5.2 #8

10/10

P(n) be statement we can Form 5n dollars.

answer {5, 8, 10, 13, 15, 16, 18, 20, 21, 23, 24, 25, 26, and all #'s 28 and up}

We will prove this by showing P(5), P(8), P(10) P(13) P(15) P(16) P(18) P(20) P(21) P(23) P(24) P(25) P(26) P(28) P(29) P(30) P(31) and P(32)
~~and we will show that if P(n) is true for~~
~~the P(k+1) is true~~
Proof ~~of P(5)~~... P(28)

Write instead: "P(5) is true because 5·5 = 25", etc.

P(5) = 5·5 = 25
P(8) = 5·8 = 40
P(10) = 5·10 = 25+25
P(13) = 5·13 = 40+25
P(15) = 5·15 = 25+25+25
P(16) = 5·16 = 40+40
P(18) = 5·18 = 40+25+25
P(20) = 5·20 = 25+25+25+25
P(21) = 5·21 = 40+40+25
P(23) = 5·23 = 40+25+25+25
P(24) = 5·24 = 40+40+40
P(25) = 5·25 = 25+25+25+25+25
P(26) = 5·26 = 40+40+25+25
P(28) = 5·28 = 40+25+25+25+25
P(29) = 5·29 = 40+40+40+25
P(30) = 5·30 = 25+25+25+25+25+25
P(31) = 5·31 = 40+40+25+25+25
P(32) = 5·32 = 40+40+40+40

~~Now we assume the inductive hypothesis, that P(k) is true for all k with 28≤k≤~~

very good.

Now we assume the inductive hypothesis, that P(n) is true for 28≤n≤k where k≥32.
We want to show P(k+1) is true. Because k−4≥28, we know that P(k−4) is true, that we can Form 5(k−4) dollars. Adding one more 25-dollar certificate gives 5(k+1) dollars, which is what we set out to prove. This completes the proof by strong induction.

QED.