Homework Questions?

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Questions 4 to 9

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4. In each equation, determine the value of P when $n = 1$.

a) $P = 2n$ b) $P = 3n$ c) $P = 4n$ d) $P = 5n$

a) P= 2n

P = 2(1)

P= 2

b) P= 3n

P = 3(1)

P= 3

c) P= 4n

P = 4(1)

P= 4

d) P= 5n

P = 5(1)

P= 5

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5. In each equation, determine the value of A when $n = 2$.

a) $A = 3n + 1$ b) $A = 3n + 2$

c) $A = 3n + 3$ d) $A = 3n + 4$

a) A= 3n + 1
A = 3(2) + 1
A = 6 + 1
A = 7

b) A= 3n + 2
A = 3(2) + 2
A = 6 + 2
A = 8

c) A= 3n + 3
A = 3(2) + 3
A = 6 + 3
A = 9

d) A= 3n + 4
A = 3(2) + 4
A = 6 + 4
A = 10

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6. In a table of values for a pattern, $P = 3$ when $n = 1$; which of the following equations might represent the pattern?

a) $P = 3n$ b) $P = n + 3$

c) $P = 2n + 1$ d) $P = 3 - n$

a) P= 3n
P = 3(1)
P = 3
Works

b) P= n + 3
P = (1) + 3
P = 4
Doesn't Work

c) P= 2n + 1
P = 2(1) + 1
P = 2 + 1
P = 3
Works

d) P= 3 - n
P = 3 - 1
P = 2
Doesn't Work

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7. The pattern in this table continues. Which expression below represents the number of squares in terms of the figure number?

Figure, f	Number of Squares, s
1	6
2	7
3	8
4	9
5	10

a) $5f$ b) $2f$ c) $f + 5$ d) $s + 5$

$s = \frac{1}{1} f + 5$

$s = 1f + 5$

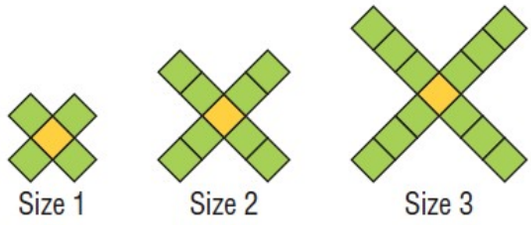
In dep

x | y

$y = \frac{\Delta y}{\Delta x} x \pm H$

Nov 13-8:55 PM

8. This pattern of squares continues. Which equation below relates the number of squares, n, in a picture to the size number, s?



a) $n = s + 4$ b) $n = 4s$

c) $n = 4s + 1$ d) $s = 4n$

size (s)	# of squares , (n)
1	5
2	9
3	13
4	17

$n = \frac{4}{1} s + 1$

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9. The pattern in this table continues. Which equation below relates the number of squares to the figure number?

Figure, f	Number of Squares, s
1	5
2	7
3	9
4	11
5	13

$y = \frac{\Delta y}{\Delta x} x \pm \#$

$S = \frac{2}{1} f + 3$

a) $s = 4f + 1$ b) $s = 2f + 3$

c) $s = f + 2$ d) $f = 2s + 3$

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11. The pattern in each table below continues. For each table:

i) Describe the pattern that relates v to t.

ii) Write an expression for v in terms of t.

iii) Write an equation that relates v to t.

iv) Verify your equation by substituting values from the table.

iii) $y = \frac{\Delta y}{\Delta x} x \pm \#$

$V = \frac{11}{1} t$

a)

Term Number, t	Term Value, v
1	11
2	22
3	33
4	44

ii) $11t$

iv) $V = 11t$

$V = 11(2)$

$V = 22$

$V = 11(3)$

$V = 33$

Mar 11-7:50 AM

11. The pattern in each table below continues.
For each table:
i) Describe the pattern that relates v to t.
ii) Write an expression for v in terms of t.
iii) Write an equation that relates v to t.
iv) Verify your equation by substituting values from the table.

c)

