Sample IAB questions for Algebra and Functions #1

1. Enter a value that makes the equation true: $8x = 2$
2. Enter a value that makes the equation true: $4y = 10$

3. Solve the inequality for n: $12 < n - 2$

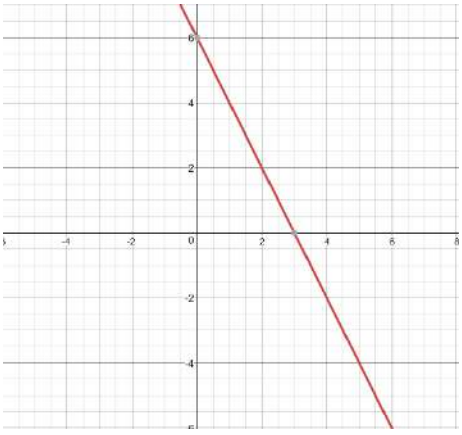
4. Solve the inequality for n: $n - 4 \geq 5$

5. Write an inequality that represents all the solutions of: $-10d < -5$
6. Write an inequality that represents all the solutions of: $-3c \geq 12$

7. There are 480 students going on a field trip. 8 of the students ride in a van, the rest of the students will ride on 8 buses.
    - Write an equation that can be solved to find the number of students, s, that will ride on each bus.
    - Find the number of students on each bus.

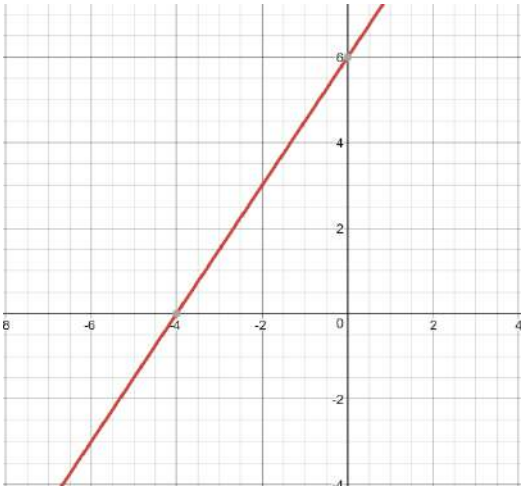
8. There are 263 students going to watch the school play. 13 of the students will sit in the front row of the theater, the remaining students will sit in the following 10 rows of the theater.
    - Write an equation that can be solved to find the number of students, s, that will be in each of the 10 rows.
    - Find the number of students in each remaining row.

9. Select the ordered pair that is a solution to the equation represented by the graph:



A. (2, 1)
B. (6, 0)
C. (3, 4)
D. (3, 0)

10. Select the ordered pair that is a solution to the equation represented by the graph:



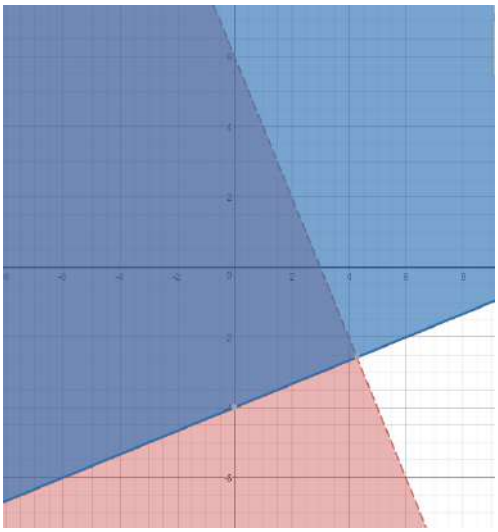
A. (-4, 0)
B. (6, 0)
C. (-2, 4)
D. (3, 0)

11. Select the graph that best represents the solution to the system of inequalities:

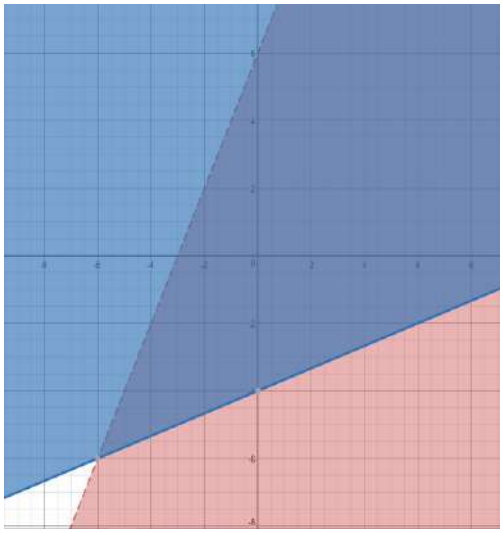
$y < -2x + 6$

$y \geq \frac{1}{3}x - 4$

1.



