ENPM696 Assignment 2 Name: _____ Date: _____

Note: This assignment must be completed without the aid of computers, tablets, cell phones, etc.

1. Use the Load Effective Address instruction to implement the following arithmetic operations:
    a. Add 26 to a variable

    b. Multiply a variable by 9

    c. Multiply a variable by 17

2. Use one of the "efficient" methods to implement the following arithmetic operations:
    a. Multiply a variable by 34

    b. Multiply 34 by 21

    c. Multiply a variable by 1000

3. Implement the following while loop in IA-32 assembly language using posttested loop. Why is posttested loop implementation possible in this situation?

```
int x = 1;
while (x <= 30) {
       /* CodeBlock */
       x = x + 1;
}
```

4. Implement the following C code segment in IA-32 assembly language as efficiently as possible.

```
int i = 0;
int j = 0;
while (i < 15) {
	if (i >= 8 && j >= 20) {
		/* CodeBlock */
	}

	i = i + 1;
	j = j + i;
}
```

5. Implement the following C code segment in IA-32 assembly language. Use the cdecl calling convention to implement (Note: treat func1 as both a caller and a callee)

```
int func1() {
	int i = 1;
	int j = 2;
	int k = 3;

	k = func2(i, j, k);

	return k;
}
```

6. Generate the equivalent C code for the following IA-32 assembly code.

```
Label1:
   cmp [var1], 0x6
   jle Label2
   jmp Label6
Label2:
   cmp [var1], 0x11
   jg  Label3
   cmp [var2], 0x13
   jg  Label4
Label3:
   cmp [var1], 0x4
   jle Label5
   cmp [var2], 0x18
   jg  Label4
   jmp Label5
Label4:
   ; CodeBlock
Label5:
   mul [var2], 0x25
   inc [var1]
   jmp Label1
Label6:
```