**1**

1. inputs: price per gallon (ppg), number of gallons purchased (gal), payment method (paymethod)
2. outputs: cost of gas transaction (price)
3. error conditions: ppg <= 0, gal <= 0
4. Minimum number of operations: 8
5. Maximum number of operations: 9

READ ppg

READ gal

READ paymethod

SET price to 0

IF ppg <= 0 or gal <= 0, THEN

DISPLAY error

ELSE

IF paymethod = cash, THEN

COMPUTE price as ppg \* gal

ELSE

COMPUTE price as ppg \* gal \* 1.1

ENDIF

ENDIF

DISPLAY price

Test Case 1: ppg = 1, gal = 2, paymethod= cash, price = 2, display 2

Test Case 2: ppg = -1, gal = 5, paymethod = credit, display error

Test Case 3: ppg = 4, gal = 3, paymethod = credit, price = 13, display 13.2

**2**

1. inputs: age, location
2. outputs: price
3. error conditions: age <= 0 or age >120
4. Minimum number of operations: 7
5. Maximum number of operations: 11

READ age

READ location

SET price to 0

IF age <= 0 or age > 120, THEN

DISPLAY error

ELSE  
 IF age < 7, THEN

SET price as 0

ELSEIF age <= 65

SET price as 13.20

ELSE

SET price as 7.50

ENDIF

ENDIF

IF location = inside train, THEN

COMPUTE price as 1.2 \* price

ENDIF

DISPLAY price

Test Case 1: age = 7, location = inside train, price = 15.84, display 15.84

Test Case 2: age = 0, location = outside train, display error

Test Case 3: age = 65, location = outside train, price = 13.20, display 13.20

Test Case 4: age = 66, location = inside train, price = 9, display 9

**3**

1. inputs: number of hours spent programming (n)
2. outputs: prize
3. error conditions: n < 0
4. Minimum number of operations: 5
5. Maximum number of operations: 12

READ n

SET price to 0

IF n < 0, THEN

DISPLAY “Error”

ELSEIF n = 0, THEN

SET prize as “No prize”

ELSE

IF n >= 1 and n <= 5, THEN

SET prize as “T-Shirt”

ELSEIF n >= 1 and n <= 400

IF (n % 10 == 9), THEN

SET prize as “laptop ”

ENDIF

IF (n % 2 == 0), THEN

COMPUTE prize as prize + “hat ”

ENDIF

IF (n % 3 == 0), THEN

COMPUTE prize as prize + “TV ”

ENDIF

ELSEIF (n > 400)

SET prize as “cat “

ENDIF

ENDIF

DISPLAY “Prizes: “ + prize

Test Case 1: n = -1, display error

Test Case 2: n = 0, prize = “no prize”, display “no prize”

Test Case 4: n = 4, prize = “T-Shirt”, display “T-Shirt”

Test Case 4: n = 29, prize = “laptop “, display “laptop “

Test Case 5: n = 9, prize = “laptop TV”, display “laptop TV”

Test Case 6: n = 6, prize = “hat TV”, display “hat TV”

**4**

1. inputs: number (n)
2. outputs: number of 7s (count)
3. error conditions: n < 0
4. Minimum number of operations: 5
5. Maximum number of operations: Depends on value

READ n

SET count to 0

IF n < 0, THEN

DISPLAY “Error”

Else

WHILE n > 0

IF n % 10 == 7, THEN

COMPUTE count as count + 1

ENDIF

COMPUTE n as n / 10

ENDWHILE

ENDIF

DISPLAY count

Test Case 1: n = -1, display “Error”

Test Case 2: n = 2, display “0”

Test Case 4: n = 37727, display “3”