

KSA Maths Challenge

The Rules



There are 24 Challenges to attempt.

Every Challenge you complete can be submitted as an individual entry. That means if you complete just 1 challenge or all 24 challenges you can submit your completed challenges into the prize draw.

All complete challenges need to be returned to Miss Taylor by 3.30pm on Wednesday 16th December

You must include your name and tutor group on your entry.

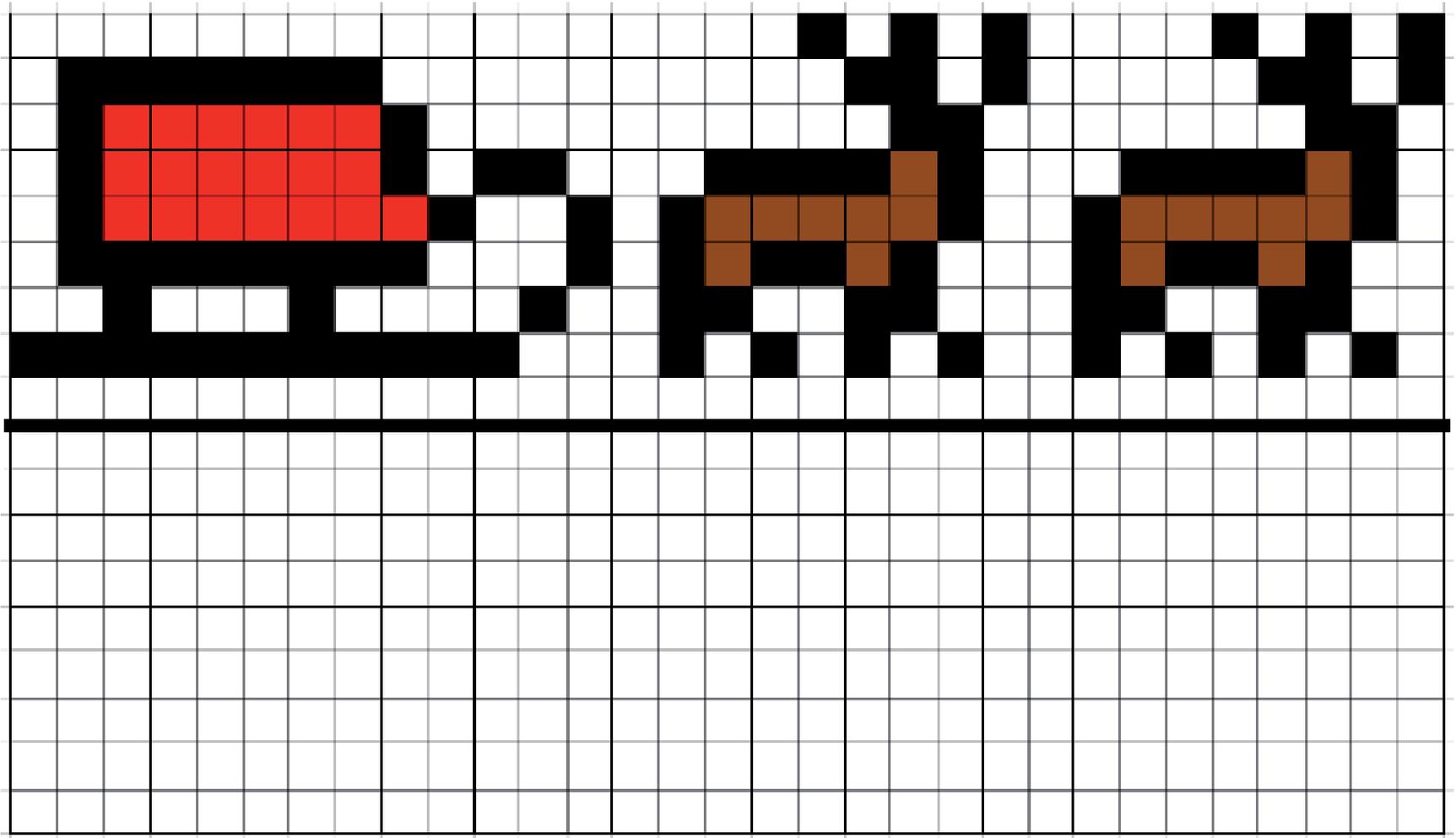
24 Winners will be drawn from the correct entries. The prize winners will be displayed on the notice boards on Friday 18th December.

Prizes can be collected from Miss Taylor.

