Number Systems

8. [5] The word consecutive means 'in a row' - since you don't know any of the numbers, use x.

x = smallest x+1 = next x+2 = largest

$x(x+1) = 5(x+2) - 5$ → once it's set-up - solve!

$x^2 + x = 5x + (10 - 5)$

$x^2 + x = 5x + 5$

$-5x + 5 \quad -5x + 5$

$x^2 + 4x - 5$ → now factor

$(x+1)(x-5)$ → now set = to zero + solve

$x+1 = 0$ $\quad -1 \quad -1$ $\quad x = -1$

$x - 5 = 0$ $\quad +5 \quad +5$ $\quad x = 5$

10. $2a + 3s = 34$ a = Antonio

$s = 5a$ s = Sarah

Substitute + plug in $s = 5a$

$2a + 3(5a) = 34$

$2a + 15a = 34$

$\frac{17a}{17} = \frac{34}{17}$ $a = 2$

Now, plug Antonio's age in to an equation to find Sarah's age.

$s = 5(2)$ [Sarah is 10]

13. Katie ×2 each time Jennifer +200 each time

Turn	Points
0	100 ×2
1	200 ×2
2	400 ×2
3	800

[Answer Turn 4]

Turn	Points
0	100 +200
1	300 +200
2	500 +200
3	700

15. [D] $E = mc^2$ Solve for m

$$\frac{E}{c^2} = \frac{mc^2}{c^2} \qquad \boxed{m = \frac{E}{c^2}}$$

24. Make the shape by graphing each pair of points given.

27. [B] - use the formula given and plug in info given on the sides

$$A = \frac{1}{2}h(b_1 + b_2)$$

$b_1 = x - 3$ $\quad b_2 = x + 7$ $\quad h = 4$

① $A = \frac{1}{2}(4)(x - 3 + x + 7)$

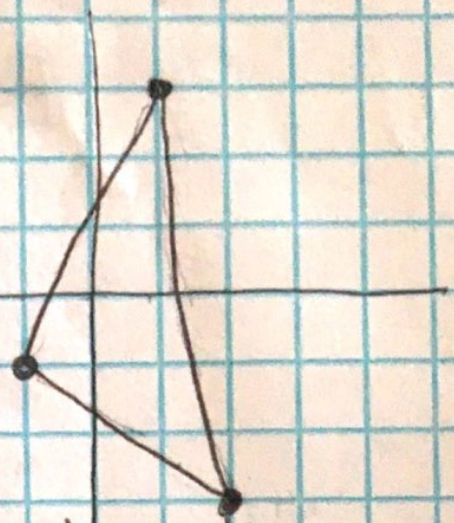
② Solve using PEMDAS + combine like terms inside the parentheses.

$\rightarrow ((x)[-3] + (x)[+7]) \rightarrow 2x + 4$

$A = \frac{1}{2}\left(\frac{4}{1}\right) = \frac{4}{2} = 2(2x + 4)$

$\boxed{A = 4x + 8}$

24. (1, 3)
(2, -3)
(-1, -1)



① Graph the shape
② count squares to get general perimeter

[B] 14 (its about 14 - note the word approximate)

30. nickels: .05 (five cents) = x
dimes: .10 (ten cents) = y

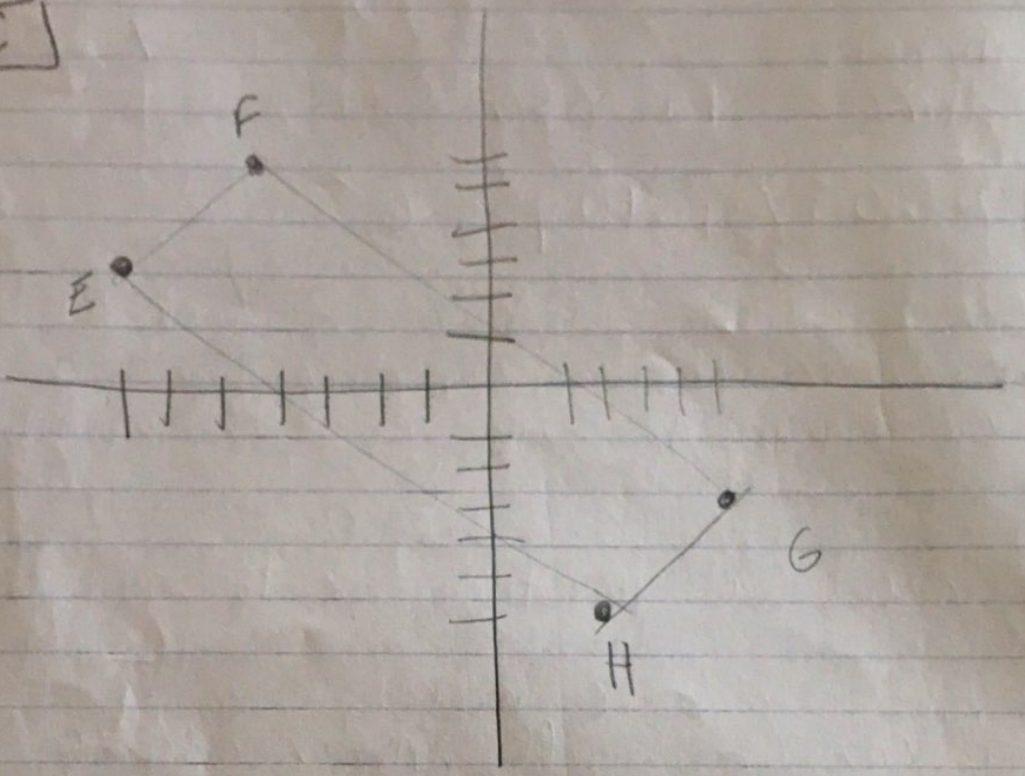
$.05x + .10y = .65$

* Before doing ANY math, look at the answer choices and notice the differences.
- choices A + B have even numbers as well as odd
- choices A + C have 0
- since the question deals with nickels, which are odd and dimes, which are even
- since we have nickels, which are odd, we can cross off answer choices that have even options (A + B).
- next, plug in 0 since that's the only difference between C + D and notice that plugging in zero gives an answer of $6.50 since he must use nickels, this won't work!
- Must be answer [D]

32. [C] The word 'originally' tells you that's the y-intercept (4) - You can automatically cross off choices B + D because the y-intercept is -4. The words 'there were' mean equals, so put 178 on the left of the equal sign + C is the only option. To prove it, plug it in + solve

$178 = 6n + 4$
$-4 \quad -4$
$174 = 6n$
$\frac{174}{6} = \frac{6n}{6}$
$n = 29$ ✓

33. C



35. B

① Make a table so you can see the pattern better

X = weeks
Y = # days

X	Y
1	4
2	9
3	14
4	19

+5 +5 +5

- since the rate of change is 5, but the first y-value (y-intercept) is 4, it's B, because 4 − 5 = −1

$f(n) = 5n - 1$ → $4 - 5 = -1$

5 → rate of change