Term Number, t	Term Value, v
1	7
2	6
3	5
4	4

$V = \frac{-1}{1}t \pm \#$

iii) $V = -1t + 8$

ii) $-t + 8$

iv) $V = -t + 8$

$V = -2 + 8$

$V = 6$

Mar 11-7:55 AM

12. Here is a pattern of triangles made with congruent toothpicks.
The pattern continues.

Figure 1 Figure 2 Figure 3 Figure 4

a) Make a table of values for the figure number and the number of toothpicks in a figure. What patterns do you see?
b) Write an expression for the number of toothpicks, t, in figure n.
c) Determine the number of toothpicks in figure 45.
d) Write an equation that relates t to n.
e) Which figure has 17 toothpicks? How could you check your answer?

f	$\#t$
1	3
2	5
3	7
4	9

d) $t = \frac{2}{1}f \pm \#$

$t = 2f + 1$

b) $2f+1$

c) $t = 2f + 1$

$t = 2(45)+1$

$t = 90 + 1$

$t = 91$

e) $t = 2f + 1$

$17 = 2f + 1$

$\frac{16}{2} = \frac{2f}{2}$

$f = 8$

Mar 11-7:57 AM

13. Assessment Focus Hexagonal tables are arranged as shown. The pattern continues. One person sits at each side of a table.

a) Determine the number of people who can be seated at each table arrangement. Record your results in a table.

b) Describe the patterns in the table.

c) ~~What strategies can you use to determine the number of people who could be seated at any table arrangement in the pattern?~~

d) Write an equation that relates the number of people, p, who can be seated at n tables. How can you check that your equation is correct?

e) How many tables are needed to seat 41 people? How could you check your answer?

Show your work.

a)

b)

	t	P	
	1	6	
+1	2	10	+4
+1	3	14	+4
+1	4	18	+4

c) $y = \frac{\Delta y}{\Delta x} x \pm \#$

$P = \frac{4}{1} t + 2$

d) $41 - 2 = 4t + 2 - 2$

$\frac{39}{4} = \frac{4t}{4}$

$t = 9.75$

Mar 14-8:41 AM

14. The cost to print brochures is the sum of a [illegible] e.

a) Write an equation that relates the total cost, C dollars, to the number of brochures, n. $C = 1.25B + 250$

b) What is the cost of printing 2500 brochures?

c) How many brochures can be printed for $625?

Justify your answers.

	B	C
	0	250
+1	1	251.25
+1	2	252.50
+1	3	253.75

b) $C = 1.25B + 250$

$C = 1.25(2500) + 250$

$C = 3125 + 250$

$C = \$3375$

c) $C = 1.25B + 250$

$625 - 250 = \quad + 250 - 250$

$\frac{375}{1.25} = \frac{1.25B}{1.25}$

$b = 300$

Mar 11-7:58 AM

15. A pizza with tomato sauce and cheese costs $9.00.
Each additional topping costs $0.75.

a) Create a table that shows the costs of a pizza for up to 5 toppings.

b) Write an equation that relates the cost, C dollars, to the number of toppings, n. Verify your equation by substituting values of n from the table.

c) Suppose a pizza costs $15.00. How many toppings were ordered? What strategy did you use? Try a different strategy to check your answer.

a)

t	C
0	9
1	9.75
2	10.50
3	11.25

(+0.75, +0.75, +1, +1)

b) C = [illegible] t + 9

c) $C = 0.75t + 9$

$15 = 0.75t + 9$ (−9 −9)

$\frac{6}{0.75} = \frac{0.75t}{0.75}$

$8 = t$

Mar 11-7:58 AM

16. Clint has a window cleaning service.
He charges a fixed cost of $12, plus $1.50 per window.

a) Write an equation that relates the total cost to the number of windows cleaned. How do you know that your equation is correct?

b) Clint charged $28.50 for a job. How many windows did he clean? How do you know?

C = 1.50W +12

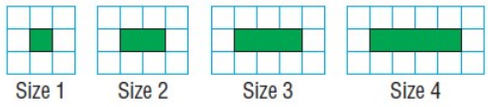
W	C
0	12
1	13.50
2	15.00
3	

C = 1.50W +12

28.50 = 1.50W +12

Mar 11-7:59 AM

17. A landscaper uses square patio stones as a border around a rectangular garden. The number of patio stones needed depends on the size of the garden. This pattern continues.



