Forfar academy

S1 Maths Star Problems

Rules: Complete as many star problems per month as you can to gain awards

Totals of stars can gain awards:

20	45	70	95
			
Bronze	Silver	Gold	Platinum

August Maths Stars Problems

★ Problem

In the first year of production a play sells 1572 tickets, in its second year it sells 1753 tickets, in its third year it sells 152 less than in its second year.

How many tickets are sold in 3 years?

★★★ Problem

A ball is dropped from a height of 125m.
Each time it hits the ground it bounces 3/5 of the height it fell.

How high will the ball bounce on the 3rd bounce?

★★ Problem

Jane is older than Kim.
Kim is older than Shawn.
Shawn is younger than Jane.
Rachel is older than Jane

List the people from oldest to youngest.

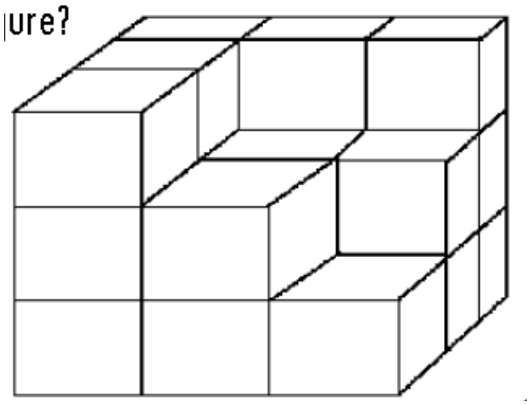
★★★★ Problem

What is the four-digit number in which the first digit is one-third the second, the third is the sum of the first and second, and the last is three times the second?

September Maths Stars Problems

Problem

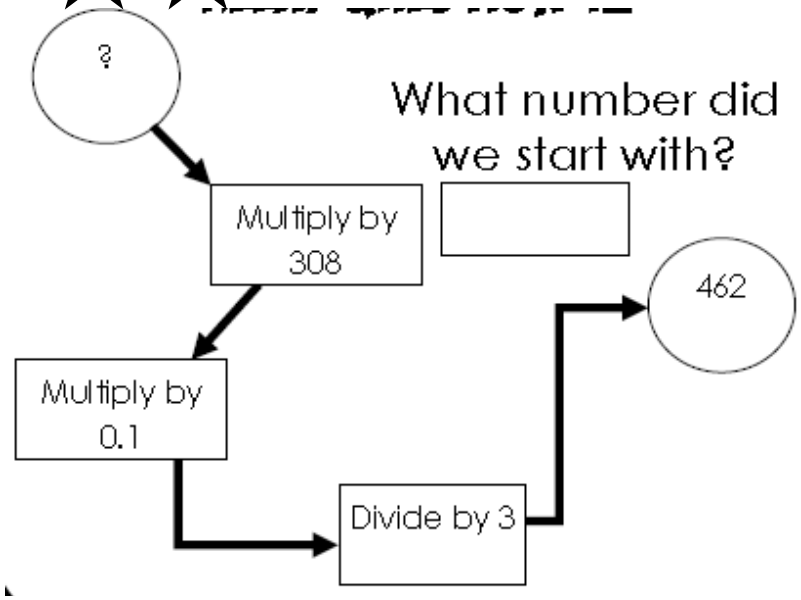
How many cubes are needed to build this solid figure?



★★★ Problem

The average monthly rainfall for 6 months was 28.5mm. If it had rained 1mm more each month what would the average have been?

★★ Problem



★★★★ Problem

40 aliens landed on the planet Zog.

$\frac{1}{2}$ the aliens played hide-and-seek in and out of the craters.

$\frac{1}{4}$ of the aliens went to explore the planet.

$\frac{1}{8}$ of the aliens wore red shoes.

$\frac{1}{10}$ of the aliens went to climb a mountain.

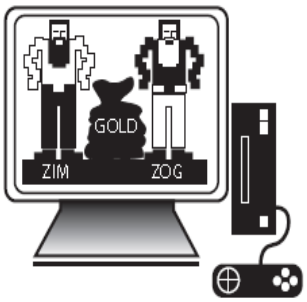
How many stayed in the spaceship?