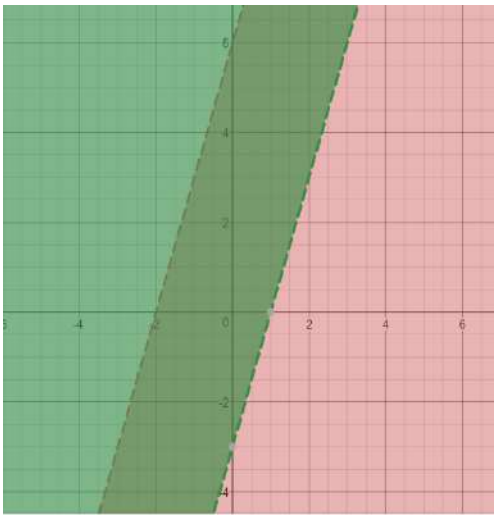
2.



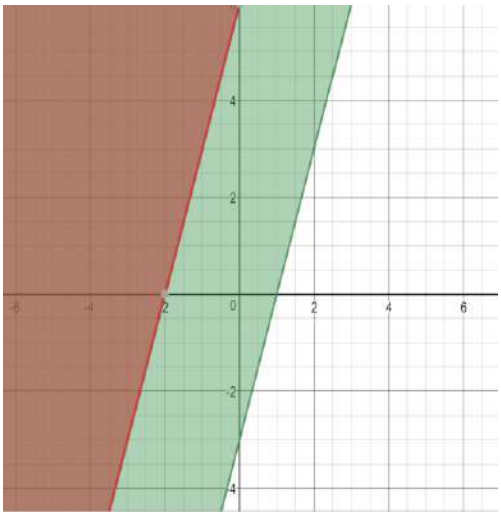
12. Select the graph that best represents the solution to the system of inequalities:

$$y < 3x + 6$$
$$y > 3x - 3$$

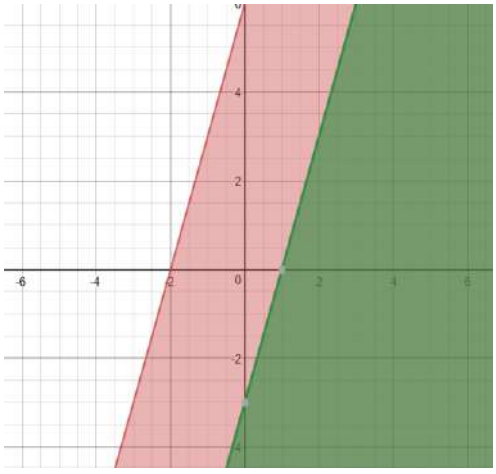
A.



B.



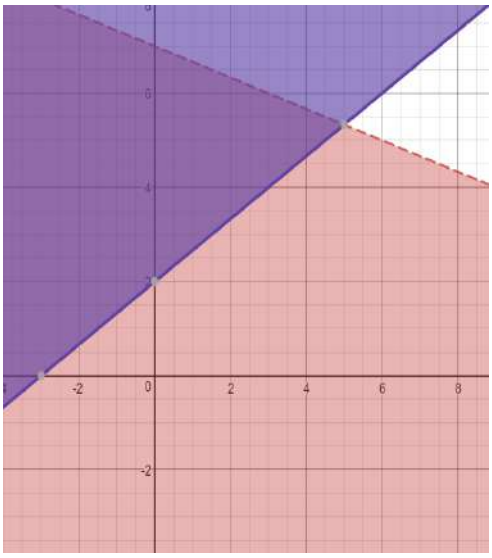
C.



