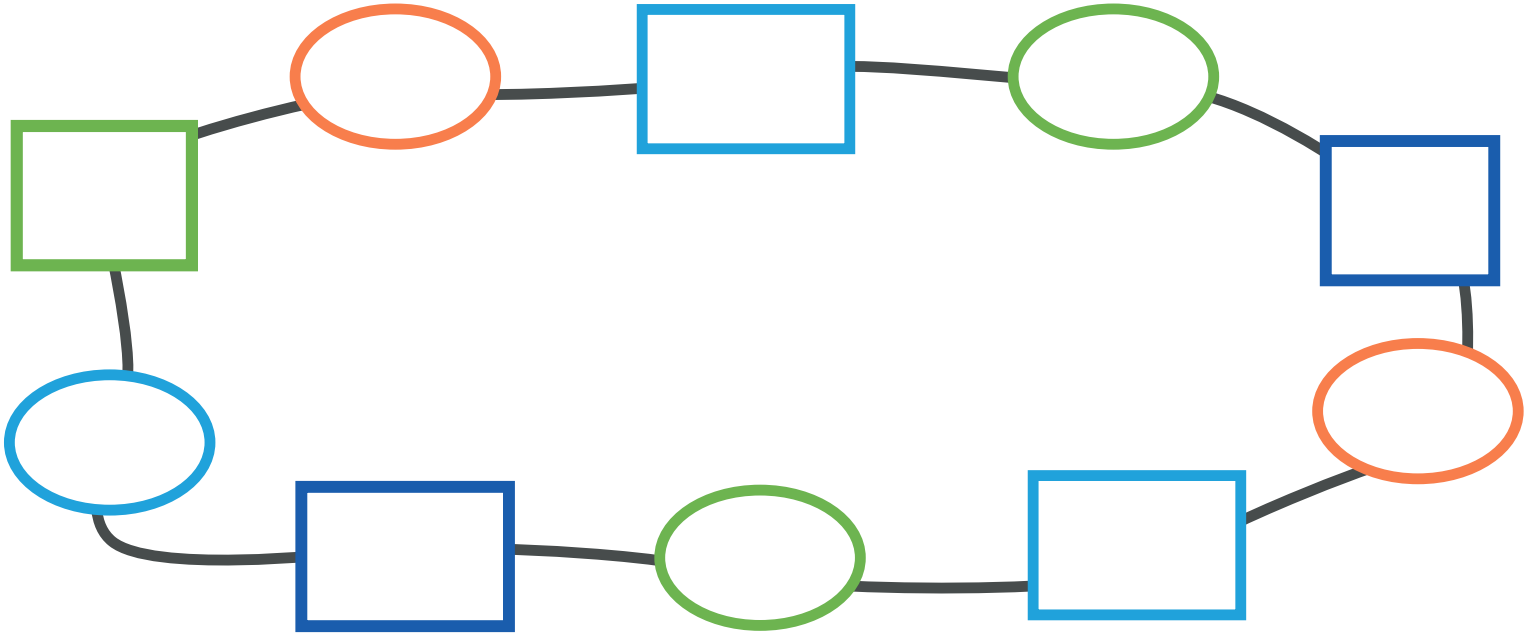
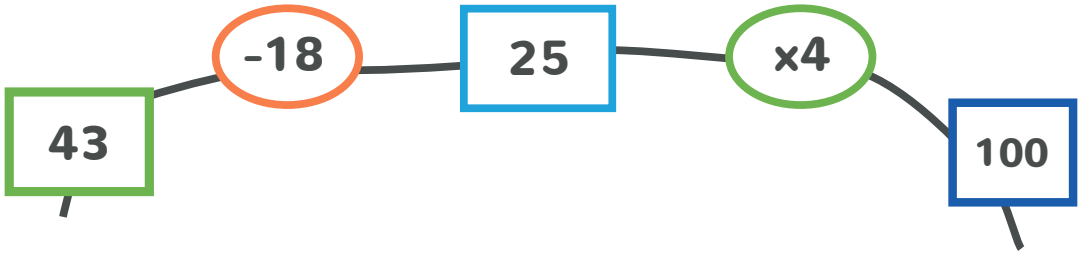
Day 2 Question