KSA Maths Challenge

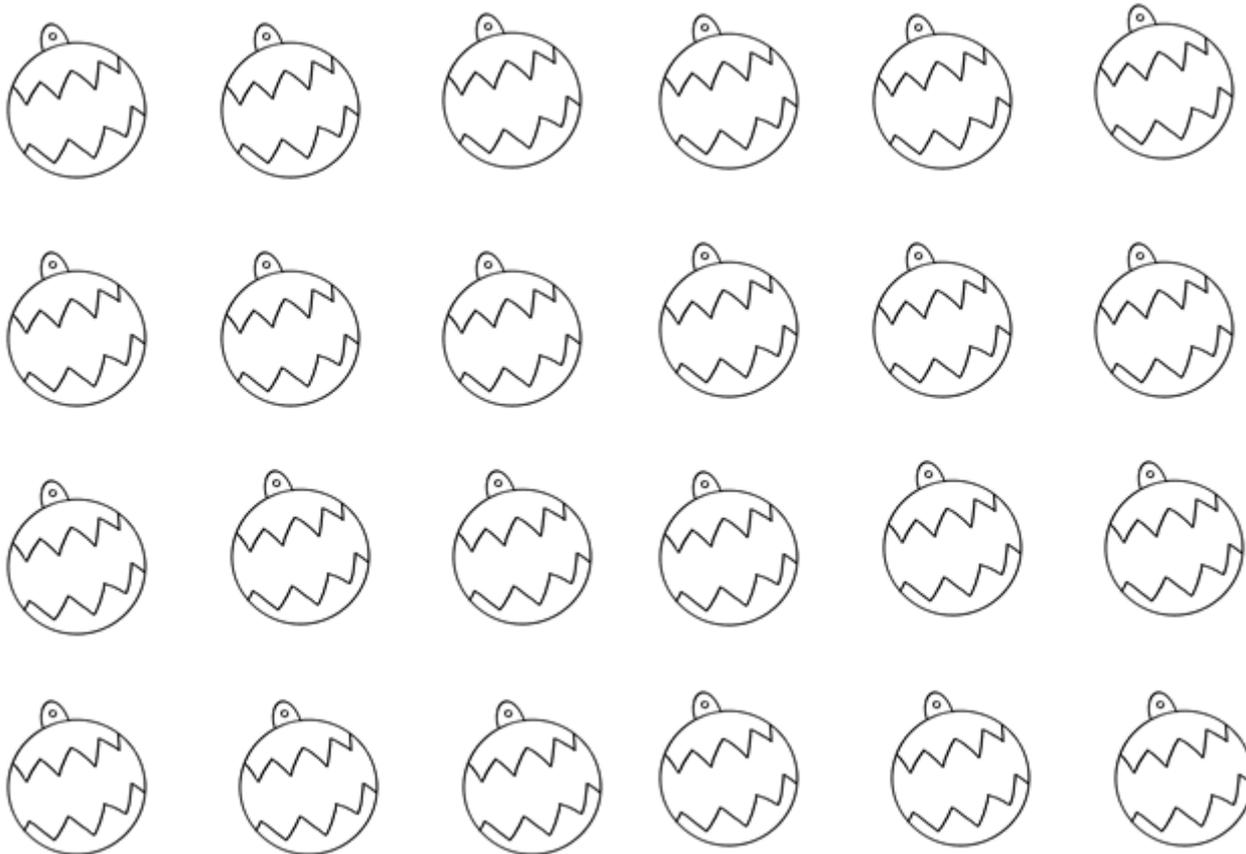
1

Reflect the sleigh and the reindeer in the mirror line.



