Kay

M1T1 DCA (F.IF.8) Review

1. The diagrams show different designs a child is making by stacking blocks.

Design 1   Design 2   Design 3   Design 4
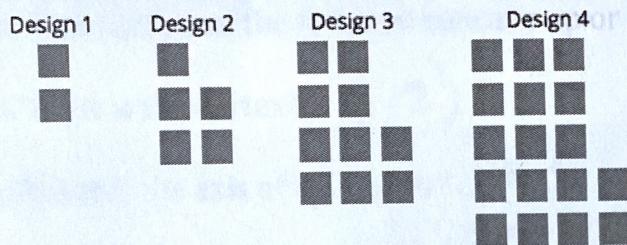
a. Given n = the design number, write an expression for the nth design. $(n-1)^2 + 2n$

or $n^2 + 1$

b. Sketch Design 5.
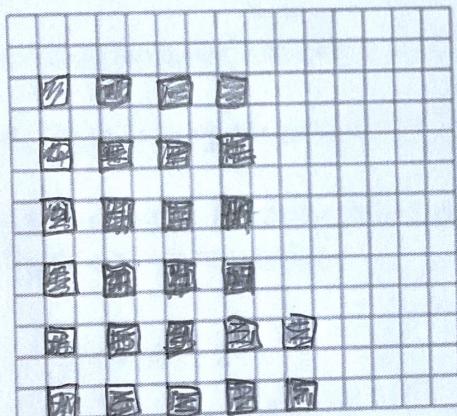
← don't have to leave spaces

c. If the child has only 60 blocks, what is the largest design she can complete? Show your work and/or *explain your answer.*

7th: $6^2 + 2(7) = 50$ ← Can only complete design #7

8th: $7^2 + 2(8) = 65$

2. Analyze the function $f(x) = (x - 8)(x + 10)$

a. Is the graph of the function concave up or concave down? Concave up

b. What are the roots (x-intercepts)? $(8,0), (-10,0)$

c. What is the vertex? $(-1, -81)$ → $x_v = \frac{8 + -10}{2} = -1$ $y_v = (-1-8)(-1+10) = -81$

d. What is the axis of symmetry? $x = -1$

e. What is the y-intercept? $(0, -80)$ $(0-8)(0+10)$

3. Analyze the function $f(x) = -4(x - 9)^2 + 12$.

    a. Is the graph of the function concave up or concave down? *concave down*

    b. What is the vertex? $(9, 12)$

    c. What is the axis of symmetry? $X = 9$

    d. What is the y-intercept? $(0, -312)$ $-4(0-9)^2 + 12$

4. Analyze the function $f(x) = -x^2 + 14x - 20$.

    a. Is the graph of the function concave up or concave down? *concave down*

    b. What is the vertex? $(7, 29)$ $X_v = \frac{-14}{2(-1)} = 7$ $Y_v = \frac{-1(7)^2 +}{14(7)-20}$

    c. What is the axis of symmetry? $X = 7$

    d. What is the y-intercept? $(0, -20)$

5. Analyze the graph. Describe whether each function could be used to model the graph. Explain your reasoning.

a. $f(x) = -5(x + 6)^2 + 2$

No. The equation is of a function that is concave down, but the graph is concave up.
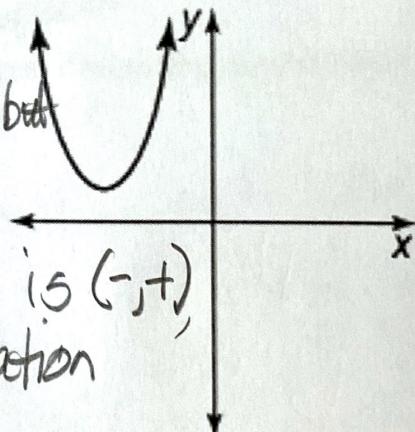
b. $g(x) = 3(x - 4)^2 + 1$

No. The vertex in the graph is $(-5, +)$ but the vertex in the equation is $(4, 1)$.

6. Simplify. Show your work. Write your equation in standard form.

a. -11i + 12 - 9i - 21 + 6i

$\boxed{-9 - 14i}$

b. (-10i - 12) - (6i - 8) $-6i + 8$

$\boxed{-4 - 16i}$

c. (7 + 3i)(6 - 8i)

$42 - 56i + 18i - 24i^2$ $+24$

$\boxed{66 - 38i}$

d. (9i - 6)(8i + 4)

$72i^2 + 36i - 48i - 24$ (-72)

$\boxed{-96 - 12i}$