Size 1 Size 2 Size 3 Size 4

The landscaper uses 152 stones. What size of garden does she make?
How can you check your answer?

Size (x)	Stones (y)
1	8
2	10
3	12
4	14

+1 +1 +2 +2

$y = \frac{\Delta y}{\Delta x} x \pm \#$

$y = \frac{2}{1} x + 6$

$y = 2x + 6$

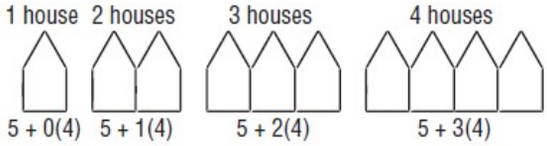
$152 = 2x + 6$ (−6 −6)

$\frac{146}{2} = \frac{2x}{2}$

$73 = x$

Mar 11-7:59 AM

18. Here is another way to rearrange the toothpicks in question 10.



1 house 2 houses 3 houses 4 houses

5 + 0(4) 5 + 1(4) 5 + 2(4) 5 + 3(4)

a) Explain how the expression below each picture describes the number of toothpicks in the picture.

b) Suppose n represents the number of houses. Write an equation that relates the number of toothpicks, t, to the number of houses, n.

c) Compare the equation in part b with the equation in question 10c. How can two different equations represent the same pattern? Explain.

n Houses	t toothpicks
1	5
2	9
3	13
4	17

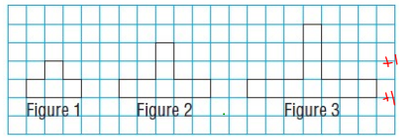
+1 +1 +4 +4

$t = \frac{\Delta t}{\Delta n} n \pm \#$

$t = \frac{4}{1} n + 1$

Mar 11-7:59 AM

19. Here is a pattern of squares. Each square has side length 1 cm. The pattern continues.



a) Make a table that shows each figure number, its perimeter, and its area.
b) Write an equation that can be used to determine the perimeter of any figure in the pattern. Verify the equation. How did you do this?
c) Write an equation that can be used to determine the area of any figure in the pattern. Verify the equation.
d) Determine the perimeter and area of figure 50.
e) Which figure has a perimeter of 100 cm?
f) Which figure has an area of 100 cm²?

Perimeter

f	P
1	10
2	16
3	22

+6, +6

$P = \frac{\Delta P}{\Delta f} f \pm \#$

$P = \frac{6}{1} f + 4$

Area

f	A
1	4
2	7
3	10

(3), (3); +3, +3; +1, +1

$A = \frac{\Delta A}{\Delta f} f \pm \#$

$A = \frac{3}{1} f + 1$

d) $P = 6(50) + 4$
$P = 300 + 4$
$P = 304$

d) $A = 3(50) + 1$
$A = 150 + 1$
$A = 151$

e) $P = 6f + 4$
$100 = 6f + 4$ (−4, −4)
$\frac{96}{6} = \frac{6f}{6}$
$12 = f$

f) $A = 3f + 1$
$100 = 3f + 1$ (−1, −1)
$\frac{99}{3} = \frac{3f}{3}$
$33 = f$

Mar 11-8:00 AM

20. The pattern in this table continues.

Term Number, *t*	Term Value, *v*
1	80
2	76
3	72
4	68

(−4), (−4); +1, +1; −4, −4, −4

a) Write an equation that relates *v* to *t*.
b) Verify your equation by substituting values from the table.

$V = \frac{\Delta V}{\Delta t} t \pm \#$

$V = \frac{-4}{1} t + 84$

Mar 11-8:00 AM

21. Marcel has a sheet of paper. He cuts the paper in half to produce two pieces. Marcel places one piece on top of the other. He then cuts these pieces in half. The pattern continues. The table below shows some of Marcel's results.

Number of Cuts	1	2	3	4	5	6	7	8	9	10
Number of Pieces	2	4	8							

a) Copy and complete the table.
b) What patterns do you see in the numbers of pieces?
c) Determine the number of pieces after 15 cuts.
d) Write an equation that relates the number of pieces, P, to the number of cuts, n.
e) How many cuts have to be made to get more than 50 000 pieces? Explain how you found out.

Mar 11-8:01 AM