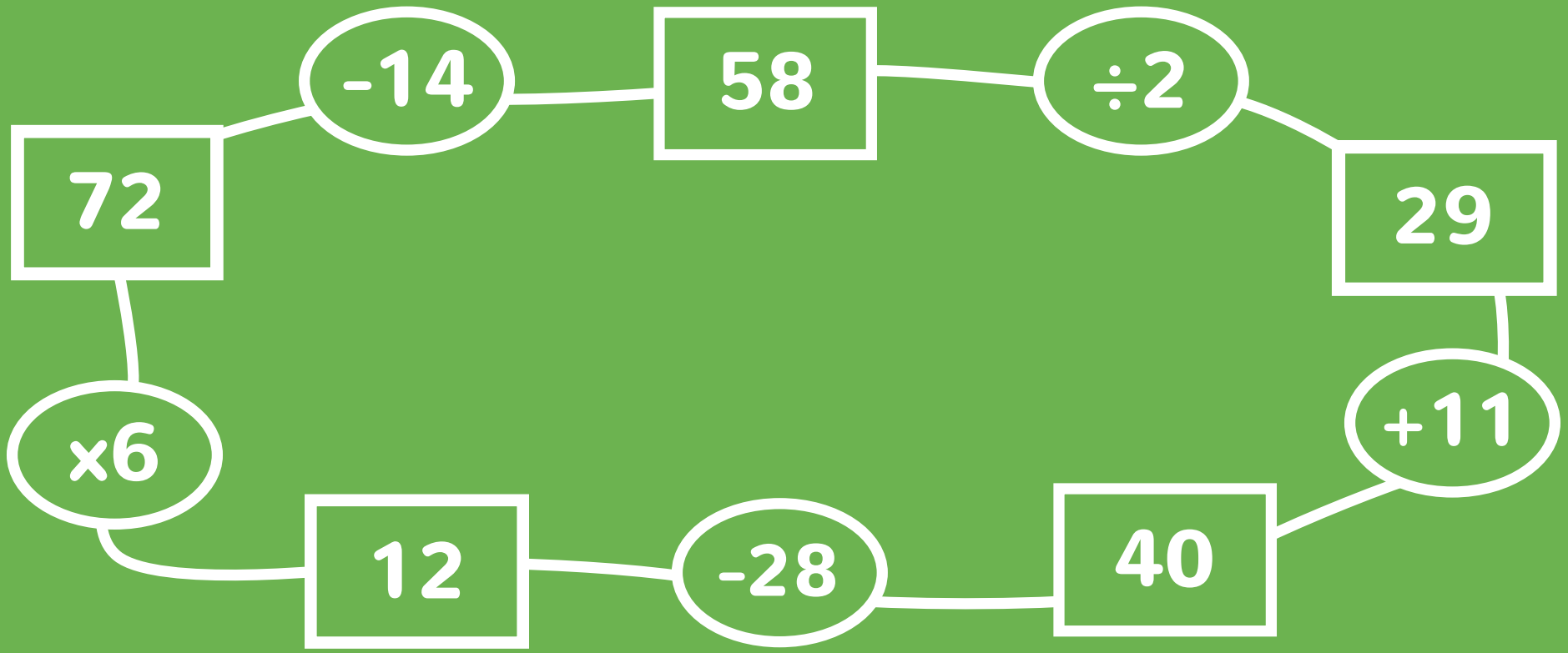


Copy or print the bracelet or draw your own.

Write any two or three digit number in the rectangles, then write in the appropriate operation in the circle going clockwise round the bracelet. Try using multiplication and division. For example:



Here is an example, answers will vary



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Day 3
Question

If November 5th is on a **Monday** this year, on which day will Christmas Day be?

Explain how you worked this out.

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Day 3
Answer

Tuesday

Remember - there are 30 days in November and Christmas Day is on 25th December.
5th November is on a Monday, the next Monday will be 12th , then the next will be 19th, the next 26th, and then we go into December so the next Monday will be 3rd December, 10th, 17th and then 24th so the 25th December will be Tuesday

Another method:

How many days between 5th November and 25th December? Well, there are 25 days through to the end of November and then another 25 up to 25th December, so 50 in all.

Monday repeats every seven days, so it's still Monday after 49 days. So it will be Tuesday.

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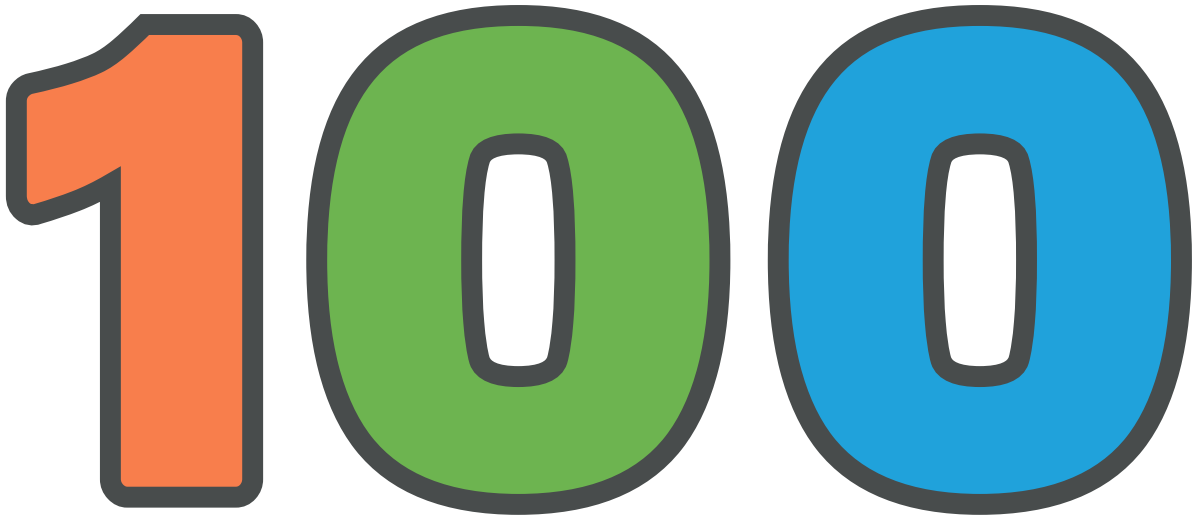
Day 4
Question

Make three 2-digit numbers and one 1-digit number using 1, 2, 3, 4, 5, 6, 7.

