


# Y6 Whickham School Maths Transition – Problem of the Fortnight


At Whickham School, one lesson every fortnight is dedicated to solving one big problem-solving question. This is to develop important skills that will help you in maths from year 7.


It takes the whole lesson because you need to look at it very carefully, think about it logically and from lots of different perspectives. To ensure success with problem solving, in the Maths faculty we use our problem-solving pencil and exam question toolkit to help you.




## PROBLEM SOLVING

What skills do you have in your toolbox?  
What skills do you need to use to solve this problem?




**What do you see?** 

What shapes can you see in the diagram? What are the key pieces of information? What key command words can you pick out (e.g. calculate/prove)?

**What do you know?** 

What formulae do you know that apply? What do you know about the angles/sides in these shapes? Can you form an equation to describe the situation?

**What do they want?** 

What is the question asking for? Have you got enough information? Have you written down the units or are they provided? Have you rounded to the required degree?

Problem Solving Steps to Success

Read the problem twice. Do you understand what it is asking you to do?

Identify the key words/information you are given

Can you draw a picture/diagram/chart to help you?

What facts/figures or information can you add to this?

What maths can you now do to solve the problem? Show all of your workings

How can you use these answers for the next step of the problem?

Repeat the last step until you answer the question correctly

Check your answer, does it make sense?  
Now show your reasoning

I started by...  
I noticed that...  
I think that...  
I tried to...  
I decided to... because...  
Next, I...  
I have added... to my diagram because...  
This didn't work so I...

I did this because...  
I checked it by...  
This is correct because...  
The pattern I noticed was...  
I think that because...  
I used the fact that...  
This is different because...  
I already know this because...  
Therefore, I can see...

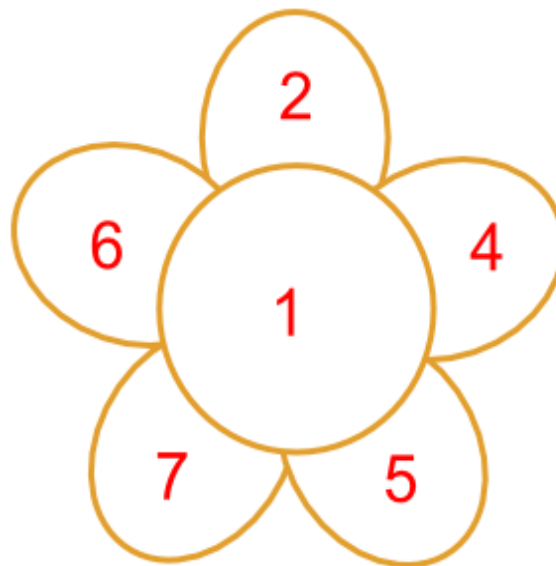
Therefore it can/can't be because...  
If I did... instead...  
This affects my answer by...  
I know I am right because...  
This would always work because...  
This is always true because...  
I noticed a connection between...  
Another method could be to...  
My diagram proves this because...  
My answer proves this because...  
I can use algebra here to prove it by....

Be the best you can be

## Your Task – The Number Daisy

$$\begin{aligned}1 &= 1 \\2 &= 2 \\3 &= 1 + 2 \\4 &= 4 \\5 &= 5 \\6 &= 2 + 4 \\7 &= 1 + 2 + 4 \\8 &= 5 + 1 + 2 \\9 &= 4 + 5 \\10 &= 7 + 1 + 2 \\11 &= 5 + 4 + 2 \\12 &= 5 + 4 + 2 + 1 \\13 &= 7 + 6 \\14 &= 7 + 6 + 1 \\15 &= 7 + 6 + 2 \\16 &= 7 + 6 + 2 + 1 \\17 &= 7 + 5 + 4 + 1 \\18 &= 7 + 5 + 4 + 2 \\19 &= 7 + 5 + 4 + 2 + 1 \\20 &= 5 + 7 + 6 + 2 \\21 &= 5 + 7 + 6 + 2 + 1 \\22 &= 4 + 5 + 7 + 6 \\23 &= 5 + 7 + 6 + 1 + 4 \\24 &= 5 + 7 + 6 + 2 + 4 \\25 &= 5 + 7 + 6 + 2 + 4 + 1\end{aligned}$$

This Daisy is special because you can make **every number from 1 to 25**. You are only allowed to add neighbours (numbers touching each other) and you can only use each number once in a sum.



We can make **all the numbers from 1 to 25** using this Daisy.

Can you do better than this with a different set of numbers?

The challenge is to find six numbers to go in the Daisy from which you can make all the numbers from 1 to a number bigger than 25.

### Hints:

- Use the problem-solving pencil and the tips in there to help you.
- Use the toolkit and think about what you see, what you know and what they want.
- Experiment! Draw lots of daisies and put lots of different numbers in there. Can you see any patterns? Are there any numbers that are essential? Any orders of numbers that are essential?

### #FastFinisher:

- Can you explain your reasoning and thinking? What was your thought process? How many experimental daisies did you have to draw and what did you discover? Use the 'steps to success' to help you with this.
- Can you create a daisy that gets you higher than 25 but doesn't have 1 in the middle?