

67 Investigation

Look at the numbers 6 and 7. What can you do with them?

$$7+6= \quad 7\times 6= \quad 7-6= \quad 7\div 6=$$

What happens if you add one to each of the numbers?

Can you spot any patterns?

Do they come out at the same number?

Do they create a sequence?

**Compare: all the addition sums; all the subtraction differences;
all the multiplication products and all the division quotients.**



67 Investigation

Look at triangles.

Using Pythagoras' Theorem, what are the possible lengths of a right angled triangle?

If you have an isosceles triangle, with sides of 6cm and 7cm, what are the size of the angles?

Height of 6cm, length of 7cm: what is the area and the third side?

Remember Pythagorean Triples? $2mn$, $m^2 + n^2$ and $m^2 - n^2$

What size of triangle would that lead to? What would its area be?



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6th and 7th term in different sequences

Using the numbers 6 and 7, come up with an nth term for each sequence.

What is the the 6th , 7th and 67th term in the Fibonacci Sequence?

What about the quadratic sequence with the nth term being
$$t_n = 6n^2 + 7n + 67$$

Can you make up a sequence that has 67 as a term in it?

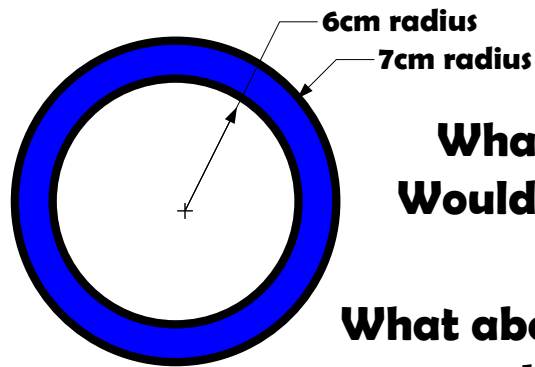
Does this sequence contain 67? How do you know?

$$t_n = \frac{7n + 60}{6} - 7$$



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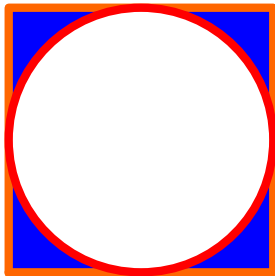
Circles



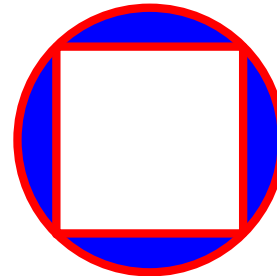
What is the area of the blue ring?

**What if there are lots of rings 1cm wide?
Would their area be the same? Or is there a
difference?**

**What about the circumferences? How do they
change as the radius increases?**



**A circular peg in a
square hole or a square
peg in a circular hole:
which leaves most
room?**



67 Investigation

Time and Measure

How many seconds are there in 67 hours?

How many degrees does an hour hand move between 6 o'clock and 7 o'clock? What about the minute and second hands?

On what date would each of the people in your group have been 67 days old?

What month of the year were you 67 months old?

Bill was born on the 67th day of the year 2000. On what date would Bill be 6,767 days old? How old would he be?

There are 2.54cm in one inch. LaMelo Ball is 6'7" tall. How tall, to the nearest mm, is he?



67 Investigation

Making numbers

Can you come up with a calculation using only the numbers 6 and 7 to give every number between 0 and 67 as an answer? You **MUST** use at least one 6 and one 7 in every solution.

Can you do it again but this time, using an **odd** number of operators for each answer? (Operators are + - × ÷)