October Maths Stars Problems

★ Problem

Jane and Mo are playing a computer game.
The game needs them to share out gold coins between 2 giants, Zog and Zim.

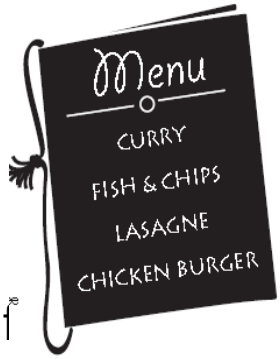
When there are 2 coins
Jane says, 'We can
share out the coins 3 ways.'
What are the 3 ways
Jane is talking about?



★★★ Problem

Ann, Boris, Carla, and David are talking about their favourite food.
They know they all like different foods that are shown on the menu.

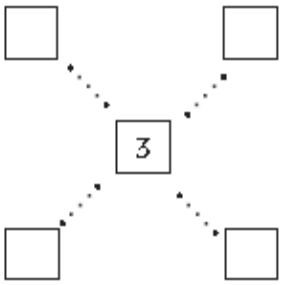
- Boris does not like chips.
- Ann will not eat chicken.
- One of the boys likes fish.
- One of the girls likes burgers.
- Neither of the boys likes spicy f



★★ Problem

Raza and Jo go to the fairground to try to win some prizes at the shooting gallery. To win they must hit targets a certain number of times. Both the crossed lines of the target must have the same total.

1. Digits 1–5, total 9



Can you find the missing numbers?

★★★★ Problem

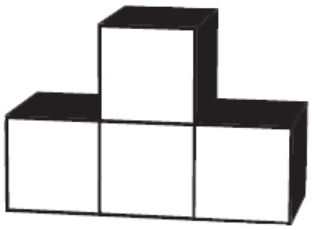
Find the numbers that would make the problems correct.

a. ☐ + 135 = 240
b. ☐ + 1.2 = 6.9
c. ☐ – 123 = 87
d. ☐ – 23.6 = 6.9
e. ☐ x 7 = 154
f. ☐ ÷ 20 = 30

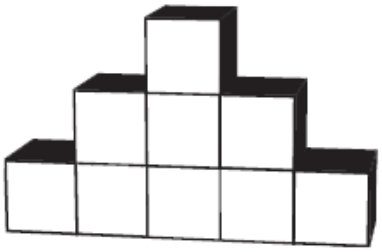
November Maths Stars Problems

★ Problem

At the Olympic Games the winners stand on boxes to get their medals.
For three medal winners four boxes are needed to give the medals.



So that 5 people can get medals more boxes are added.



For 7 people to get medals more boxes again will be added.

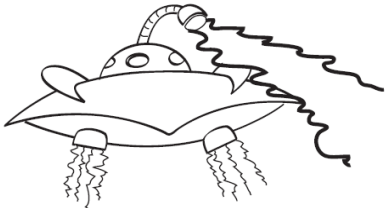
How many boxes would they need for 7 people?

★★ Problem

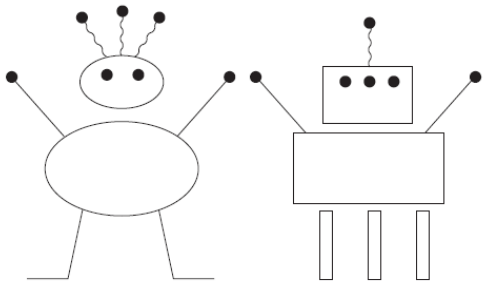
A hundred S2 pupils are playing a game. The pupil who wins the game gets to choose who they will sit beside in class.
Each pupil is given a card with a number and all the pupils stand up.
The numbers on the cards are from 1 to 100.
The teacher gives clues.
If the number each pupil has does not agree with the clue then they have to sit down.
The winner is the pupil who is left standing.
From the clues decide which pupil number wins.

- *The number has two digits.*
- *The number is odd.*
- *The sum of the two is 5*
- *The digits differ by one.*

★★★Problem



A TV producer has asked a class of pupils to design an alien for a new science fiction programme.
One pupil designs one alien with circles and another with squares.



The pupil decides to mix up the heads, body and legs of the two aliens.
How many different combinations are possible?