Add them together to make 100.

Is there more than one solution?



One way is 56, 17, 23, 4

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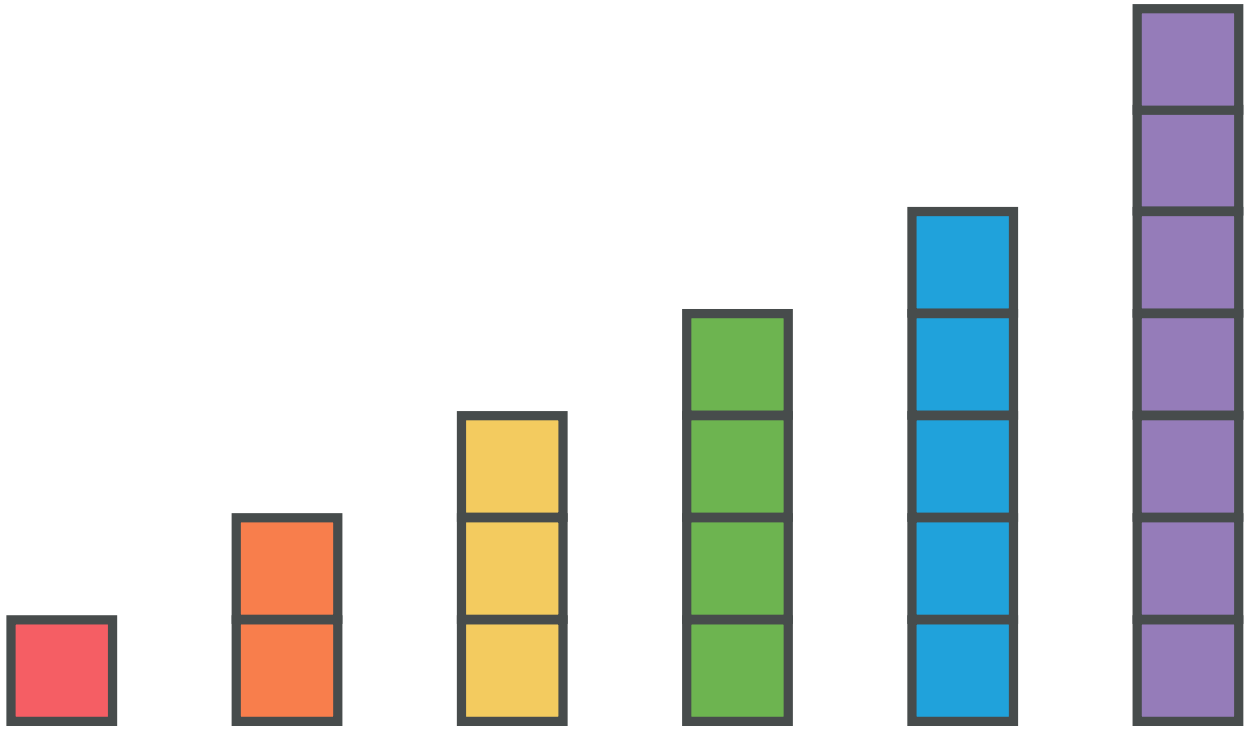
Day 5
Question

Choose three of the rods below

What are the shortest and the longest trains?
(You make a train by placing the rods end to end)

Can all the different length trains between the shortest and the longest train be found using three different rods only each time?



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Day 5
Answer

The shortest train is 6 and the longest train is 16

All the possibilities can be made between 6 and 16.

6 = 3, 2, 1
7 = 4, 2, 1
8 = 4, 3, 1
9 = 5, 3, 1
10 = 5, 2, 3
11 = 5, 4, 2
12 = 7, 4, 1
13 = 7, 5, 1
14 = 5, 7, 2
15 = 7, 5, 3
16 = 7, 5, 4

There are some different ways to make these numbers.

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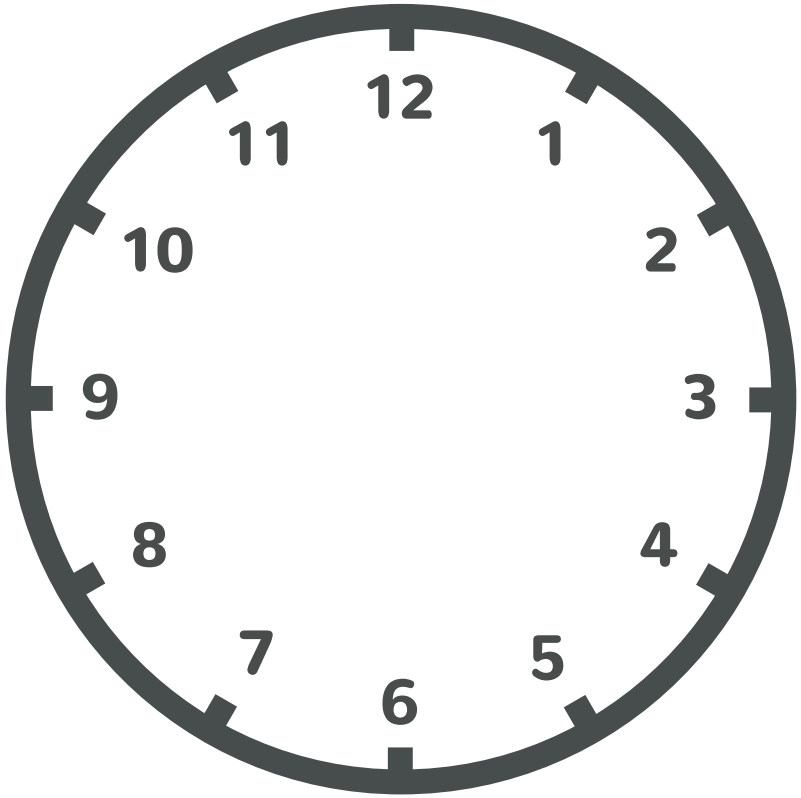
Day 6
Question

