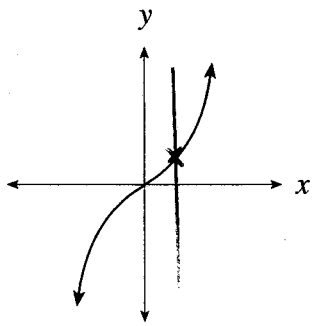
C PATTERNS AND RELATIONS (*Relations and Functions*)	C15 describe a function in terms of – ordered pairs – a rule, in word or equation form – a graph

Knowledge *Prescribed Learning Outcomes – C15*

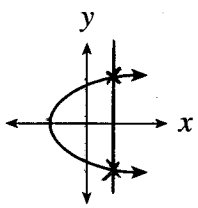
95. The graph below represents a function.



* (A) True
B. False

Understanding *Prescribed Learning Outcomes – C15; A5*

96. Which of the following represent(s) a function?

✓ I.	(0, 0), (2, 4), (3, 9), (4, 16), (5, 25)
✓ II.	Square the number and add 3 to the result. $y = x^2 + 3$
✓ III.	$y = -3x^2 + 2$
✗ IV.	

A. I only
B. II and III only
* (C) I, II and III only
D. I, II, III and IV

97. Which of the following can be used to describe one and the same function?

I.

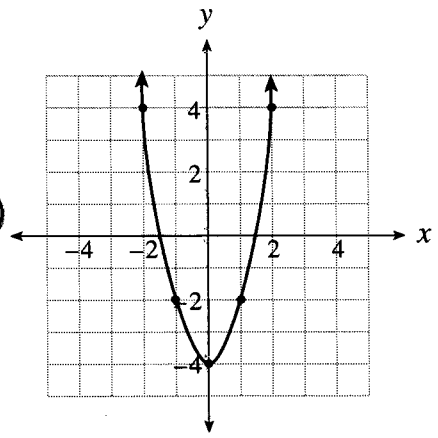
x	y
–5	46
–3	14
0	–4
3	14
5	46

$2(-5)^2 + 4 = 54$ or $2(-5)^2 - 4 = 46$

II. $g(x) = 2x^2 + 4$

III. Four less than twice the squared number. $y = 2x^2 - 4$

IV.

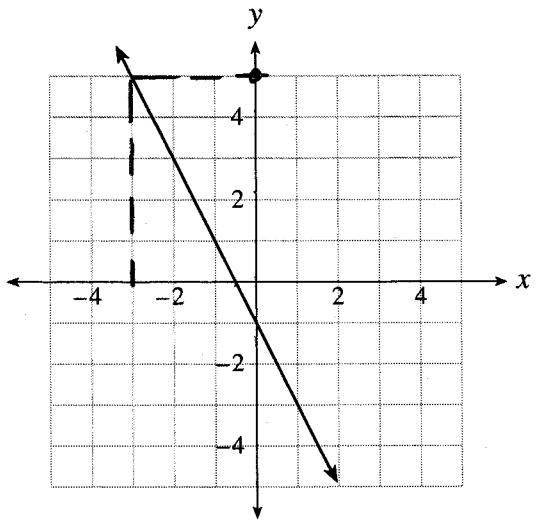


A. I and IV only
B. II and III only
* C. I, III and IV only
D. I, II, III and IV

C PATTERNS AND RELATIONS (*Relations and Functions*)	C16 use function notation to evaluate and represent functions

Knowledge *Prescribed Learning Outcomes – C16*

98. According to the graph below, the value of $f(-3) = 1.5$



A. True
* B. False

99. Consider the following expressions:

①	I.	$f(x)=\frac{1}{2}x-3$
②	II.	$f(x)=-3x+5$
④	III.	$f(x)=x^2+2x+1$
③	IV.	$f(x)=3x^2-x-6$

$f(2)=\frac{1}{2}(2)-3=-2$

$f(2)=-3(2)+5=-1$

$f(2)=2^2+2(2)+1=9$

$f(2)=3(2)^2-2-6=4$

Evaluate $f(2)$ and put the results in order from least to greatest.

		Least → Greatest			
	A.	I	II	III	IV
*	B.	I	II	IV	III
	C.	II	I	III	IV
	D.	II	I	IV	III

Higher Mental Processes *Prescribed Learning Outcomes – C16*

100. If $f(x)=3x^2-2x+1$, which of the following expressions is $f(x+1)$?

A. $3x^2-2x+2$
B. $3x^2-2x+5$
* C. $3x^2+4x+2$
D. $3x^2+4x+6$

$f(x+1)=3(x+1)^2-2(x+1)+1$

$=3(x^2+2x+1)-2x-2+1$

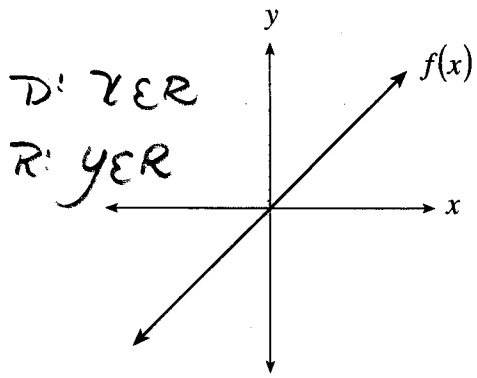
$=3x^2+6x+3-2x-2+1$

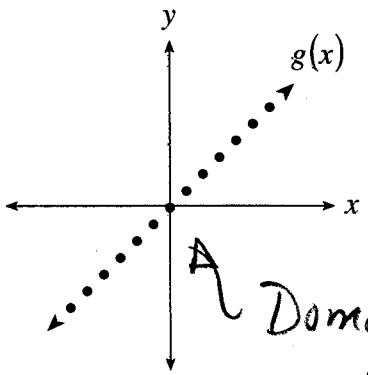
$=3x^2+4x+2$

C PATTERNS AND RELATIONS (*Relations and Functions*)	C17 determine the domain and range of a relation from its graph

Knowledge *Prescribed Learning Outcomes – C17*

101. Consider the following functions:





Domain & Range would be individual x & y values.

