1) On the LC3, we can build more complex math operations out of simpler ones. The BR (branch) instruction can be used to create loops. Show how to add up the numbers from 10 down to 1, and turn it into LC3 machine code. Use R3 to hold the sum, and R2 to hold the counter.

```markdown
# R3 <- 0
AND R3, R3, #0

# R1 <- 10
AND R2, R2, #0
ADD R2, R2, #10

# Now start adding
ADD R3, R3, R2
ADD R2, R2, #1

# If we have not gotten to zero, keep going
BRP three steps back
```

2) Now let's multiply some numbers (in a really easy, but really stupid way). Assume the numbers we want to multiply are in R0 and R1, and we put the result in R2. Note that R0 has to be positive.

```markdown
# R2 <- 0
AND R2, R2, #0

# Add R1 to the running total, decrement R0
ADD R2, R2, R1
ADD R0, R0, #-1

# If R0 is still positive, add R1 to the total again.

BRP three steps back
```