★★★★Problem

As part of the S4 work experience programme Stacey and Farzad join a team of archaeologists who are digging in the grounds of Crookston Castle to look for any ancient artefacts.
Before they begin to dig they mark out the ground into a grid of squares so that they can map out where any finds are made. Stacey and Farzad have the task of getting the pegs for the squares.
Unfortunately they are not sure how many pegs are needed.

The archaeologist asks for a square with 3 pegs on every side to be mapped out. Stacey draws a sketch and tells Farzad that they need 8 pegs.

a) Draw a square that has 4 pegs on every side. How many pegs are needed?

b) The archaeologist then asks for a square that uses 28 pegs. How many pegs are on each side?

December Maths Stars Problems

★ Problem

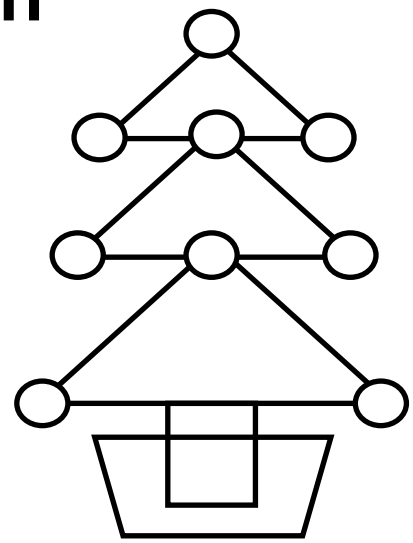
To allow last minute Christmas shopping, the Overgate Shopping Centre is opening from 8am till midnight on Mondays to Saturdays and 8am till 10pm on Sundays. How many hours is it open in one week?

★★★ Problem

Beth is making gingerbread men. She uses 2 raisins for eyes and 3 raisins for buttons for each gingerbread man. She buys 4 boxes of raisins, each with 120 raisins in it. How many dozens of gingerbread men can she make?

★★ Problem

Place the numbers 1 to 9 inside the baubles on the Christmas tree so that each triangular section of the tree adds up to the same total.



★★★★ Problem

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

Twelve lords' a-leaping,

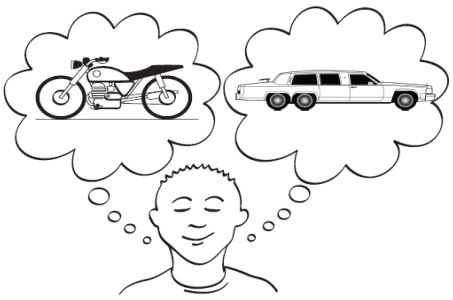
Eleven ladies dancing…

…And a partridge in a pear tree!

How many gifts did my true love send to me altogether in all twelve days?

January Maths Stars Problems

★Problem



Ali is mad for motorbikes and limousines.
He knows that motorbikes have 2 wheels.
He also knows that limousines have 6 wheels.

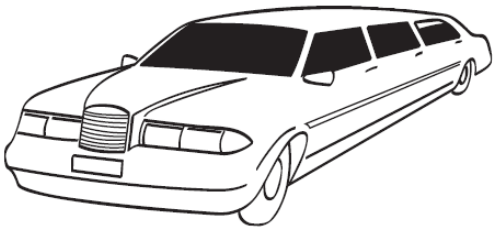
During a boring lesson he looks out of window and is amazed to see a number of motorbikes and limousines.

In total he counts 18 wheels.

How many motorbikes and limousines did Ali see?

Could you find more than one answer?

★★ Problem



Davi, Edi, Farah and Ger hire a limousine to take them to the school prom. The back seat is big enough to seat all four pupils. However, they cannot decide who will sit where. So every minute they change seats.

Here are two ways they could sit.

DAVI	FARA	EDI	GER
FARA	EDI	GER	DAVI

Find as many more ways as you can that the pupils can sit together.

★★★ Problem

Jacques and Muntar are designing a new flag for their club.
The club colours are blue and green and the flag is made up by three rectangles.

Design as many different flags as possible.

Both colours could be used or just one colour may be used.

★★★★Problem

Find numbers which would make the puzzles true.