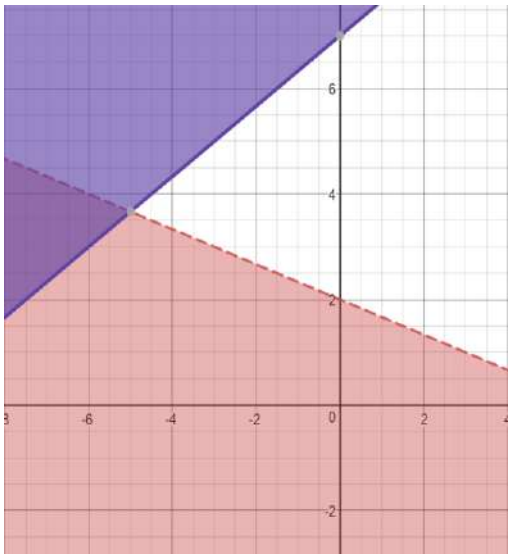
13. Select the graph that shows the solution set of the system of linear inequalities:

$$y < 7 - \frac{1}{3}x$$
$$y \geq 2 + \frac{1}{2}x$$

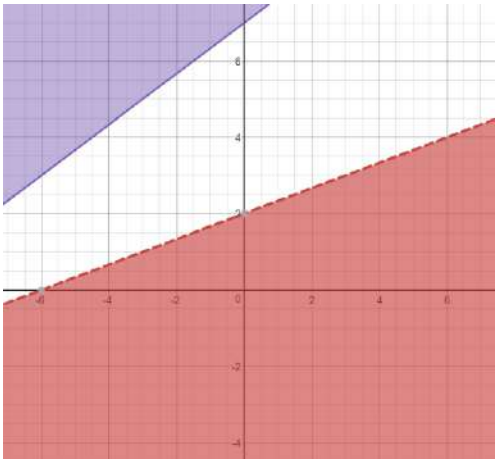
A.



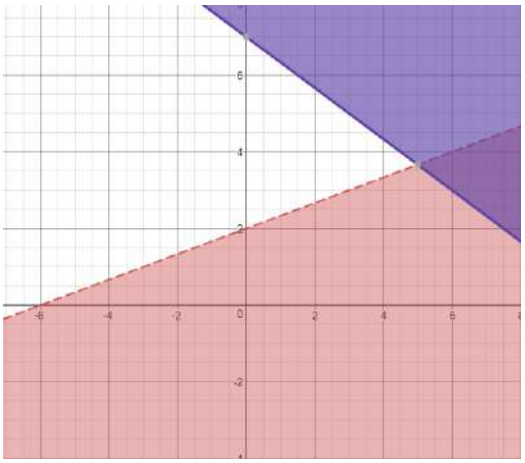
B.



C.



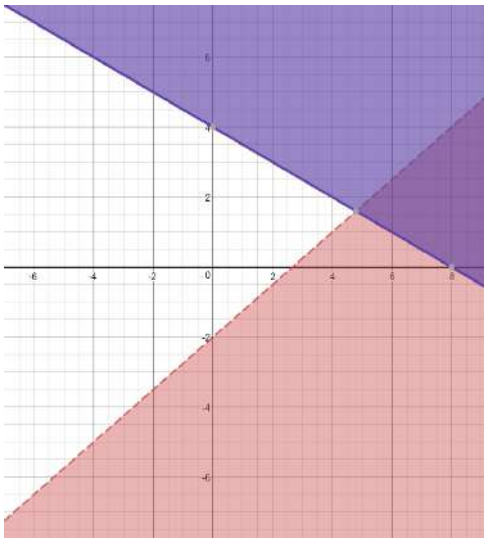
D.



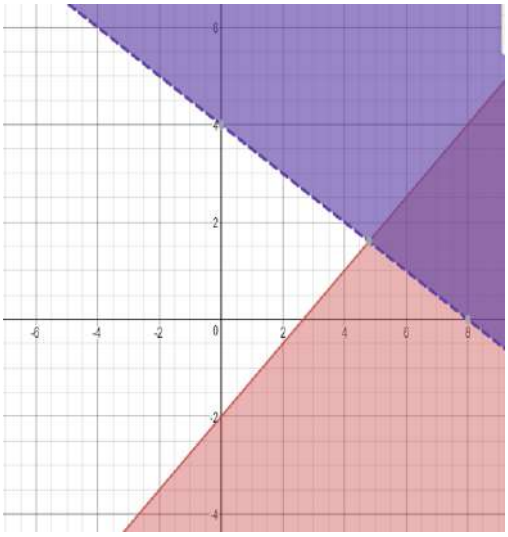
14. Select the graph that shows the solution set of the system of linear inequalities:

$$y > -2 + \frac{3}{4}x$$
$$y < 4 - \frac{1}{2}x$$

A.



B.