Divide the clock face into six parts so that the sum of the numbers is the same in each part.

Use the diagram to help.



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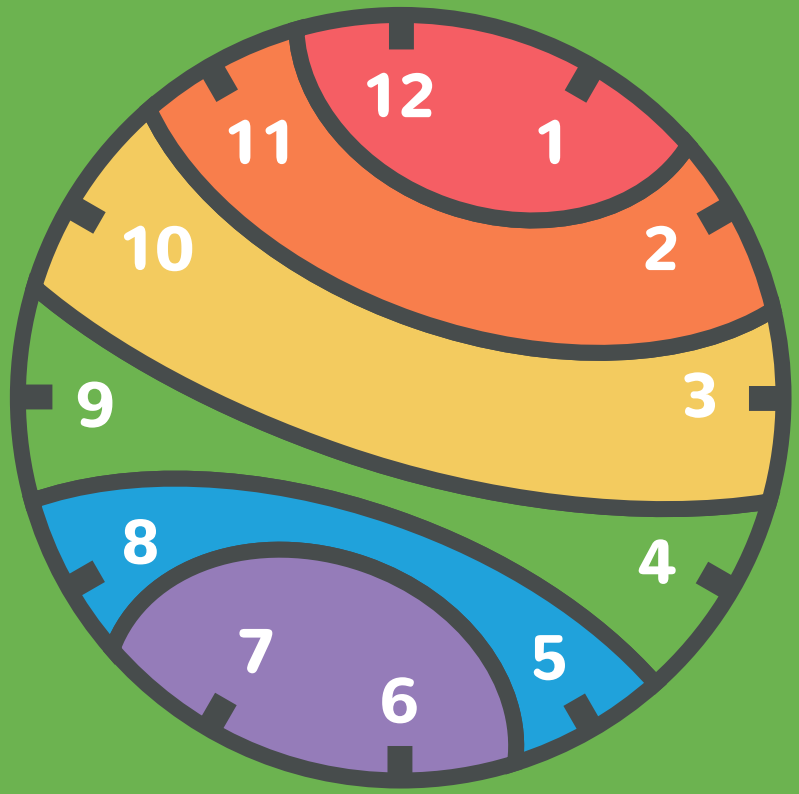
Day 6
Answer

Each part should add up to 13



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Day 7
Question

Fill in the missing squares.

How did you work this out?

	X		=	144
		X		
18	÷		=	6
=		=		=
42		18	=	

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Day 7
Answer

24	X	6	=	144
+		X		÷
18	÷	3	=	6
=		=		=
42	-	18	=	24

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Day 8
Question

True or False?

"Your height is roughly three times the distance around your head"

Convince me.

What do you have to find out?

How can you measure the distance around your head?

Can you find more than one way?

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Day 8
Answer

"Your height is roughly three times the distance around your head"

TRUE

Investigate further;

How many times would the length of your head fit into your height?

Normally 6 to 8 times

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Day 9
Question

Emma's name is worth 32p

Samara's name is worth 53p

Lizzie's name is worth 87p

Henry's name is worth 70p.

How much is your name worth?

What is the total value of the first names in your class?

What is the average value of first names in your class

A = 1p; b = 2p and so on

The answers will be dependent on names

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Day 10
Question

What three numbers am I thinking of?

Read all the clues first.

Are they in a logical order?

Which clue is the best to start with?

Are there any clues that do not help solve the problem?

Apply these clues;

The product of these three numbers is 84.

One of the numbers is even.

Three different numbers between 1 and 8.

The sum of all three numbers is 14.

The sum of two of the numbers is the third number.

They are all one digit numbers.

Two numbers are odd.

Find the three numbers.

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Day 10 Answer

This could be a logical order for the clues - listen to students' responses.

Three different numbers between 1 and 8

This could be all the variations - need to look at the next clue

They are all one digit numbers.

This clue is pointless as we already know the numbers are between 1 and 8

The sum of two of the numbers is the third number

Restricts the choice to 1,2,3; 1,3,4; 1,4,5; 1,5,6; 1,6,7; 2,3,5; 2,4,6; 2,5,7; 2,6,8; 3,4,7; 3,5,8;

Two numbers are odd.

Could use this clue to eliminate 2,4,6 and 2,6,8 - But if we already have the clue 'one of the numbers is even', then we already know this fact.