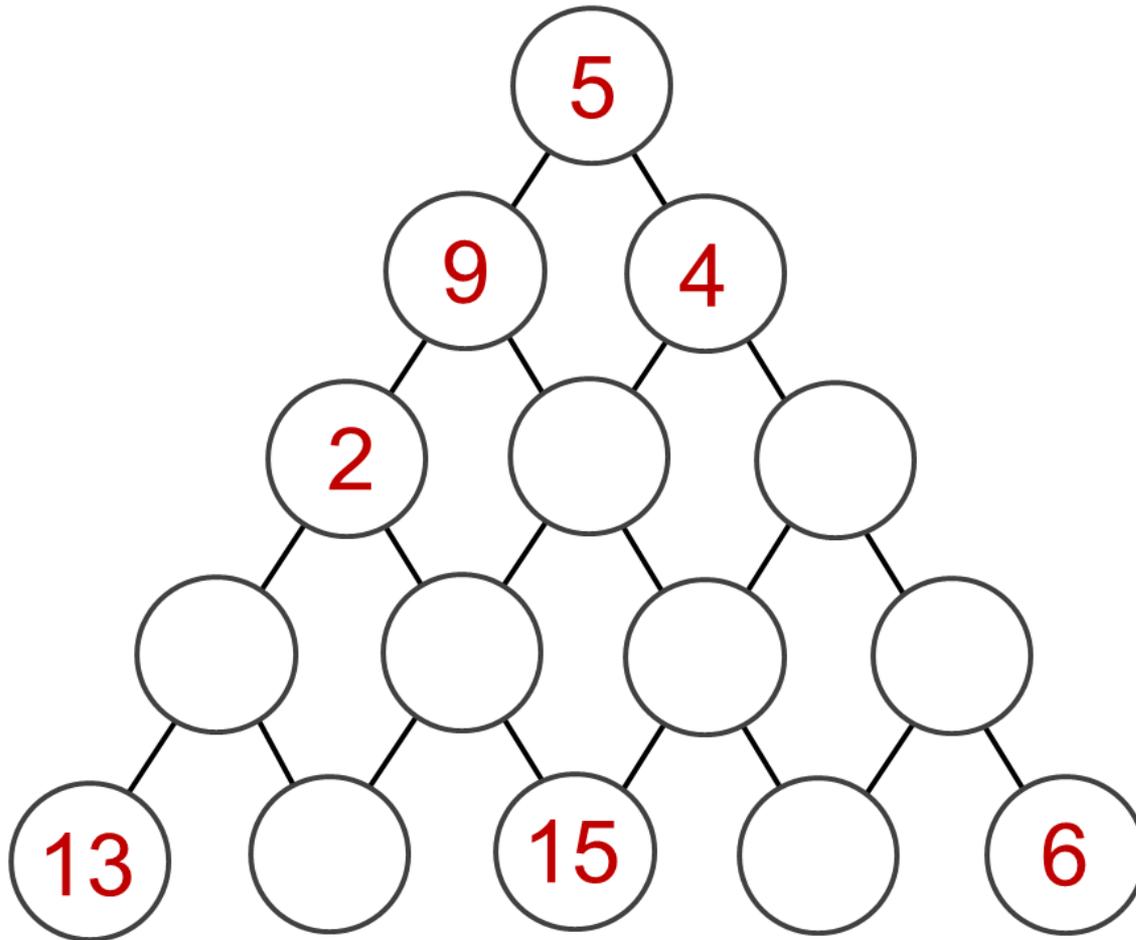
KSA Maths Challenge

2 How many different ways are there to decorate the baubles using just three colours?



KSA Maths Challenge

3



Using the numbers 1 – 15 complete the pyramid so each circle is the difference of the two numbers below it.

KSA Maths Challenge

4

Santa has a sack of presents
He has less than 30 parcels.
He counts them in groups of two.
He has 1 left over.
He then counts them in groups of three.
He has 0 left over.
He finally counts them in groups of five.
He has 1 left over.
How many parcels are in the sack?



KSA Maths Challenge

5

C H R I S T M A S

M			I	S	T		S
	T			C		M	
H		S	M		R		
S			H	S	A		T
	A			S		S	
C		M	R		A		S
		I				C	A
	M			R			S
A		S	T		H		M

Complete this puzzle like a sudoku. Every row column and 3x3 square contains all 9 letters.

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6

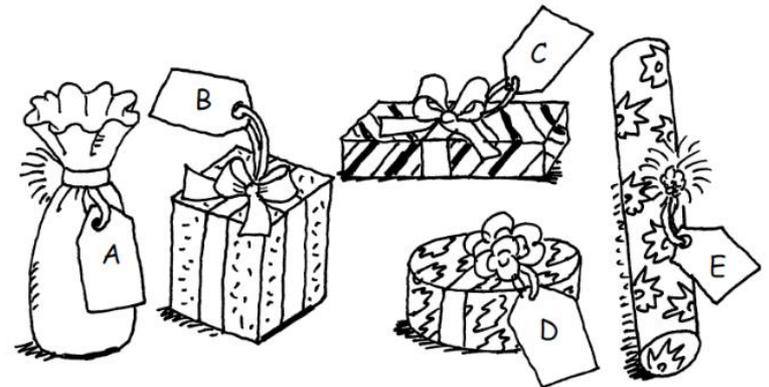
Fill in the missing values

			
			£15
			£10
£14			

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7

Ben paid £21 for five presents.
For Anne and Brody's he paid a total of £6.
For Brody's and Charlie's he paid a total of £10.
For Charlie's and Danielle's he paid a total of £7.
For Danielle's and Edward's he paid a total of £9.
How much did Ben pay for each present?