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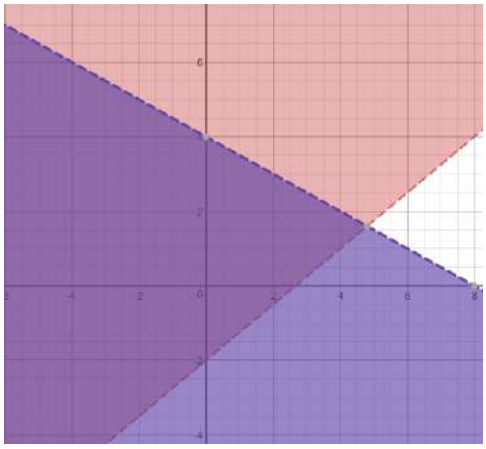
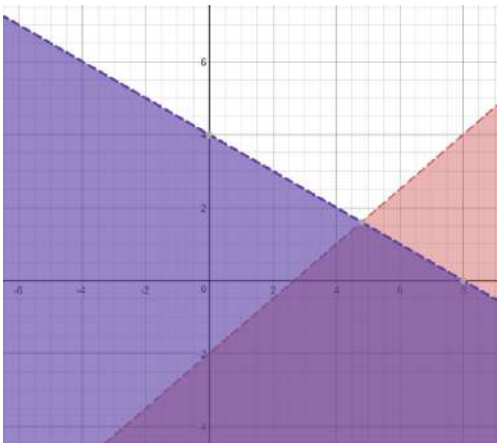
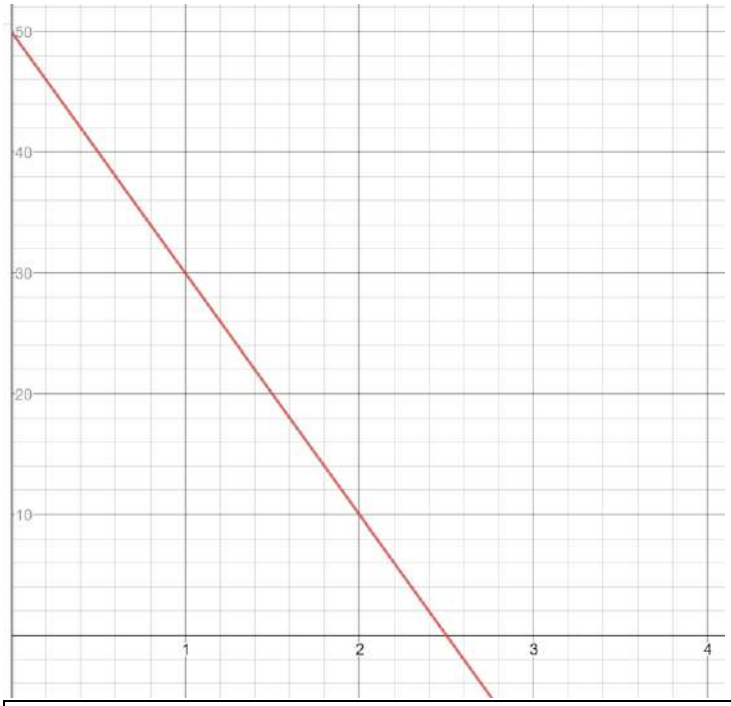


D.

