

UNIT 3 QUIZ REVIEW

Name: Key

Part 1: Multiple Choice Practice – Answer the following questions below based on your knowledge of congruent triangles.

1) Which of the following characteristics is true of Quadratic Function?

- A. They have a common difference B. They will form a line graph
 C. They have a common second difference D. They multiply or divide to get the next term

2) Given the table below, what explicit equation describes the data?

- A. $f(x) = 36 \cdot 3^{x-1}$ B. $f(x) = 3 \cdot 36^{x-1}$
 C. $f(x) = 36 + 3(x - 1)$ D. $f(x) = 3 + 36(x - 1)$

x	1	2	3	4	5
y	36	108	324	972	2916

\downarrow \downarrow
 .3 .3

3) Identify the rate of change in the representation: $f(2) = 6$ and $f(4) = 12$

- A. 4 B. 2 C. 6 D. 3

$(2, 6)$ $(4, 12)$ $m = \frac{12-6}{4-2} = \frac{6}{2} = 3$

4) Determine which model is most appropriate for the set of data in the table. Show work to support your answer.

Δx	x	y	Δy
+2	1	16	+6
+3	3	22	+9
+3	6	31	+9
	9	40	

- A. Linear B. Exponential
 C. Quadratic D. Other

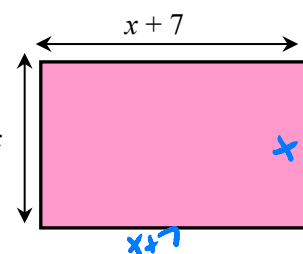
$\frac{6}{2} = \frac{9}{3} = \frac{9}{3} = 3$

★ 5) The value of a car over several years is shown in the table. Determine which model is most appropriate for the data. Show work to support your answer.

Age (years)	Value (dollars)
0	25,000
1	17,450
2	12,250
3	8,600
4	6,000

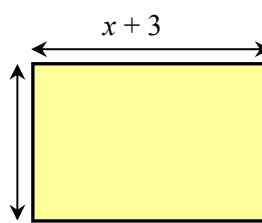
- A. Linear B. Exponential
 C. Quadratic D. Other

6) Find algebraic expressions for the perimeter and area of these rectangles.

a)  $P = 2l + 2w$
 $P = 2(x) + 2(x+7)$
 $= 2x + 2x + 14$
 $= 4x + 14$
 $A = x(x+7)$
 $A = x^2 + 7x$

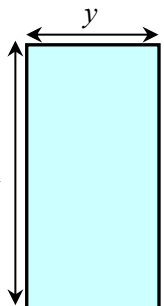
Perimeter: 4x+14

Area: x²+7x

b)  $P = 2(x-1) + 2(x+3)$
 $= 2x - 2 + 2x + 6$
 $= 4x + 4$
 $A = (x-1)(x+3)$
 $= x^2 + 3x - x - 3$
 $= x^2 + 2x - 3$

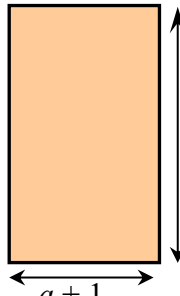
Perimeter: 4x+4

Area: x²+2x-3

c)  $P = 2(y) + 2(2y-1)$
 $= 2y + 4y - 2$
 $= 6y - 2$
 $A = y(2y-1)$
 $= 2y^2 - y$

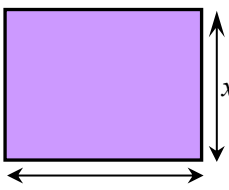
Perimeter: 6y-2

Area: 2y²-y

d)  $P = 2(2a) + 2(a+1)$
 $P = 4a + 2a + 2$
 $P = 6a + 2$
 $A = 2a(a+1)$
 $= 2a^2 + 2a$


Perimeter: 6a+2

Area: 2a²+2a

e)  $P = 2(x+y) + 2(x-y)$
 $= 2x + 2y + 2x - 2y$
 $= 4x$
 $A = (x+y)(x-y)$
 $= x^2 - xy + xy - y^2$
 $= x^2 - y^2$

Perimeter: 4x

Area: x²-y²

f)  $P = 2(2a-b) + 2(3a-b)$
 $= 4a - 2b + 6a - 2b$
 $= 10a - 4b$
 $A = (2a-b)(3a-b)$
 $= 6a^2 - 2ab - 3ab + b^2$
 $= 6a^2 - 5ab + b^2$