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8

The first present and the second cost a total of £13

The second present and the third present cost a total of £16

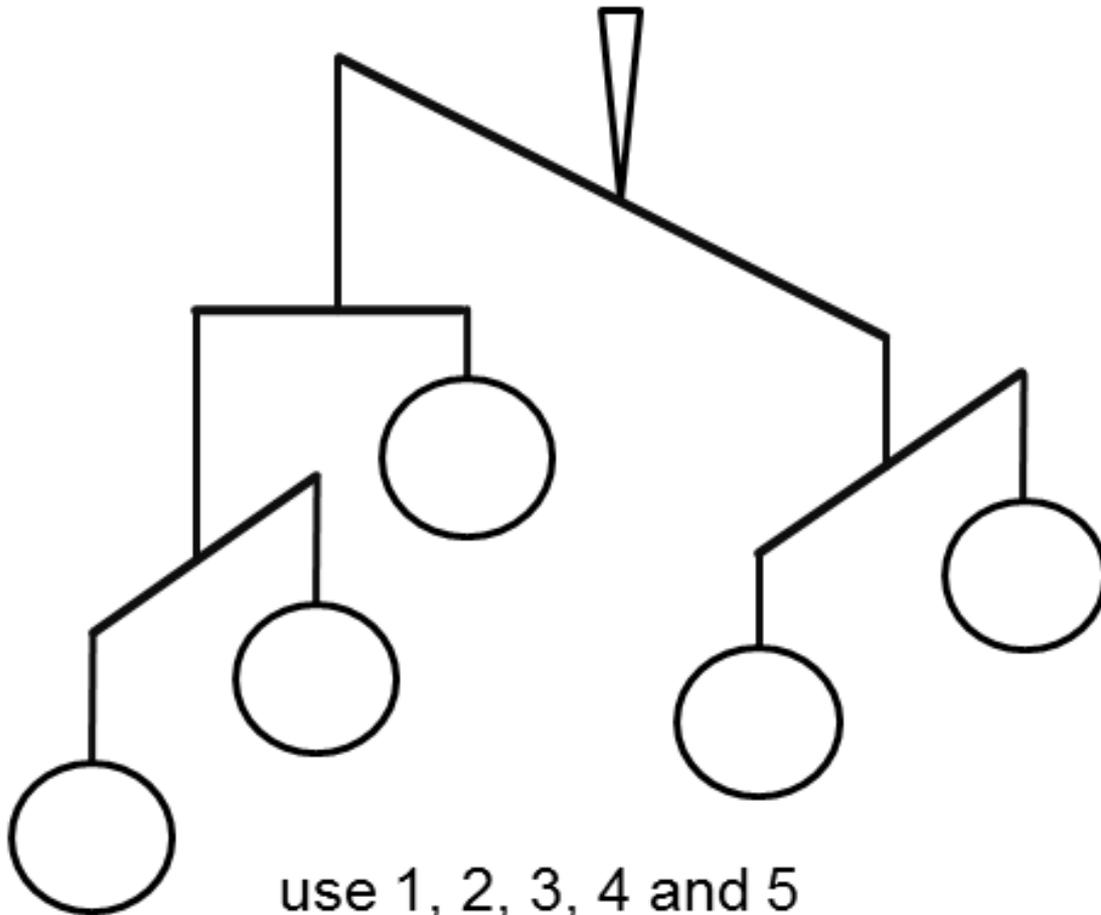
The first and the last present cost a total of £11



Maisie bought three presents for Christmas. Can you work out how much they cost?