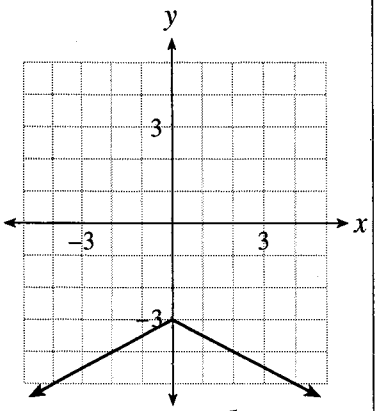
The domain and range for $f(x)$ and $g(x)$ are the same.

A. True
* B. False

Match each Graph on the left with the correct Range on the right.
Each Range may be used once, more than once or not at all.

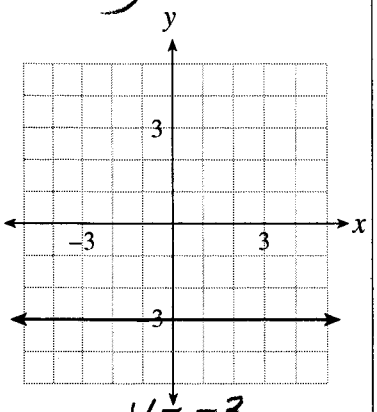
Graph	Range

102.



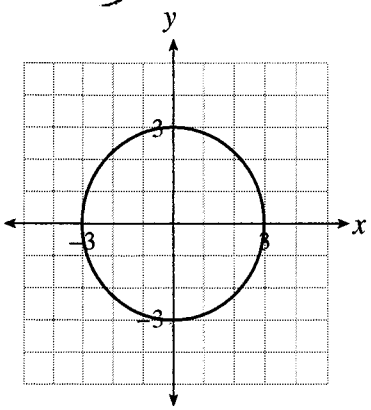
$y \leq -3$

103.



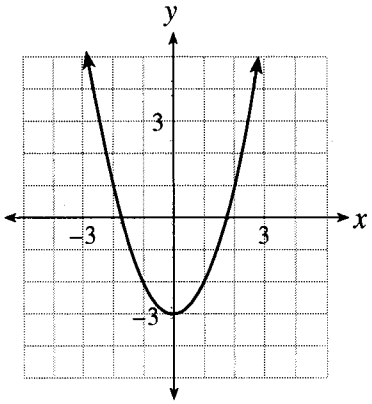
$y \leq -3$

104.



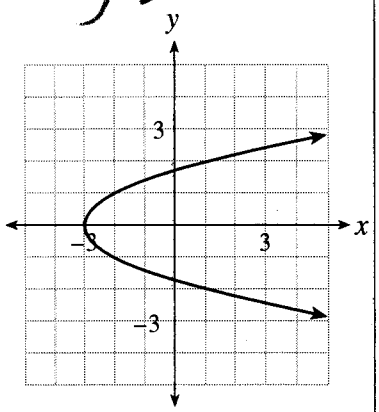
$-3 \leq y \leq 3$

105.



$y \geq -3$

106.



$y \in R$

A. $y = 3$

B. $y = -3$

C. $y \leq 3$

D. $y \geq -3$

E. $y \leq -3$

F. $3 \leq y \leq -3$

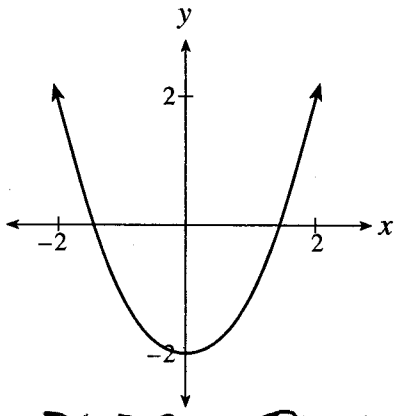
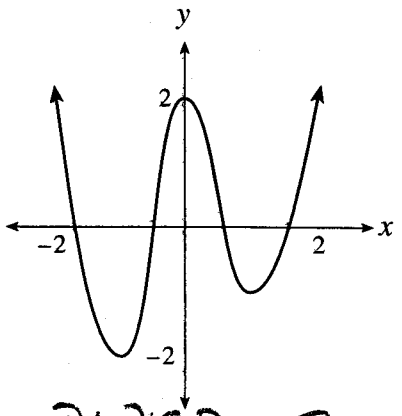
G. $-3 \leq y \leq 3$

H. all real numbers

Answers

102. E
103. B
104. G
105. D
106. H

Use the following graphs of the functions to answer question 107.

Function I	Function II
	

107. Which of the following statements is correct?

A. The range of both functions is $-2 \leq x \leq 2$.
B. The domain of both functions is $-2 \leq x \leq 2$.
C. The range of both functions is all real numbers.
* D. The domain of both functions is all real numbers.