1. If you add 5 to the number and multiply the answer by 3, you get 36.

2. Double the number then treble it and the answer is 36.

3. Half the number then add 6 and the answer is 20.

4. Half the number then add 10 and you have the number you started with.

5. Add 7 then double it then subtract 2, and the answer is 22.

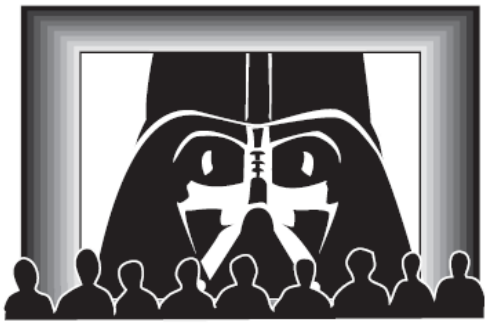
6. Multiply by 5, subtract 3 and divide by 8, and the answer is 4.

7. Multiply by 5, subtract 6 and divide by 2, and the answer is 17.

8. Choose any number, multiply it by 2, then multiply by 10, then divide by 100 and then multiply by 5. What answer do you get?

February Maths Stars Problems

★ Problem



Ayesha, Brian, Carol, and Darius go to the cinema. Use the clues to decide where they sit.

a. Ayesha does not like Brian.
b. The boys want to sit together.
c. Carol doesn't like Brian either.
d. Darius is sitting between a boy and a girl.
e. Ayesha is sitting on the seat at the far left of the group.

Copy and fill in the seats where all the pupils sit.

★★ Problem

You have 18 dots.
Only one dot can be placed in each box.
Some boxes can be left empty.

To complete this puzzle each row and each column must have an even number of dots.

Copy out this grid and fill in where the dots should be

★★★ Problem

The local cheerleading team are using red, blue and green for their uniform.

The uniform is a hat, a t-shirt and shorts.
The uniform must use red, blue and green for only one piece of clothing.

Here is one way the uniform could be made.

HAT	Green
T-SHIRT	Red
SHORTS	Blue

Can you find 4 other ways the cheerleaders could choose their uniform?

★★★★Problem

A government agent is gathering information about an enemy spy so that the spy can be caught.

The spy has been spotted moving from one country to another.

The spy has recently been in the following countries:

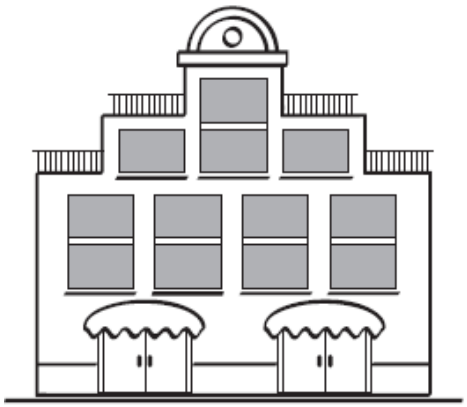
Use the clues below to find out which country, from the above list, the spy is in now.

- The country's name does not start with a vowel.
- The country's name starts with a letter that has either rotational symmetry or line symmetry.
- The number of letters in the country's name is not a prime number.
- The number of letters in the country's name is divisible by 4.

March Maths Stars Problems

★Problem

Jack and Shaheen are glaziers. They have been asked to replace all the rectangular windows in the building below.



'That will not be expensive as there are only 7 rectangular windows,' says Jack.

'You can't count,' says Shaheen.

Can you explain this?

★★Problem

Donna is having a sleepover party. She invites Carla, Tasnim, Marita and Rosie. For food she orders pizza for her friends.

Donna likes more than one topping on her pizza.
Carla likes ham but not pineapple.
Tasnim likes mushrooms but not ham.
Marita likes ham but not large pizzas.
Rosie likes mushrooms but not on a big pizza.

Can you work out what pizzas arrived and who ordered what pizza?