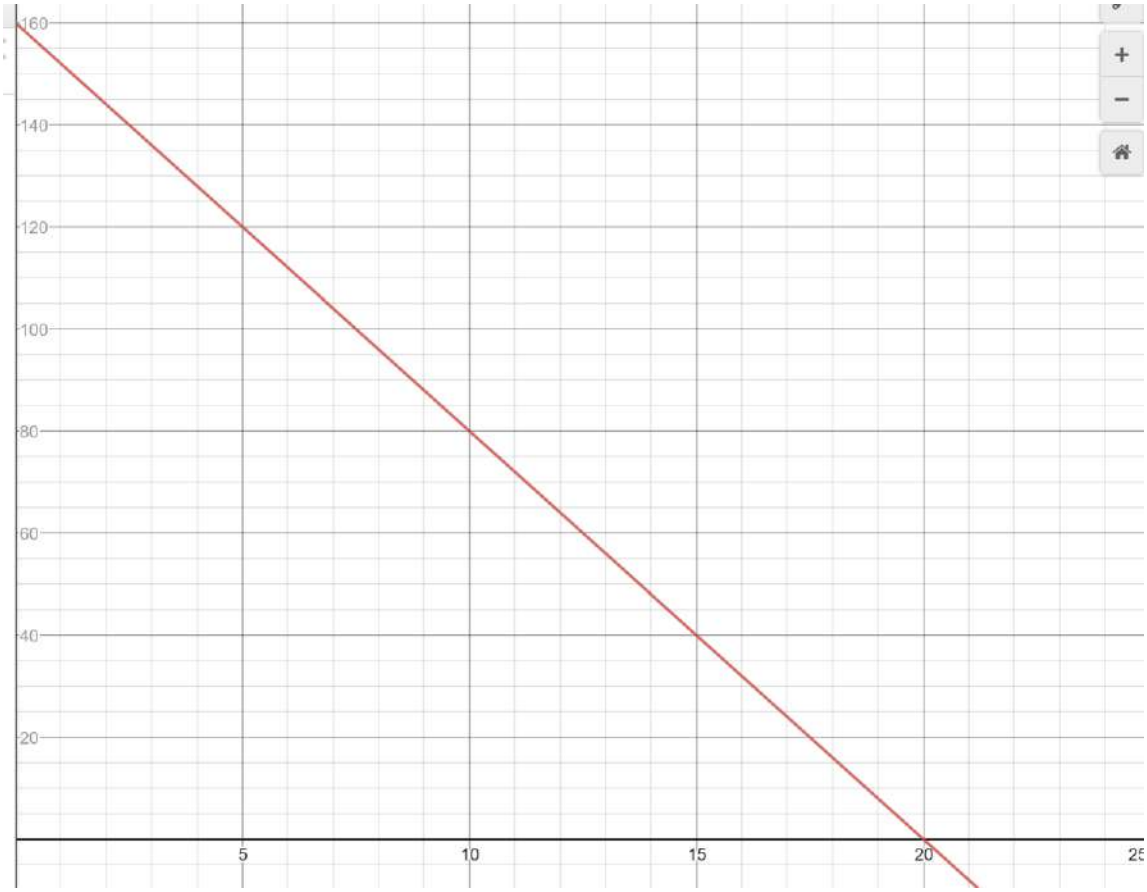


15. The graph shows the amount of water, in gallons, in a pool modeled as a function of time. Determine if each statement is true or false:



	True	False
1. The maximum amount of water in the pool was 50 gallons.		
2. The amount of water in the pool is at a maximum at t = 0.		
3. The pool will be empty in 2 hours.		

16. The graph shows the amount of money in a checking account as a function of time. Determine if each statement is true or false:



	True	False
1. The maximum amount of money in the account was $140.		
2. The amount of money is at a minimum at 20 days.		
3. The amount of money is at a maximum at t = 0.		

17. Mary and Mike make key chains. Mike can make 6 in one hour and Mary can make 4 in one hour. Write an equation that can be used to find the number of hours, t, it will take them to make 50 key chains together. Solve the equation to find the number of hours it will take Mary and Mike to make 50 key chains together.

18. Sarah and Molly make blankets. Sarah can make 3 blankets in one hour and Molly can make 2 blankets in one hour. Write an equation that can be used to find the number of hours, t, it will take for them to make 60 blankets together. Solve the equation to find the number of hours it will take Sarah and Molly to make 60 blankets together.

19. Match each table of values to its equation:

x	f(x)
-2	$7\frac{1}{2}$
-1	$3\frac{1}{2}$
0	$-\frac{1}{2}$
1	$-4\frac{1}{2}$

x	f(x)
-2	$-7\frac{1}{2}$
-1	$-3\frac{1}{2}$
0	$\frac{1}{2}$
1	$4\frac{1}{2}$

x	f(x)
-2	$8\frac{1}{2}$
-1	$4\frac{1}{2}$
0	$\frac{1}{2}$
1	$-3\frac{1}{2}$

A. $f(x) = -4x - (-\frac{1}{2})$ B. $f(x) = 4x - (-\frac{1}{2})$ C. $f(x) = -4x - \frac{1}{2}$

20. Match each table of values to its equation:

x	f(x)
-3	11
-1	5
0	2
3	-7

x	f(x)
-3	7
-1	1
0	-2
3	-11

x	f(x)
-3	-11
-1	-5
0	-2
3	7

A. $f(x) = 3x - 2$ B. $f(x) = -3x + 2$ C. $f(x) = -3x - 2$

21. Use the equation below to answer the question:

$f(x) = 2x - 2$

Which equivalent equation is correctly matched with a key feature of the graph of the function it represents?

