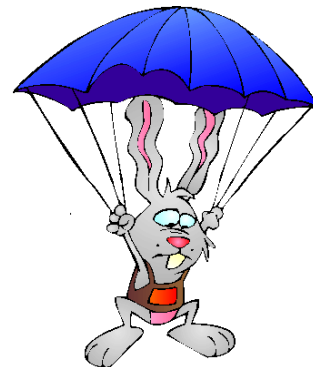


Daily Dollar Questions 2017

Level 4

For Year 7, and Year 8 students.

Curriculum level 4.



What to do.

For students.

1. You may work in pairs or on your own and your teacher or parent can help you.
2. Do the questions.
3. If you are right you will get the dollar value for each question.
4. There are usually 5 questions each day.
5. Each day's questions total \$100 in value.
5. Your teacher will tell you the answers and then you can work out how many dollars you have earned for the day.
6. Add the dollars you have earned each day in the Daily Dollar Questions and get a total which you can compare at the end of the week with others in your class.
7. Perhaps your teacher may award a prize for the highest totals for the week!
8. Good luck !



2017

Thursday:

Fermat's Primes!

Pierre de Fermat was one of the great mathematicians who lived from 1607 to 1665. He was a Lawyer who lived in Toulouse, France and studied mathematics in his spare time as a hobby. He could speak six languages! His work in mathematics included probability, calculus, number theory, optics, geometry. He has become famous for his proof of $x^n + y^n = z^n$ which he wrote in the margin of his copy of a maths book. His words became famous!



"I have discovered a truly marvelous proof of this, which this margin is too narrow to contain."

Many maths people argued for centuries whether he did or not!

Fermat did discover a formula for finding some prime numbers. His formula while complicated gives only five primes!

$$F = 2^{2^n} + 1$$

Example.

When $n = 0$ what is the Fermat number?
Is it a prime?

$$F = 2^{2^n} + 1$$

$n = 0$ $2^n = 2^0 = 1$ $F = 2^1 + 1$ $F = 3$ prime!

The 10 Dollar Question.

When $n = 1$ what is the Fermat number?
Is it a prime?

$$F = 2^{2^n} + 1$$

The 20 Dollar Question.

When $n = 2$ what is the Fermat number?
Is it a prime?

$$F = 2^{2^n} + 1$$



Statue of de Fermat in
Toulouse, France.

The 30 Dollar Question.

When $n = 3$ what is the Fermat number?
Is it a prime?

$$F = 2^{2^n} + 1$$

The 40 Dollar Question.

When $n = 4$ what is the Fermat number?
Is it a prime?

$$F = 2^{2^n} + 1$$



Pierre de Fermat