Regular	Regular	Regular	LARGE	LARGE	LARGE
Mushroom & pineapple	Mushroom	Ham & pineapple	Pineapple	Mushroom & Ham	Ham

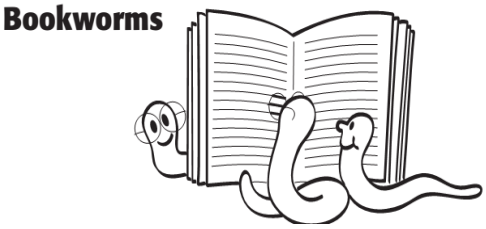
★★★ Problem

From the numbers below say which one is the odd one out and why.

There is more than one answer.

7, 8, 9

★★★★ Problem



Three friends, Alfredo, Boris and Usma, enjoy reading and regularly go to the library to borrow books.

Alfredo reads fiction and returns to the library every 10 days .Boris reads non-fiction and returns to the library every 15 days.

Usma uses the library to borrow DvDs and returns them every 40 days. To their great surprise they are all in the library on the same day, Tuesday the 1st of June. They decide to discuss when they will all be in the library on the same day again Alfredo thinks about it and says 'I don't think we will meet again this year. 'Boris guesses and says 'never, that was only luck that we all met on the same day.'Usma decides to use some maths and says 'See you on the 2nd of October.'

Are any of them correct?

Work out if the three friends would meet again in the library.

April Maths Stars Problems

★ Problem

A hundred S2 pupils are playing a game .The pupil who wins the game gets to choose who they will sit beside in class.

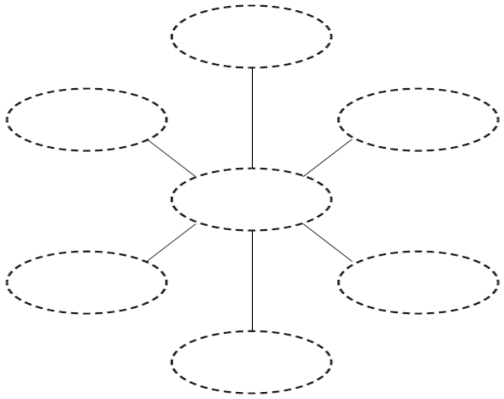
Each pupil is given a card with a number and all the pupils stand up.

The numbers on the cards are from 1 to 100.
The teacher gives clues.

The number has two digits.
The number is odd.
The sum of the two digits is 5.
The digits differ by one.
Which number wins?

★★★ Problem

Fill in the digits 1, 2, 3, 4, 5, 6, 7 so that each line has a total of 10.



★ ★ Problem

Using the numbers 4, 5, 8, 6, 7, 9 at most once, write down the largest possible
4-digit number.

Write down the smallest 4-digit number, again using the numbers at most once.

What is the difference between these two 4 digit numbers?

★★★★ Problem

1. How many days in total are in June and July?

2. Complete the following: 30 days has September, April, June and…….All the rest have……

3. Starting at 1st of August what would the date be in 7 weeks' time?

May Maths Stars Problems

★ Problem

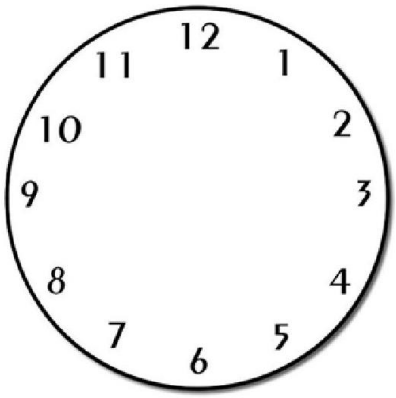
Ethel made a list of all the whole numbers between 1 to 100.

1, 2, 3, 4...

How many times did she write the number 2?

★★ Problem

Divide the clock face into **3** parts with **2** lines so that the sum of the numbers in the three parts are equal.



★★★ Problem

Place the digits 9, 4, 7, 6, 5, 1, in the boxes in order to get the largest result.

(□□x□□)

+

(□x□)

=?

★★★ ★Problem

The local sweetie shop sold large packets of sweets for 25p and small packets for 10p.

The new cashier wasn't up to the job, though; she marked down the number of sacks she sold, but forgot to record their prices. At the end of the day, she found she had sold 385 packs of sweets and had £62.65 in her cash register.

Fortunately, she figured out how many of each size of packs of sweets she had sold before her boss came by. Can you?