1. Find the area of a circle with radius 4 units. Write the exact answer in terms of π, without any units, in space number 1 on the official answer sheet.
   (For example, write 7 π.)

2. Let k be the answer in space 1 on the answer sheet. If the circumference of a circle is k units, what is the diameter of the circle? Write your answer, without any units, in the space number 2 on the official answer sheet.

3. Let k be the answer in space 2 on the answer sheet. If the area of a circle is k π square units, what is the diameter of the circle? Write you answer, without any units, in space number 3 on the official answer sheet.

4. Let k be the answer in space 3 on the answer sheet. If a circular track has a radius of k units, then how far would 10 trips around the circle be? Write the exact answer, in terms of π, in space number 4 on the official answer sheet. Do not include any units.

5. Let k be the answer in space 4 on the answer sheet. If the area of the ten congruent circles pictured here is k square units, find the length labeled L in the picture. Write your answer, without any units, in space number 5 on the official answer sheet.
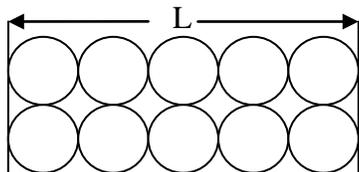
6. Let k be the answer in space 5 on the answer sheet. If the total area of k congruent circles is 360 π square units, what is the circumference of a single one of the circles? Write the exact answer, in terms of π, in space number 6 of the official answer sheet. Do not include any units.

$$16\,\pi \qquad 16 \qquad 8 \qquad 160\,\pi \qquad 40 \qquad 6\,\pi$$

<p style="text-align:center">Round 2</p>

1.   If you use all the digits, 0-9, you can form the expression $3+\dfrac{4}{28}-\dfrac{1}{790-\frac{5}{6}}$, which is a
decent approximation for π. If the actual value of $\pi = 3.141592653589793\ldots$,
beginning at the decimal, how many consecutive digits to the right in your
approximation are actually the correct value (do not do any rounding). Write that
number (of correct digits) in space number 1 on the official answer sheet.

2.   Let k be the number in space 1 on the answer sheet. The expression $\sqrt{\dfrac{10k}{3}}-\sqrt{12}$ is a
decent approximation for π. If the actual value of $\pi = 3.141592653589793\ldots$,
beginning at the decimal, how many consecutive digits to the right in your
approximation are actually the correct value (do not do any rounding). Write that
number (of correct digits) in space number 2 on the official answer sheet.

3.   Let k be the number in space 2 on the answer sheet. The expression $\dfrac{k+3}{3}\left(1+\dfrac{1}{5}\sqrt{3}\right)$
is a decent approximation for π. If the actual value of $\pi = 3.141592653589793\ldots$,
beginning at the decimal, how many consecutive digits to the right in your
approximation are actually the correct value (do not do any rounding). Write that
number (of correct digits) in space number 3 on the official answer sheet.

4.   Let k be the number in space 3 on the answer sheet. The expression
$\sqrt{7+\sqrt{6+\sqrt{k+2}}}$ is a decent approximation for π. If the actual value of $\pi =$
$3.141592653589793\ldots$, beginning at the decimal, how many consecutive digits to the
right in your approximation are actually the correct value (do not do any rounding).
Write that number (of correct digits) in space number 4 on the official answer sheet.

5.   Let k be the number in space 4 on the answer sheet. The expression $\dfrac{3k^2+16k+13}{k^2+5k+4}$ is a
decent approximation for π. If the actual value of $\pi = 3.141592653589793\ldots$,
beginning at the decimal, how many consecutive digits to the right in your
approximation are actually the correct value (do not do any rounding). Write that
number (of correct digits) in space number 5 on the official answer sheet.

6.   Let k be the number in space 5 on the answer sheet. The expression
$\dfrac{1}{1\ week}\left(\dfrac{13\ years-6weeks}{13\ years}+(k+1)\ weeks\right)$ gives a decent approximation for π,
if we evaluate it in days (using 1 year = 365.25 days and 1 week = 7 days). If the actual value
of $\pi = 3.141592653589793\ldots$, beginning at the decimal, how many consecutive
digits to the right in your approximation are actually the correct value (do not do any
rounding). Write that number (of correct digits) in space number 6 on the official
answer sheet.

4	4	3	3	2	5

Round 1

1. Round π to the nearest tenth and write your answer in space number 1 on the official answer sheet.

2. Let k be the answer in space 1 on the answer sheet. Find the value of (10k-3)/7 and write your answer in space number 2 on the official answer sheet.

3. Let k be the answer in space 2 on the answer sheet. **How many** prime numbers are evenly divisible by k/2? Write the answer in space number 3 on the official answer sheet.

4. Let k be the answer in space 3 on the answer sheet. How many sides are there on a shape #k listed below? Write the number in space number 4 on the official answer sheet.
    1) Pentagon
    2) Dodecagon
    3) Octagon
    4) Trapezoid

5. Let k be the answer in space 4 on the answer sheet. What is the smallest number $\geq$ k, that is a perfect square? Write the answer in space number 5 of the official answer sheet.

6. Let k be the answer in space 5 on the answer sheet. Solve the following equation for x. Write just the number in space number 6 of the official answer sheet.

    $$5x - 5 = k - 2x$$

    3.1   4   1   5   9   2

1. Solve the equation -3x + 4 = -44 for x. Then find the xth letter of the alphabet and write that letter in space number 1 on the official answer sheet.

2. The letter listed in space number 1 of the answer sheet is the first letter of one of the shapes listed here: Decagon, Hexagon, Octagon, Pentagon, Square.

    Let x be the perimeter of that shape, given that all of its sides are of length 1.8 units. Find the xth letter of the alphabet and write that letter in space number 2 on the official answer sheet.

3. The letter listed in space number 2 is the kth letter of the alphabet .   Use the value of k to determine what symbol (+ , − , x , ÷) would fill in the box to make the following equation true.
    2k $\square$ 3 = k + 6

   Write just the missing symbol in space number 3 of the official answer sheet.

4. One of the following mathematical symbols, + , − , x , ÷ , is listed in space number 3 of the answer sheet. Use that symbol to fill in the box with the missing operation in the following equation and then solve the problem for x.
    2(x $\square$ 5) = x - 6

    Now, find the xth letter of the alphabet and write that letter in space number 4 on the Official answer sheet.

5. The letter listed in space number 4 is the kth letter of the alphabet. Let x be the greatest common factor of the three numbers k, 27, and 45. Find the xth letter of the alphabet and write that letter in space number 5 on the official answer sheet.

6. The letter listed in space number 5 is the kth letter of the alphabet. Find the value of H in the diagram   of this right triangle.

    H

    k+19

    k+14
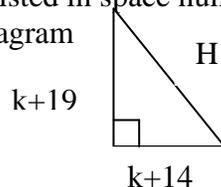
    Then find the Hth letter of the alphabet and write that letter in space 6 of the official answer sheet.

    P   I   -   D   A   Y