One of the numbers is even.

Could use this clue to eliminate 2,4,6 and 2,6,8 - but if we already have the clue 'two numbers are odd', then we already know this fact.

The sum of all three numbers is 14.

This eliminates the numbers to leave three sets of numbers 3,4,7; 1,6,7; 2,5,7;

The product of these three numbers is 84.

This clue finally eliminates all numbers and leaves the final three numbers

1x6x7= 42

2x5x7=70

3x4x7=84

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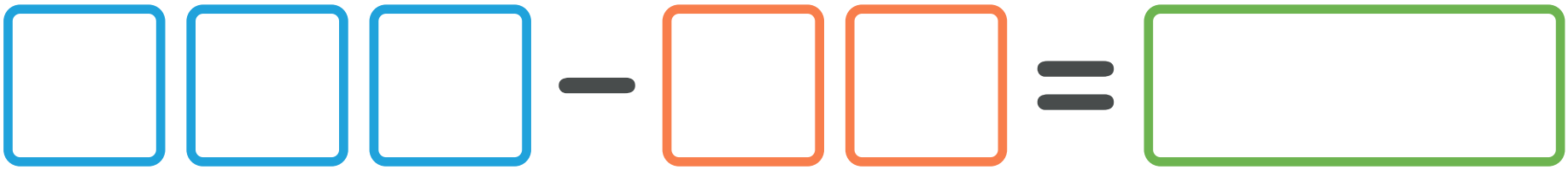
Day 11
Question



Throw a 1 - 6 dice five times.

Each time record the number in any of the blue or orange boxes.

Your aim is to make the calculation have the lowest possible difference

Record this in the green box.

Day 11
Answer

This will depend on the roll of the dice and is much more challenging than it appears.

For example:

If they rolled 3,3,4,1,6

The students might be tempted to make the first number large 641 however, as the subtrahend is a two digit number the hundreds number needs to be small as possible.

In this example, the smallest difference would be 133-64=67.
The minuend needs to be as small as possible and the subtrahend as large as possible.

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Day 12
Question

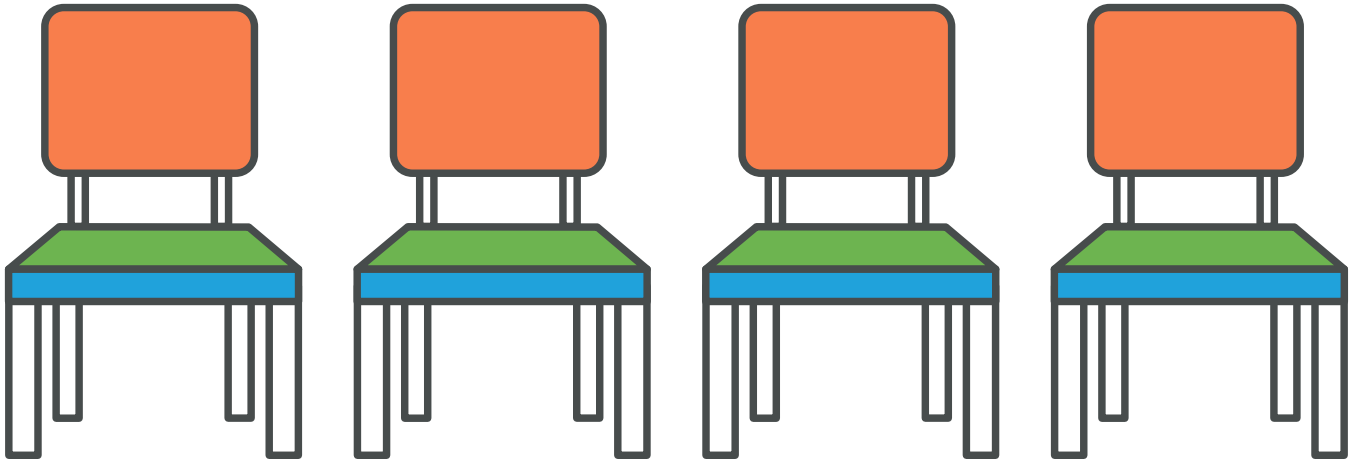
Ben is arranging the chairs in the hall for a parent assembly.

He arranges the chairs into rows of 4 and has two left over.

He then arranges them into rows of 3 and has none left over.

How many chairs might he have had?

Explain your reasoning.



Day 12
Answer

The number must be in the 3 times table:

3, 6, 9, 12, 15, 18, 21, 24, 27, 30

When it is divided by 4, it leaves a remainder of 2. From the list above, this is true of 18 and 30:

4 rows of 4 and 2 left over is 18 chairs

6 rows of 3 is 18 chairs

Or

7 rows of 4 and 2 left over is 30 chairs

10 rows of 3 is 30 chairs

There will be others (extend the 3 times table and repeat the process above)

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Day 13
Question

The magician's cards are all different.

There is a number from 1 - 8 on each card.

The magician has chosen four cards that add up to 20.

What are they?

Find all the possibilities.

What if the magician had three cards that add up to 16?

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Day 13
Answer

Systematic working helps to ensure all possibilities have been considered.

