October Events
The comic strip “Peanuts” debuted on October ________, _________. Twenty-nine years earlier on October ________, ________ a World Series game was first broadcast. On October ________, ________ Kathy Sullivan made history by being the first woman to walk in space.

Use the clues to figure out the dates and years.

Clues
- The date of the “Peanuts” debut is the only even prime number. The sum of the digits of the year is 15. The year number is a multiple of 10.
- The date of the first World Series game is equal to √25.
- The date of the first woman to walk in space is the least 2-digit prime number. The thousands digit, tens digit, and ones digit of the year are powers of 2. The tens digit is twice the ones digit. All digits are different.

Keep The Order
Use all of the number 1 – 5 in order, from left to right.
- Use any of the operations: +, -, ×, ÷, ! (factorial), and exponentiation.
- Exponents must be one of the number 1-5.
- No numbers can be combined to make multi-digit numbers.

Example: write an equation equal to 160.

\[1 \times 2^3 \times 4 \times 5 = 160\]

1. ________ = 2
2. ________ = 62
3. ________ = \(6\frac{1}{4}\)
4. ________ = \(2\frac{1}{3}\)
5. ________ = 36
6. ________ = 38
7. ________ = -40
8. ________ = \(\frac{1}{12}\)
Box Expansion
A box is 4 feet long, 3 feet high, and 2 feet wide.
What is its:
1. Surface area? ________square feet
2. Volume? ________cubic feet
Imagine that you triple all dimensions.
Of the enlarged box, what is the
3. Surface area? ________square feet
4. Volume? ________cubic feet
5. The surface area of the enlarged box is ________
times the surface area of the original box.
6. The volume of the enlarged box is ________
times the volume of the original box.

Towering Patterns
The Pattern continues
Row 1  1221
Row 2  123321
Row 3  12344321
Row 4  1234554321
Row 5  123456654321
Row 6  12345677654321
. . .

What number doubles in the middle of
1. Row 7? ______ 6. Row 7? ______
2. Row 8? ______ 7. Row 8? ______
Square Differences

\[3^2 - 1^2 = 2^2 \times 2\]
\[4^2 - 2^2 = 2^2 \times 3\]
\[5^2 - 3^2 = 2^2 \times 4\]

1. \[6^2 - 4^2 = 2^2 \times ____\]
2. \[7^2 - 5^2 = 2^2 \times ____\]
3. \[8^2 - 7^2 = 2^2 \times ____\]
4. \[15^2 - 13^2 = 2^2 \times ____\]
5. \[17^2 - 15^2 = 2^2 \times ____\]
6. \[19^2 - 17^2 = 2^2 \times ____\]
7. \[32^2 - 30^2 = 2^2 \times ____\]
8. \[33^2 - 31^2 = 2^2 \times ____\]
9. \[34^2 - 32^2 = 2^2 \times ____\]
10. \[100^2 - 98^2 = 2^2 \times ____\]
11. \[268^2 - 266^2 = 2^2 \times ____\]
12. \[(a)^2 - (a-2)^2 = 2^2 \times ____\]

Diagonal Deluge

A diagonal is a line that connects two non-adjacent vertices.

AC and BD are diagonals.

AC, AD, BD, BE, and CE are diagonals.

Complete the table for the polygons.

<table>
<thead>
<tr>
<th>Polygon Number of sides</th>
<th>Number of Diagonals</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>( n )</td>
<td></td>
</tr>
</tbody>
</table>
Balzano is a puzzle that will tap into your logical reasoning abilities. Read the directions carefully, then try your hand at Balzano Shapes.

Directions:
Your job is to figure out the Desired Arrangement (the solution) from clues that provide information about the shapes and their locations. The possible shapes are hexagon, non-square parallelogram, square, and triangle. Shapes may be repeated.

The Arrangement Column shows sets of shapes in rows. In the Balzano puzzle below, the second row, arranged in order from left to right, is: triangle, square, and hexagon.

Correct Shape in the Correct Place identifies the number of shapes that are in the Desired Arrangement AND in the correct place. The second row has one shape that is in the Desired Arrangement and in the correct place.

Correct Shape in the Wrong Place identifies the number of shapes in the Desired Arrangement that are the right shapes BUT in the wrong place. There are two of these in the second row.

Incorrect Shape identifies the number of shapes that are NOT in the Desired Arrangement. There are none of these in the second row.

<table>
<thead>
<tr>
<th>Arrangement Column</th>
<th>Correct Shape in Correct Place</th>
<th>Correct Shape in Wrong Place</th>
<th>Incorrect Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ □ △</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>△ □ □</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>□ △ □</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>□ □ △</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>□ □ △</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>