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Solution - Pseudocode

Part 1 - Writing Pseudocode

```
1. a. 50 \times 5 \times 5 + 50 for gravel + 0 x $100 for parking = $1,250
```

```
b. 100 \times 10 \times 5 + 500 for asphalt + 2 x $100 for parking = $5,700
```

```
c. 600 \times 10 \times $5 + $1,000 for concrete + 8 \times $100 for parking = $31,800
```

a. $10 \times 5 \times $5 + 500 for asphalt $+ 0 \times 100 for parking = \$750, so \$1,000

```
2. Get a value for length in feet
Get a value for width in feet
Get a value for material
Get a value for parking
```

```
Set cost to length * width * 5
If (material = "asphalt") Then
   Set cost to cost + 500
If (material = "concrete") Then
   Set cost to cost + 1000
Set cost to cost + (parking * 100)
If (cost < 1000) Then
   Set cost to 1000</pre>
```

Print "Total cost is"
Print cost

Part 2 - Reading Pseudocode

1.

a. Your change is

0 quarters

1 dimes

0 nickels

4 pennies

b. Your change is

1 quarters

0 dimes

0 nickels

0 pennies

c. Your change is

3 quarters

- 2 dimes
- 1 nickels
- 4 pennies
- 2. This algorithm will determine how to make change for an amount of money in US currency. In this case, it will start with all pennies, then attempt to substitute larger coins up through quarters.
- 3. Depending on how comfortable students are with modulus and integer division, there are a couple different ways to approach making the algorithm better. The first answer is longer, but it doesn't use modulus and integer division.

```
Get a value for change (in cents)
Set pennies to change
Set nickels, dimes, quarters to 0
While (change >= 25)
  Set quarters to quarters + 1
  Set change to change - 25
While (change >= 10)
  Set dimes to dimes + 1
  Set change to change - 10
While (change >= 5)
  Set nickels to nickels + 1
  Set change to change - 5
Set pennies to change
Print "Your change is"
Print the value of quarters and "quarters"
Print the value of dimes and "dimes"
Print the value of nickels and "nickels"
Print the value of pennies and "pennies"
If you are comfortable with modulus and integer division, you could do
Get a value for change (in cents)
```

Set quarters to change / 25
Set change to change mod 25
Set dimes to change / 10
Set change to change mod 10
Set nickels to change / 5
Set pennies to change mod 5

Print "Your change is"

Print the value of quarters and "quarters"

Print the value of dimes and "dimes"

Print the value of nickels and "nickels"

Print the value of pennies and "pennies"

4. Get a value for change (in cents)

Get a value for quarters in machine
Get a value for dimes in machine
Get a value for nickels in machine
Get a value for pennies in machine

While (change >= 25 and quarters > 0)
Set quarters to quarters - 1
Set change to change - 25

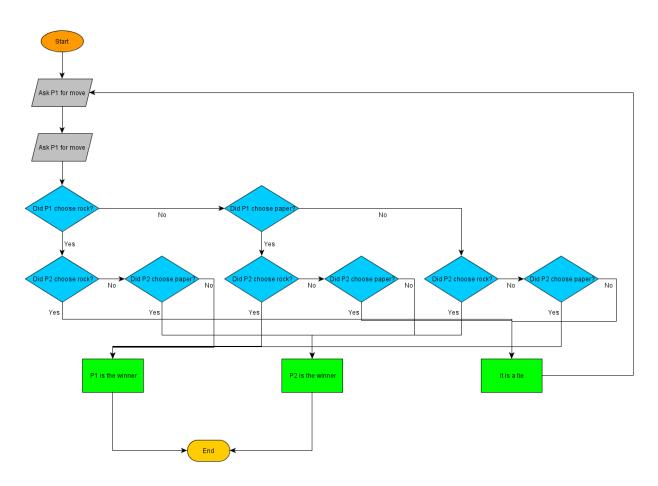
While (change >= 10 and dimes > 0)
Set dimes to dimes - 1
Set change to change - 10

While (change >= 5 and nickels > 0)
Set nickels to nickels - 1
Set change to change - 5

If (pennies >= change) Then
 Print "There is enough money to make change"
Else
 Print "There is not enough money to make change"

Solution – Flowcharts

1.



2. You would need to keep track of how many times each player has won. After a victory you would need to update the wins for the winning player for the round and check to see if that player now has 3 wins. If not, loop back and play another round, much like if there was a tie previously.

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