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9



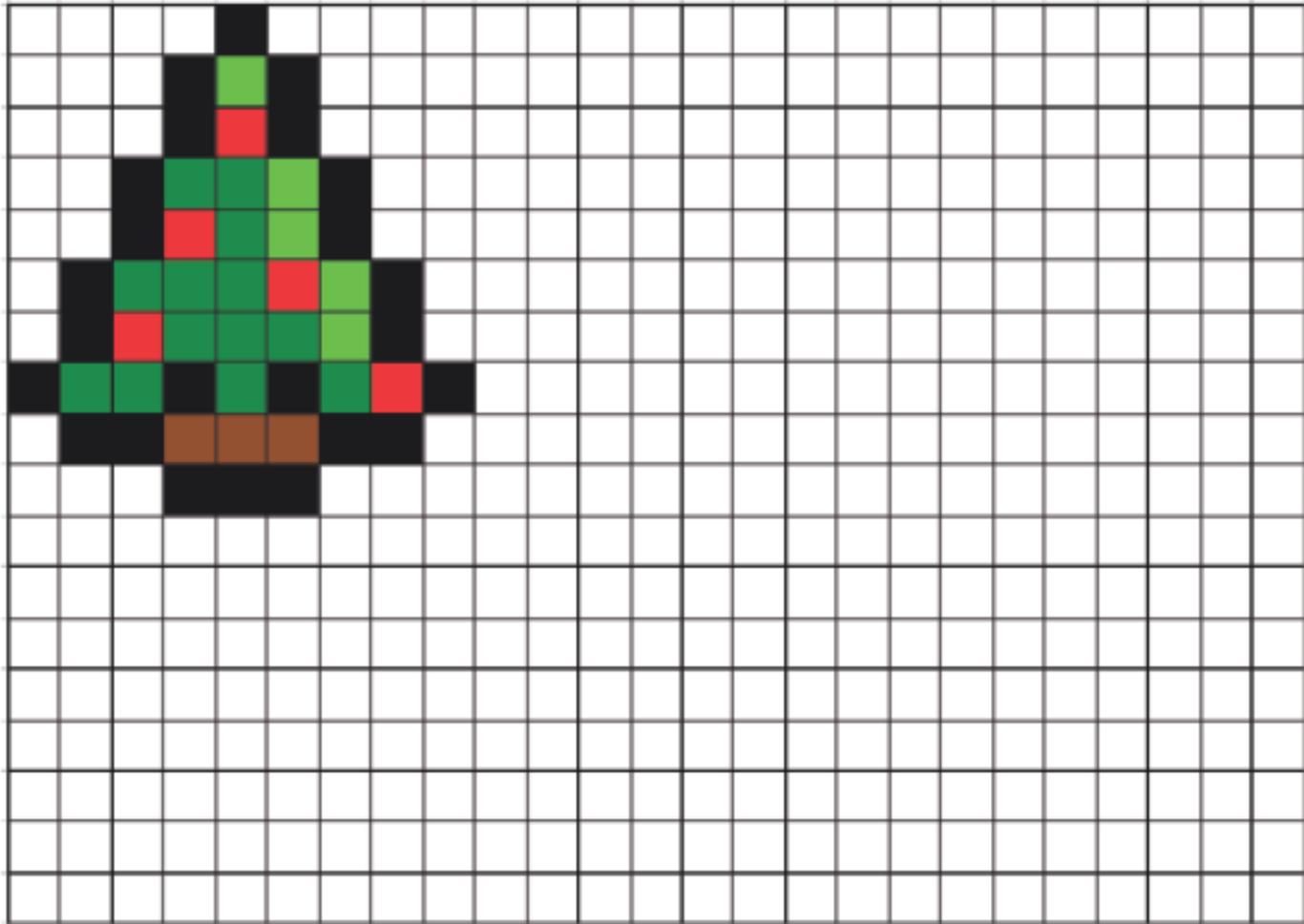
use 1, 2, 3, 4 and 5

Where do the numbers go to keep the scales in the same place?

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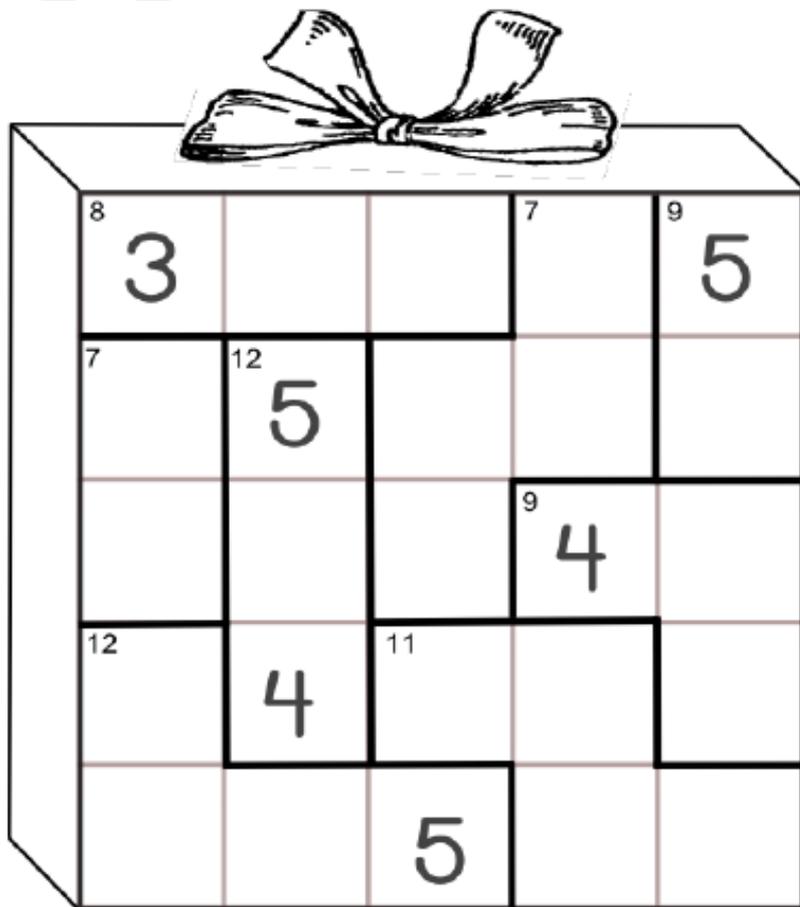
10

Translate the tree $\begin{pmatrix} 12 \\ -6 \end{pmatrix}$



KSA Maths Challenge

11



Complete each of the 5x5 grids by placing a number 1, 2, 3, 4 or 5 in each square. The grids are divided into smaller 'cells' by the darker lines. Each cell has to include numbers that sum to the 'clue' number in the top left-hand corner of each cell. Any particular number cannot appear more than once in any row or column.

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12

		-3
	1	
5		8

Complete the magic square so every row, column and diagonal has the same total.

