What’s that Smell? Oh, it’s Potpourri! (2 pts for 1-6, we drop lowest one)

Fill in the correct circles & squares completely...like this: ● (select ONE) ■ (select ALL that apply)

**Question 1:** Which of the following is a true statement regarding Abstraction? (select ONE)
- Computer Scientists are better than domain experts at deciding what details to remove.
- Abstractions are always beneficial, since they remove detail and allow users to focus on what’s important.
- Generalization allows people to ignore the details of the implementation.
- An abstraction barrier allows us to use something without needing to know how it is built.

**Question 2:** What is $11_{16} - 11_2$? (select ONE)

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$11_{14}$</td>
<td>$11_{10}$</td>
<td>$12_{10}$</td>
<td>$13_{10}$</td>
<td>$14_{10}$</td>
<td>$15_{10}$</td>
<td></td>
</tr>
</tbody>
</table>

**Question 3:** What does Mystery report, if $B$ is a non-negative integer (i.e., 0, 1, 2, …)? (select ONE)

- $A - B$
- $B - A$
- $A + B$
- $A^B$
- $B^A$
- The sum of all the numbers from $A$ to $B$
- Error
- Infinite Loop

**Question 4:** What is your guess as to the Domain and Range of Foo?

The expression does not cause an error. (select ALL that apply)

**The Domain of Foo is...**

- numbers
- words
- sentences
- Booleans
- lists

**The Range of Foo is...**

- numbers
- words
- sentences
- Booleans
- lists
(The block on the right is used for Questions 5 & 6)

**Question 5:** If $A$ and $B$ are Booleans, and the output from Test is true, which can you say for sure? (select ALL that apply)

- [ ] $A$ must be true
- [ ] $B$ must be true
- [ ] $A$ must be false
- [ ] $B$ must be false
- [ ] None of these

**Question 6:** Which of the following is the same as the original Test block? (select ONE)

- [ ] Test $A$ $B$
- [ ] report $\neg A$ and $\neg B$
- [ ] Test $A$ $B$
- [ ] report $\neg A$ or $\neg B$
- [ ] Test $A$ $B$
- [ ] report $\neg A$ or false
- [ ] None of these

**Question 7:** *Down at the swap meet*... (3 pts)

This script is intended to exchange the values of the variables $a$ and $b$ using the temporary variable $temp$.

```
script variables temp
set temp to a
set a to b
missing code
```

Which of the following can be used to replace the `missing code` so the script works as intended? (select ONE)

- [ ] set $b$ to $a$
- [ ] set $b$ to $temp$
- [ ] set $temp$ to $a$
- [ ] set $temp$ to $b$
Question 8: Beethoven was a good composer... (4 pts)
If we were given three functions:

\[ F(x) = x^2 \]
\[ G(x) = x - 7 \]
\[ H(x) = x + 5 \]

...and you wanted to calculate:

\[ (x - 7)^2 + 5 \]

...how would you compose the three functions to get that? (select ONE)

<table>
<thead>
<tr>
<th>( F(G(H(x))) )</th>
<th>( F(H(G(x))) )</th>
<th>( G(F(H(x))) )</th>
<th>( G(H(F(x))) )</th>
<th>( H(F(G(x))) )</th>
<th>( H(G(F(x))) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

Question 9: Dōm(ain), Dōm(ain) and the Range (8 pts)

We want to compute the following cascade of map with mapping function \( M() \) and keep with predicate \( P() \):

...but someone “glues” the map and keep together in the wrong order! Let’s try to change the inputs to map and keep to make it work. Which works, which can potentially cause a domain/range error, and which doesn’t cause an error but is probably a wrong answer? (select ONE per row)

<table>
<thead>
<tr>
<th>Works!</th>
<th>Possible Domain &amp; Range error</th>
<th>No Domain &amp; Range error, but is probably a wrong answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
You did it!! Congratulations!! Here's a fun comic...

SCIENCE MAY DISCOVER IMMORTALITY, BUT IT WON'T HAPPEN IN THE NEXT EIGHTY YEARS.

YOU'LL NEVER FIND A PROGRAMMING LANGUAGE THAT FREES YOU FROM THE BURDEN OF CLARIFYING YOUR IDEAS.

BUT I KNOW WHAT I MEAN!

YOU AVOID YOUR FRIEND MIKE BECAUSE YOU'RE UNCOMFORTABLY ATTRACTION TO HIM.

NICE TRY, MIKE. I GET OUT OF THE WELL.

AWW.