The four different cards with total 20

1,4,7,8

2,3,7,8,

3,4,5,8

1,5,6,8

2,4,6,8

3,4,6,7

2,5,6,7

Three different cards with total of 16

1,7,8

2,6,8

3,5,8

4,5,7

3,6,7

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Day 14
Question

I think of a number.

I add 50.

I multiply this by 3 and then subtract 25.

My answer is 275.

What was my number?

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Day 14
Answer

Encourage the students to work backwards

275 add 25 = 300

300 divided by 3 = 100

100 - 50 = 50

I am thinking of the number 50

Ben makes one 2-digit number and one 3-digit number using all the following digit cards.

The difference between the numbers is 488.

What two numbers did he make?

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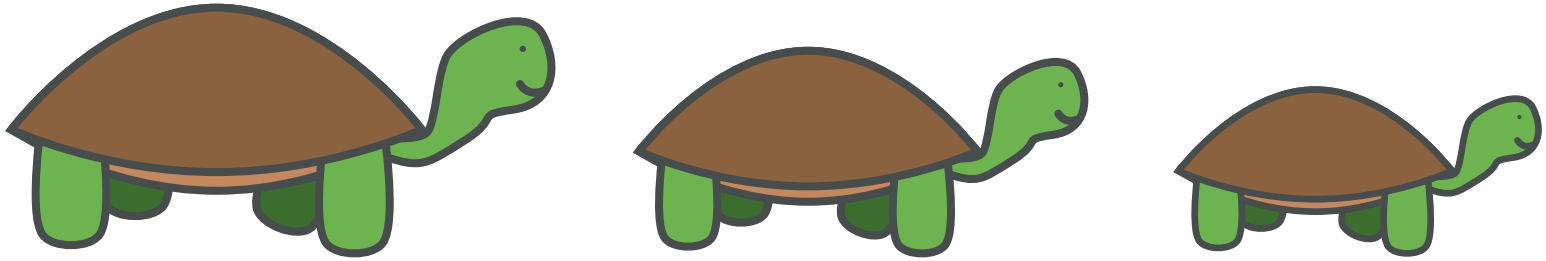
Day 15
Answer

This is not as straightforward as it appears.

The students need to think of the combinations that give 8 in the ones column but also need to think carefully about the tens column.

574 - 86 = 488



There are three tortoises.

Each is a different weight.

The first and second weigh 7kg altogether.

The second and third weigh 8kg altogether.

The first and third weigh 11kg altogether.

What is the weight of each tortoise?

The students may want to work out all the possibilities first, then process of elimination work out the weights.

Good way to practice their addition facts to 20.

First tortoise - 5kg

Second tortoise - 2kg

Third tortoise - 6kg

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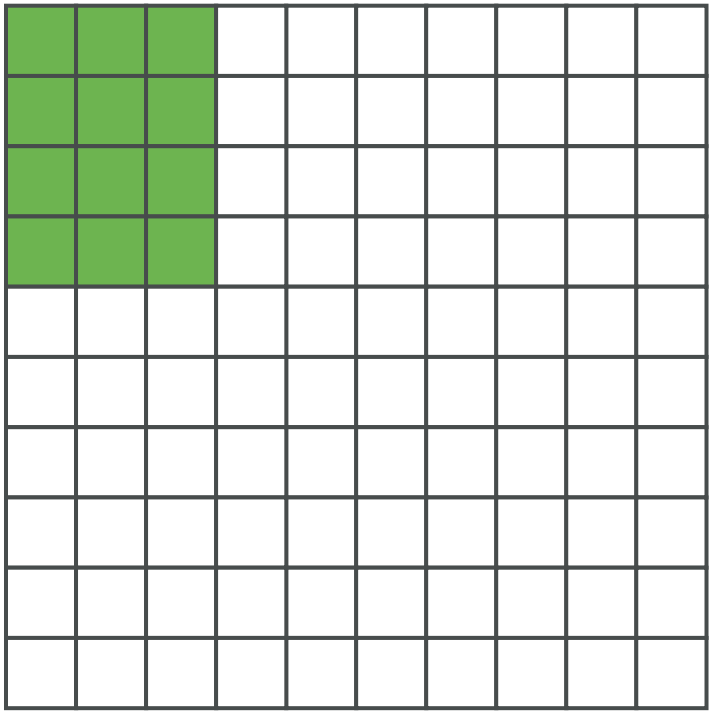
Day 17
Question



Can you cover the whole 10 x 10 grid?

You need a 10 x 10 grid, two dice and a colouring pencil.

Roll the dice. A rectangular array is then shaded in with each number representing a side of the array. Make a note of the calculation.

For example: I roll 3 and 4.

I shade an array to represent 3 by 4. I write 3 x 4 = 12

You keep rolling the two dice and shading an array until an array won't fit on the grid. You add up all the products. The highest score is the winner.