KSA Maths Challenge

13

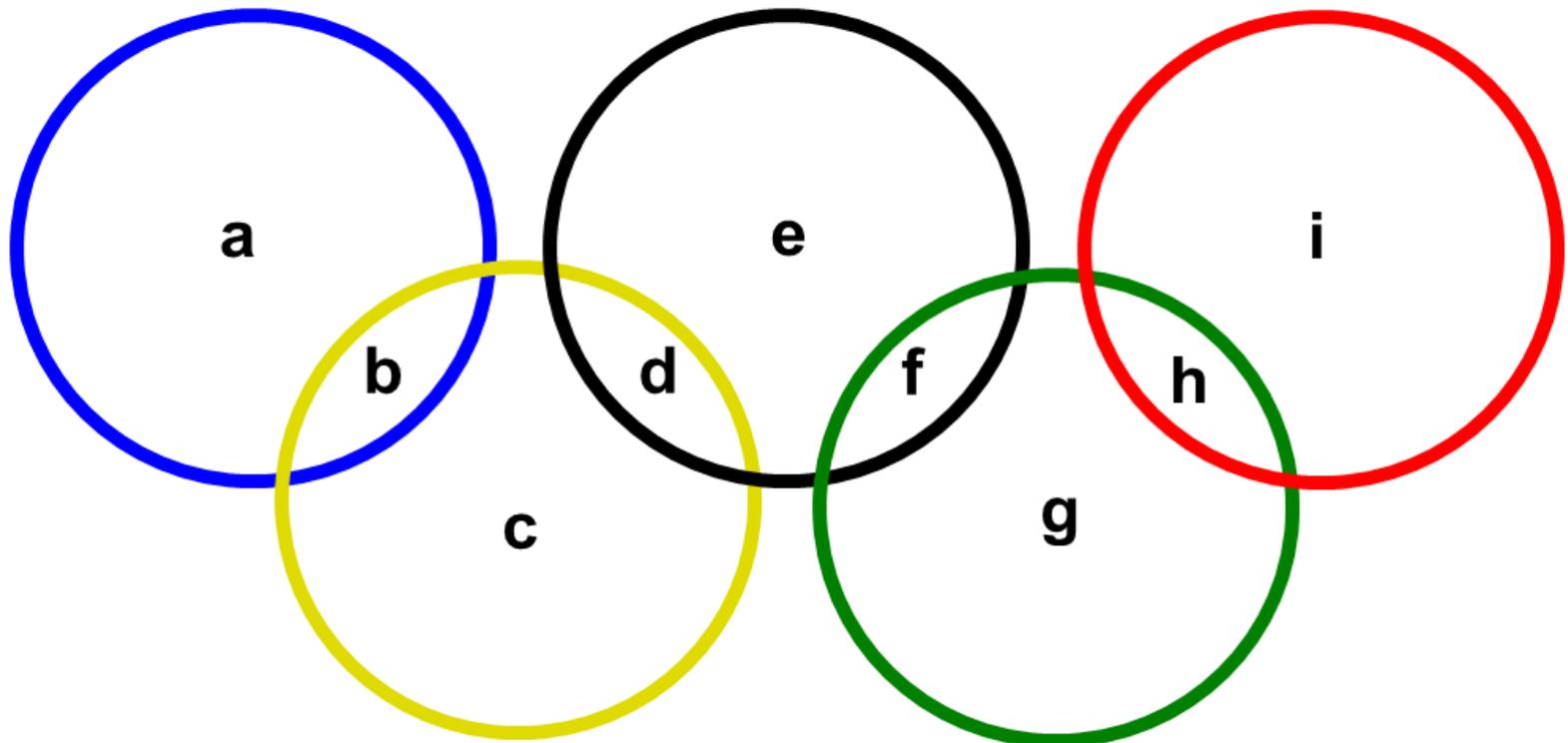
p	$2p + 1$	
		$2p - 1$
$2p$		

Complete the magic square so every row, column and diagonal has the same total.

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14

Using the number 1 to 9, put one number in each area so that the numbers in each circle sum to the same value.



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15

49	42	21	14					455	462
56	35	28	7				441	448	469
63	70	133	140				434	427	476
84	77	126	147	154	371	378	413	420	483
91	112	119	168	161	364	385	406	497	490
98	105	182	175	350	357	392	399	504	511
231	224	189	196	343	574	567	560	553	518
238	217	210	203	336	581	588	595	546	525
245	252	315	322	329	700	693	602	539	532
266	259	308				686	609	630	637
273	294	301				679	616	623	644
280	287					672	665	658	651

Santa is looking for the presents in the grotto. Draw the path for him starting at 7 and going up in 7s.

KSA Maths Challenge

16

Just how many presents are given during the 12 days of Christmas?

According to the song, on the first day of Christmas, my true love sent to me:

- a partridge in a pear tree

On the second day of Christmas, my true love sent to me:

- two turtle doves

- a partridge in a pear tree.

Therefore, from days 1 and 2, I have 4 presents (2 partridges and 2 turtle doves).

After the 12 days, how many presents will you have received?