A. $f(x) = 2(x - 1)$; highlights that the y-intercept is 1
B. $f(x) = 2(x - 1)$; highlights that the x-intercept is 1
C. $f(x) = 2(x - 1)$; highlights that the y-intercept is -1
D. $f(x) = 2(x - 1)$; highlights that the x-intercept is -1

22. Use the equation below to answer the question:

$f(x) = -3x + 6$

Which equivalent equation is correctly matched with a key feature of the graph of the function it represents?

A. $f(x) = -3(x - 2)$; highlights that the y-intercept is -2
B. $f(x) = -3(x - 2)$; highlights that the x-intercept is -2
C. $f(x) = -3(x - 2)$; highlights that the y-intercept is 2
D. $f(x) = -3(x - 2)$; highlights that the x-intercept is 2

23. Match each recursive function with the equivalent explicit function:

1. $f(1) = 6$
$f(n) = f(n - 1) + 2$

2. $f(1) = 6$
$f(n) = f(n - 1) - 2$

3. $f(1) = 1$
$f(n) = f(n - 1) - 3$

A. $f(n) = -3n + 4$

B. $f(n) = -2n + 8$

C. $f(n) = 2n + 4$

24. Match each recursive function with the equivalent explicit function:

1. $f(1) = -4$
$f(n) = f(n - 1) + 2$

2. $f(1) = 11$
$f(n) = f(n - 1) + 3$

3. $f(1) = -4$
$f(n) = f(n - 1) - 3$

A. $f(n) = 2n - 6$

B. $f(n) = -3n - 1$

C. $f(n) = 3n + 8$

25. Two types of cell phone plans are available.

- An unlimited talk and text for $60 a month, or
- A monthly $20 fee plus $ .20 for every minute of cell serviced used

Write an equation that can be used to find the number of cellular minutes (m) per month needed for the 2 cell phone plans to cost the same amount.

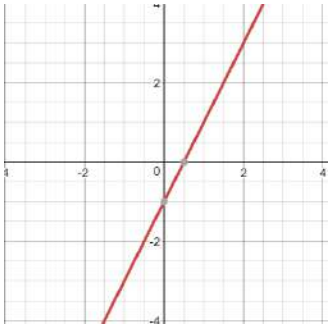
26. Two types of movie rental plans are available.

- An unlimited rental for $40 a month, or
- A monthly $4 fee plus $ 2.00 for every movie rented

Write an equation that can be used to find the number of movies (m) per month needed for the 2 rental plans to cost the same amount.

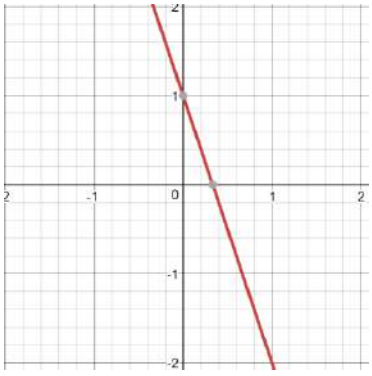
27. Select the ordered pair that is a solution to the equation represented by the graph.

A. (1,0)
B. (0,-1)
C. (2, 5)
D. (-1,0)



28. Select the ordered pair that is a solution to the equation represented by the graph.

A. (1,0)
B. (-1,-5)
C. (0,1)
D. (1, -3)



29. Sarah creates a number sequence that has a first term of 3 and a second term of 7. Each term after the second term is created by adding the term before the previous term to the previous term. She uses $s(n)$ to denote term number n in her sequence. For example, $s(1) = 3$ and $s(2) = 7$.

Which of the following can be used to find the value of $s(n)$ for some positive integer n greater than 2.

A. $s(n) = s(n-1) - s(n-2)$
B. $s(n) = s(n-2) + s(n-1)$
C. $s(n) = 2s(n-1) + s(n-1)$
D. $s(n) = s(n-2) - s(n-1)$

30. Mike creates a number sequence that has a first term of 1 and a second term of 5. Each term after the second term is created by adding two times the term before the previous term to the previous term. He uses $h(n)$ to denote term number n in his sequence. For example, $s(1) = 1$ and $s(2) = 5$.

Which of the following can be used to find the value of $s(n)$ for some positive integer n greater than 2.

A. $s(n) = 2s(n-1) - s(n-2)$
B. $s(n) = s(n-2) + s(n-1)$
C. $s(n) = 2s(n-2) + s(n-1)$
D. $s(n) = s(n-2) - 2s(n-1)$