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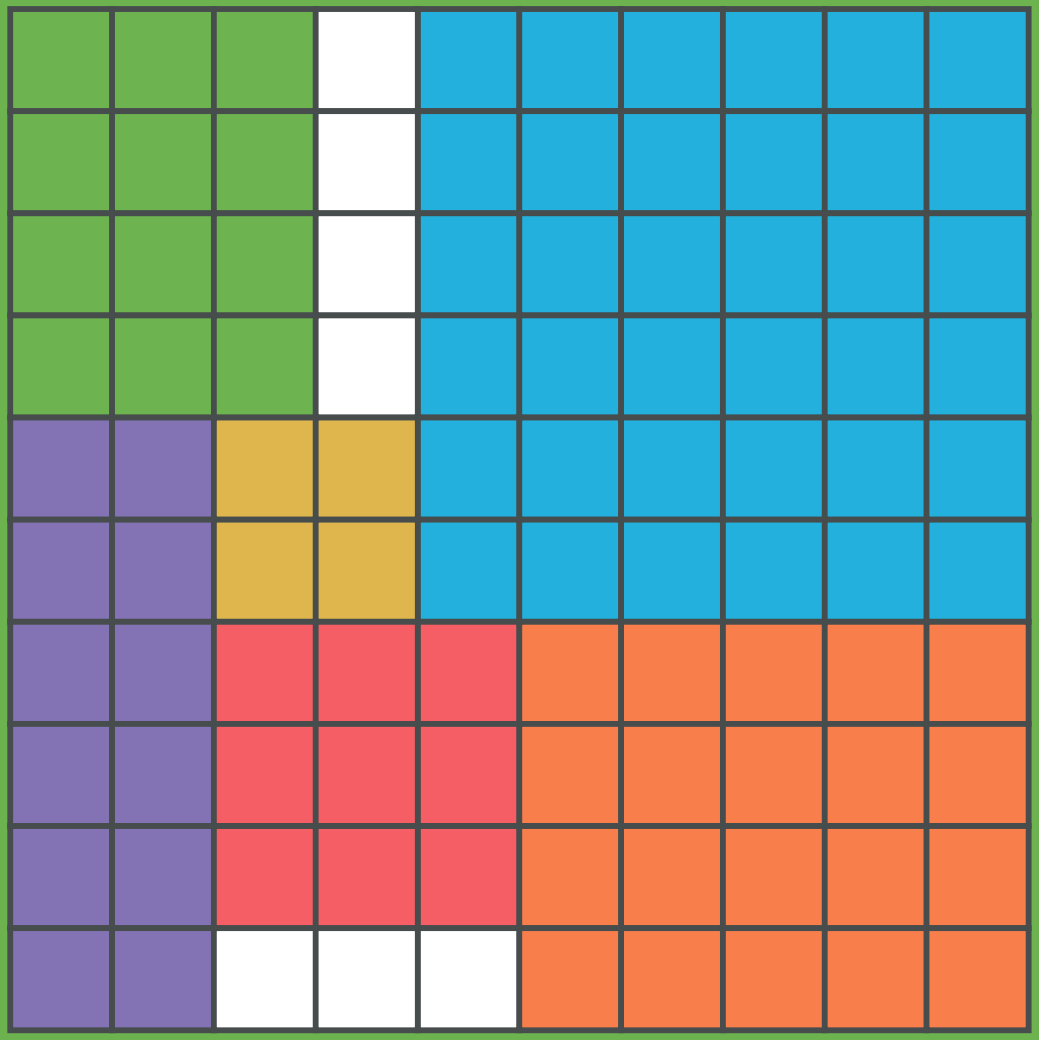
Day 17
Answer



For example:

3 x 4 = 12

6 x 6 = 36

2 x 2 = 4

2 x 6 = 12

5 x 4 = 20

3 x 3 = 9

Total = 93

A jug contains 1.280 litres of water.

The water is poured equally between 5 glasses.

How many millilitres of water is in each glass?

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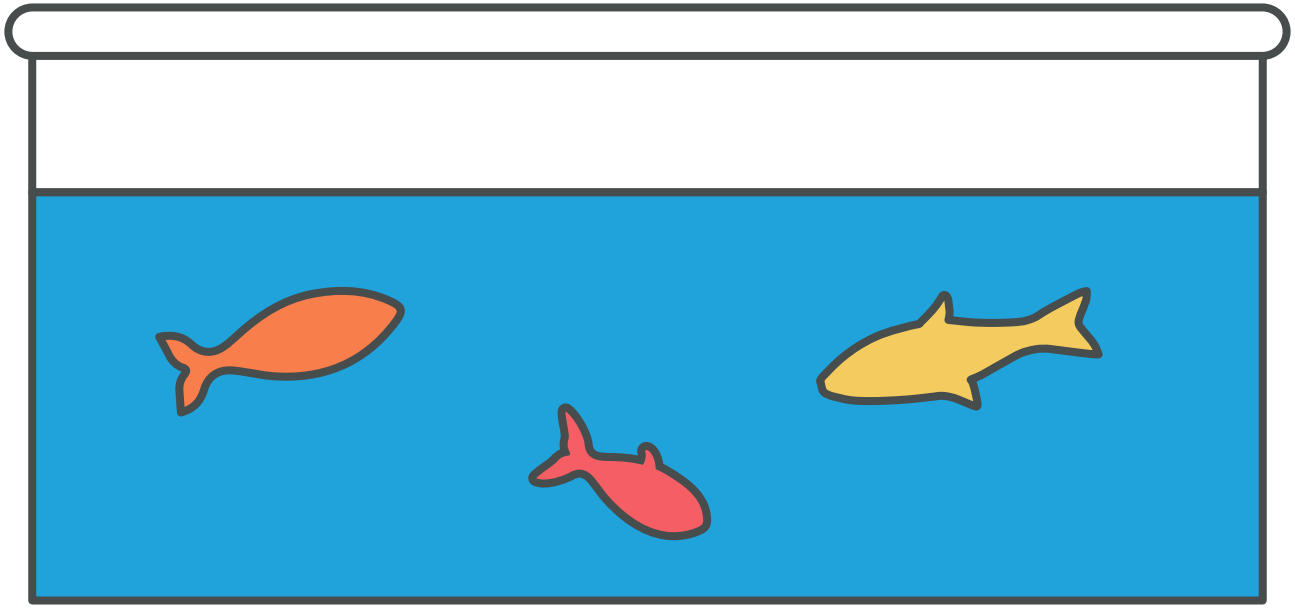
Day 18
Answer