Twelve drummers drumming

Eleven pipers piping

Ten lords a-leaping

Nine ladies dancing

Eight maids a-milking

Seven swans a-swimming

Six geese a-laying

Five gold rings

Four calling birds

Three French hens

Two turtle doves

A partridge in a pear tree

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17

Andrew, Chantelle, Charlotte, Daniel, Ethan, and James each have their own Christmas tree. Each Christmas tree has a different number of lights (13, 14, 21, 22, 26 and 29) and a different number of baubles (17, 19, 24, 41, 43 and 48).

Figure out how many lights and baubles are on each person's Christmas tree.

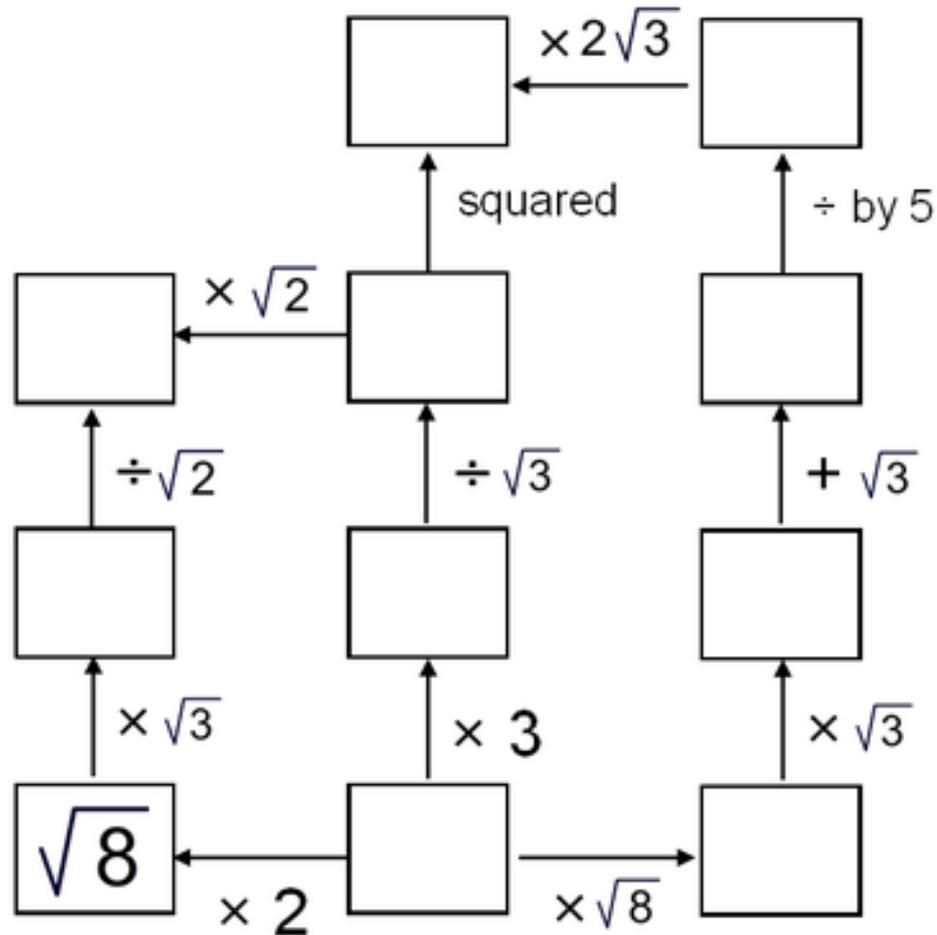
1. Ethan's Christmas tree has nineteen more baubles than the number of lights.
2. There are no more than twenty lights on Daniel's Christmas tree.
3. Daniel's Christmas tree is not the tree with twenty-one lights. His tree is also not the one with twenty-two lights.
4. Daniel's Christmas tree has the fewest number of baubles.
5. The Christmas tree with forty-three baubles is not the tree with twenty-one lights.
6. Andrew's Christmas tree has the fewest number of lights.
7. Chantelle's Christmas tree has twenty-seven more baubles than the number of lights.
8. There are no more than forty baubles on Andrew's Christmas tree.
9. There are no more than forty-two baubles on James' Christmas tree.
10. James' Christmas tree has two more lights than the number of baubles.