Perimeter: 10a-4b

Area: 6a²-5ab+b²

$$P = 2(x+y) + 2(x-y)$$

$$P = 2x + 2y + 2x - 2y$$

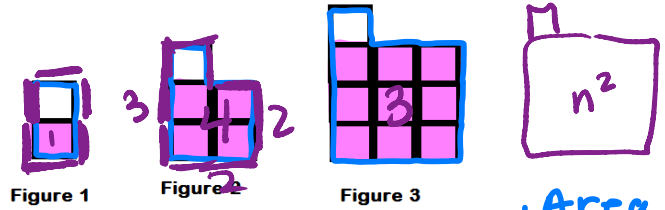
$$P = 4x$$

$$A = (x+y)(x-y)$$

$$= x^2 - xy + xy - y^2$$

$$= x^2 - y^2$$

7) Here are the first three figures in a growing pattern.



a) Write a recursive rule for finding the total area of the nth figure in the pattern.

$$f(1) = 2$$

$$f(n) = f(n-1) + 2n - 1$$

b) Write an explicit rule for finding the total area of the nth figure in the pattern.

$$f(n) = n^2 + 1$$

c) Write a recursive rule for finding the perimeter of the nth figure in the pattern.

$$f(1) = 6$$

$$f(n) = f(n-1) + 4$$

d) Write an explicit rule for finding the perimeter of the nth figure in the pattern.

$$f(n) = 6 + 4(n-1) \quad \text{or} \quad f(n) = 4n + 2$$

n	Area f(n)
0	2
1	5
2	10
3	17
4	26
5	37

Area differences: +3, +5, +7, +9

n	Perimeter
0	6
1	10
2	14
3	18
4	22
5	26

Perimeter differences: +4, +4, +4, +4

Use differences to identify the type of function represented by the table of values and write their recursive and explicit equations below. If the table models a quadratic function, do not complete recursive equation.

8)

x	f(x)
0	-1
1	2
2	7
3	14
4	23
5	34

Differences: +3, +5, +7, +9, +11

Second differences: +2, +2, +2, +2

Explicit equation: $f(x) = x^2 - 2$

Type: Quadratic

Recursive Rule:

$$f(1) = -1$$

$$f(n) = f(n-1) + 2n - 1$$

Explicit Rule:

$$f(n) = n^2 - 2$$

9)

x	f(x)
1	32
2	16
3	8
4	4
5	2
6	1

Differences: -16, -8, -4, -2

Second differences: -8, -4, -2

Third differences: -4, -2

Fourth differences: -2

Type: Exponential

Recursive Rule:

$$f(1) = 32$$

$$f(n) = f(n-1) \cdot \frac{1}{2}$$

Explicit Rule:

$$f(n) = 32 \left(\frac{1}{2}\right)^{n-1}$$

10)

x	f(x)
-3	-5
-2	1
-1	7
0	13
1	19
2	25
3	31

Constant
+6
+6
+6
+6
+6
+6

Type: Linear

Recursive Rule:

$$f(-3) = -5$$

$$f(n) = f(n-1) + 6$$

Explicit Rule:

$$f(n) = 6n + 13$$

11)

x	f(x)
0	4
1	10
2	18
3	28
4	40
5	55

Linear
Constant
Explicit
+2
+2
+2
+2
+2
+2
+2
4 1·4
10 2·5
18 3·6
28 4·7
40 5·8
n n(n+3)

Type: Quadratic

Recursive Rule:

$$f(0) = 4$$

$$f(n) = f(n-1) + 2n + 2$$

Explicit Rule:

$$\text{or } f(n) = n(n+3)$$

$$f(n) = n^2 + 3n$$

Simplify & Classify:

12) $(4xy^3)(-6x^6y^2)$

$$-24x^7y^5$$

12th degree monomial

13) $\frac{-20z^3w^5}{25z^7w^5}$

$$\frac{-4}{5z^4} = -\frac{4}{5}z^{-4}$$

not a polynomial

14) $(2x-5)(4x+7)$

$$8x^2 + 14x - 20x - 35$$

$$8x^2 - 6x - 35$$

Quadratic Trinomial

15) $\frac{2}{5}y(10x^2 - 15y) - \frac{1}{7}(49x^2 + 14) - 3$

$$4x^2y - 6y^2 - 7x^2 - 2 - 3$$

$$4x^2y - 6y^2 - 7x^2 - 5$$

Cubic Polynomial

16) $(3x-1)(x^2-5x+4)$

$$3x^3 - 15x^2 + 12x - x^2 + 5x - 4$$

$$3x^3 - 16x^2 + 17x - 4$$

Cubic Polynomial

17) $(7x^4 - 3x + 1) + (3x^2 + 7x - 4)$

$$7x^4 - 3x + 1 + 3x^2 + 7x - 4$$

$$7x^4 + 3x^2 + 4x - 3$$

Quartic Polynomial

18) $-9g^2 - 1(3 - 2g^2) + 3(-5g^2 + 4)$

$$-9g^2 - 3 + 2g^2 - 15g^2 + 12$$

$$-22g^2 + 9$$

Quadratic Binomial