Convert litres to millilitres 1.280l = 1280ml

1280 ÷ 5 = 256



A full fish tank holds 40 litres of water.

The fish tank is $\frac{3}{4}$ full.

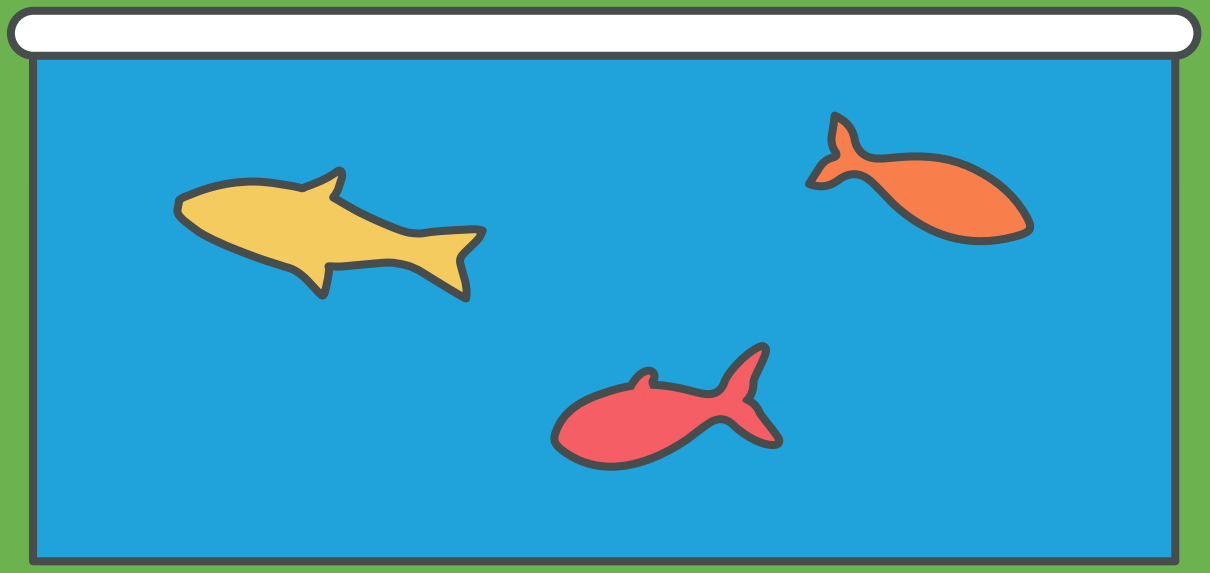
How much more water is needed to fill the tank?

Have to find $\frac{3}{4}$ of 40.

To find $\frac{1}{4}$ of 40 : 40 ÷ 4 = 10

So 10 x 3 = 30.

The tank has 30 litres and 10 litres is needed to fill the tank.



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Day 20
Question

Is this statement always, sometimes or never true?

‘Two multiples of 5 add up to a multiple of 10’.

Give examples to support your reasoning.

Sometimes true

For example:

Works with 15 + 5 but not 20 + 5

What's the same? What's different?

Multiples of 3 and Multiples of 6

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Day 21
Answer

What's the same?

The digits in the multiples add up to multiples of 3

All multiples of 6 are also multiples of 3

12 is the least common multiple

Common multiples

Both have 60 as multiple

And so on

What's different?

Multiples of 6 are all even

Multiples of 3 are also multiples of 9

Some multiples of 3 are odd

Some multiples of 3 are not multiples of 6

Multiples of 6 have a repeating pattern with the ones digit 6, 2, 8, 4, 0, ...

Multiples of 3 have a longer repeating pattern 3, 6, 9, 2, 5, 8, 1, 4, 7 , 0 ... and use all the digits 0 - 9

And so on

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Day 22
Question

Start with any number - if it is even divide it by 2, if odd multiply by 3 and add 1 then keep going, writing down the sequence of numbers that you generate.

For example, starting with 7:

7 (x 3 + 1) > 22 (÷ 2) > 11 (x 3 + 1) > 34 > 17 and so on

Try again with a different number. What do you notice?

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Day 22
Answer

7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1, 4, 2, 1, ...

It seems no matter what number you start with you eventually hit a 1 and then "bounces" into the small loop 4, 2, 1, ...

These sequences are called the ‘hailstone numbers.’

This is because, like hailstones, they go up and down a number of times before inevitably falling to Earth.

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