KSA Maths Challenge

18

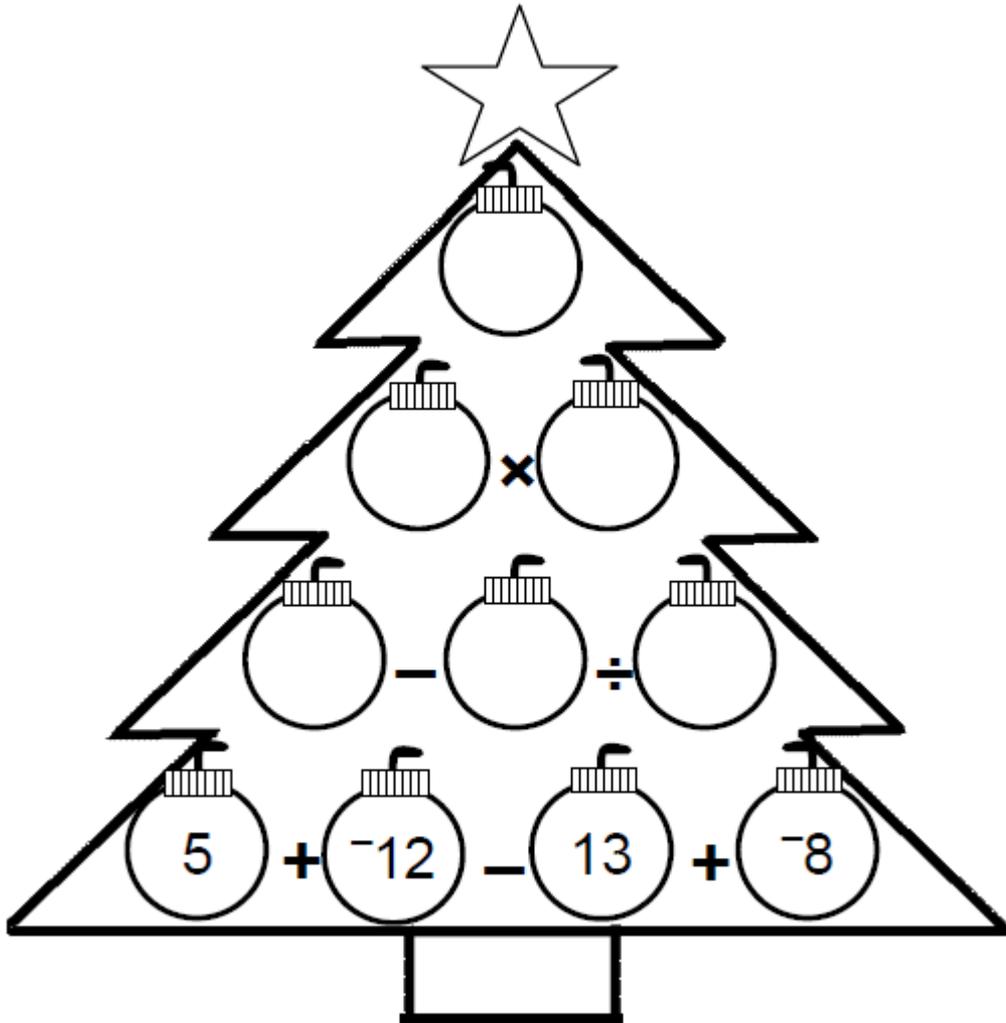
Put each box in the correct place so each calculation is true.

$\sqrt{6}$	$\sqrt{18}$
$2\sqrt{3}$	$\sqrt{3}$
6	$\sqrt{2}$
$4\sqrt{3}$	4
$5\sqrt{3}$	$2\sqrt{6}$



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19



Work out the numbers from the bottom up. The number in each bauble is found by performing the operation on the two numbers directly below it.



KSA Maths Challenge

20

$$\sqrt{8 - 4\sqrt{3}} = \sqrt{a} - \sqrt{b}$$

$$\sqrt{14 - 8\sqrt{3}} = \sqrt{c} - \sqrt{d}$$

$$\sqrt{25 - 10\sqrt{6}} = \sqrt{e} - \sqrt{f}$$

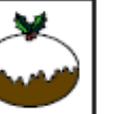
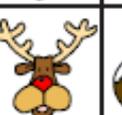
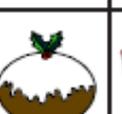
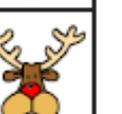
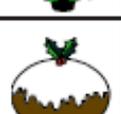
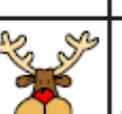
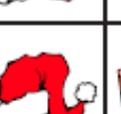
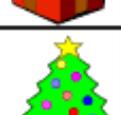
Find the values
of a, b, c, d, e
and f



KSA Maths Challenge

21

What is the value of each symbol?

29

28

35

28

19

30

13

32

23

18

21

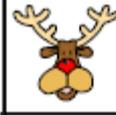
35

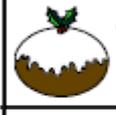
29

34

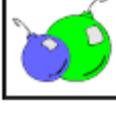
24

30







KSA Maths Challenge

22

What numbers should replace each letter to make this addition sum work?

$$\begin{array}{rcccc} & M & A & T & H \\ + & E & M & A & T \\ \hline & I & C & A & L \end{array}$$

KSA Maths Challenge

23



Can you find a path from the star at the top of this network on the Christmas tree to the bottom, which goes through each of the 8 different shapes once and once only?

KSA Maths Challenge

24

Cut out the 10 pieces and put them together to make the snowflake.

