Sixty symbols: Pi

http://www.sixtysymbols.com/videos/pi.htm

1. What kind of number is pi? ....
2. How many digits of pi can you memorize? ....
3. Where is pi important? ....

Listening. Answer Qs.

1) Which definition of pi does the speaker give? ....

2) What is the test of geekiness? ....

3) What examples of the use of pi does the speaker give? ....

4) Which formulas are mentioned in the video? ....

5) How often does the speaker use pi? ....

6) Which examples in physics does he give of the use of pi? ....

7) What does he say about the expression pi=22/7 ? ....

8) What were mathematicians fascinated by? ....

9) How can pi/4 be expressed? ....

10) Which famous mathematician developed a series with pi? ....

11) What do all these series have in common? ....

12) What is pi/2 ? ....

$\pi\Pi$

In mathematics, the symbol Π is denoting the ratio of the circumference of a circle to its diameter. The ratio is (1)............ 3.14159265, pi being an irrational number (one that cannot be expressed as a simple fraction or as a decimal with a (2)................. number of decimal places) and a transcendental number (one without continuously recurrent digits). Electronic computers in the late 20th century have carried pi to more than 100,000,000 decimal places.

Pi occurs in various mathematical calculations. The circumference (c) of a circle can be determined by (3)................. the diameter (d) by Π: $c = \Pi d$. The area (A) of a circle is determined by the square of the radius (r): $A = \Pi r^2$. Pi is applied to mathematical problems involving the (4)............. of arcs or other curves, the areas of elipses, sectors, and other curved surfaces, and the volumes of (5)............ . It is also used in various formulas of physics and engineering to describe such periodic phenomena as the motion of pendulums, the vibration of strings, and alternating electric (6)................. .

In very ancient times, 3 was used as the approximate value of pi, and not until Archimedes (3rd century (7)...........) does there seem to have been a scientific effort to compute it; he reached a figure equivalent to about 3.14. A figure equivalent to 3.1416 dates from before AD 200. By the early 6th century Chinese and Indian mathematicians had independently (8)................. or improved the number of decimal places. By the end of the 17th century in Europe, new methods of mathematical analysis (9)............... various ways of calculating pi. Early in the 20th century the Indian mathematical genius Srinivasa Ramanujan developed ways of calculating pi that were so efficient that they have been (10)................. into computer algorithms, permitting expressions of pi in millions of digits.

1. **Complete the text with the correct missing words:**

   1) a) appropriately b) approximately c) evidently d) equally

   2) a) finite   b) finish   c) final   d) familiar

   3) a) adding   b) dividing   c) multiplying   d) subtracting

   4) a) strengths   b) depths   c) lengths   d) widths

   5) a) stuff   b) solids   c) sides   d) structures

   6) a) currents   b) streams   c) currants   d) brooks

   7) a) AD   b) IE   c) EG   d) BC

   8) a) controlled b) conducted c) confirmed d) confined

   9) a) provided   b) forced   c) proposed   d) looked after

   10) a) bought   b) traced   c) involved   d) incorporated

2. Decide whether these statements are true or false.

1. Computers can compute the exact and precise value of pi.
2. There have been scientific efforts to compute pi since the very beginning of mathematics.
3. New methods of mathematical analysis in the 17th century Europe brought new and different figure equivalent to the value of pi.
4. Pi is used to count determined squares.
5. Number that can be expressed as a simple fraction is a rational one.
6. Chinese and Indian mathematicians worked together to improve the number in decimal places.

3. Match the words with their definitions.

ratio   ellipse   phenomenon

  equivalent confirm   permit

continuously   ancient   pendulum   compute

a) having the same value, purpose, etc. as a thing of a different kind
b) to calculate a result, answer, sum, etc.
c) something that exists, especially something that is studies because it is not understood
d) a rod with a weight at the bottom that swings regularly from side to side
e) a relationship between two amounts that is represented by a pair of numbers showing how much greater one amount is than the other
f) belonging to a time long ago
g) a curve shaped like a circle, but with two slightly longer and flatter sides
h) to show that something is definitely true, especially by providing more proof
i) to make it possible for something to happen

4. Reading. Read the text and prepare 5 questions you could ask about it.

Japanese breaks pi memory record Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/2/hi/asia-pacific/4644103.stm

A Japanese mental health counsellor has broken the world record for reciting pi, the ratio of the circumference of a circle to its diameter, from memory.

Akira Haraguchi, 59, managed to recite the number's first 83,431 decimal places, almost doubling the previous record held by another Japanese. He had to stop three hours into his recital after losing his place, and had to start from the beginning. Pi is an infinite decimal whose numbers never repeat in a pattern. Mr Haraguchi, from Chiba, east of Tokyo, took several hours reciting the numbers, finishing in the early hours of Saturday. "I thank you all for your support," he told reporters and onlookers at the public hall in Tokyo. He hopes to be listed in the Guinness Book of World Records to replace his fellow countryman Hiroyuki Goto, who managed to recite 42,195 numbers as a 21-year-old student in 1995. Mr Haraguchi had already recited the ratio up to about 54,000 digits last September, but was forced to drop the challenge when the facility hosting the event closed for the night. So far, pi has been calculated to 1.24 trillion decimal places with the aid of a supercomputer. Conventionally, 3.14159 is used as pi. Pi is known for turning up in all sorts of scientific equations, including those describing the DNA double helix, a rainbow, ripples spreading from where a raindrop fell into water, waves, navigation and more.