

**MCAS Mathematics - Grade 7 - Week of May 11**

**Question 1: Multiple-Choice**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.1



Samir made a pattern by starting with 9 and repeatedly dividing by 3, as shown below.

$$9, 3, 1, \frac{1}{3}, ?, \frac{1}{27}, \dots$$

What number belongs in the position indicated by the question mark?

A.  $\frac{1}{6}$

B.  $\frac{1}{9}$

C.  $\frac{1}{12}$

D.  $\frac{1}{18}$

---

**2007, Mathematics - Grade 8**

**Question 9: Open-Response**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.6



Marisa drank one cup of milk and ate  $x$  small vanilla cookies for a snack. The linear equation below represents  $y$ , the total number of calories in Marisa's snack.

$$y = 12x + 120$$

- What is the  $y$ -intercept of the line represented by this equation?
  - Explain what the  $y$ -intercept tells us about Marisa's snack.
  - What is the slope of the line represented by this equation?
  - Explain what the slope tells us about Marisa's snack.
  - If Marisa eats 9 small vanilla cookies, what is the total number of calories in her snack? Show or explain how you got your answer.
- 

**2007, Mathematics - Grade 8**

**Question 10: Multiple-Choice**

**Reporting Category: Patterns, Relations, and Algebra**

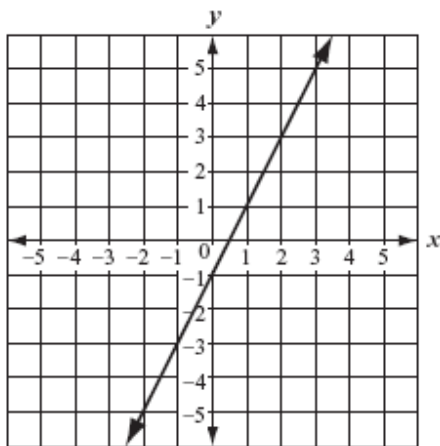
Standard: 8.P.7



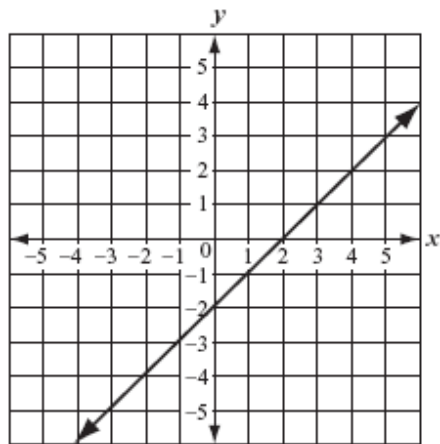
Which of the following graphs best represents the equation below?

$$y = -2x + 1$$

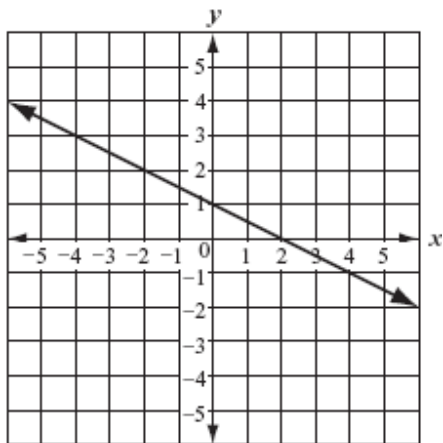
A.



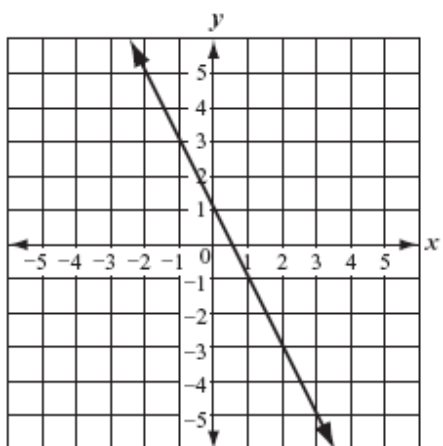
B.



C.



D.



---

**2007, Mathematics - Grade 8**

**Question 14: Multiple-Choice**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.3



Which of the following is equivalent to the expression below?

$$-2(x - 3)$$

- A.  $x - 5$
- B.  $x + 6$
- C.  $-2x - 5$
- D.  $-2x + 6$

---

**2007, Mathematics - Grade 8**

**Question 16: Multiple-Choice**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.1



The table below shows the relationship between the number of a term in a pattern and the value of that term. The same rule is used to find the value of the term in each row.

| Term Number | Value of Term |
|-------------|---------------|
| 1           | 3             |
| 2           | 5             |
| 3           | 7             |

|     |   |
|-----|---|
| $n$ | ? |
|-----|---|

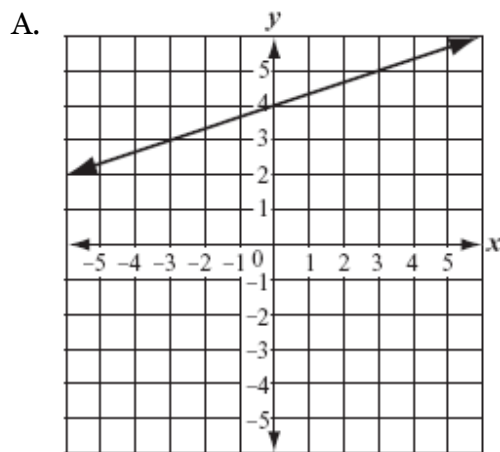
Based on the pattern shown in the table, which of the following expressions could

- A.  $3n$
- B.  $n + 2$
- C.  $n + 5$
- D.  $2n + 1$

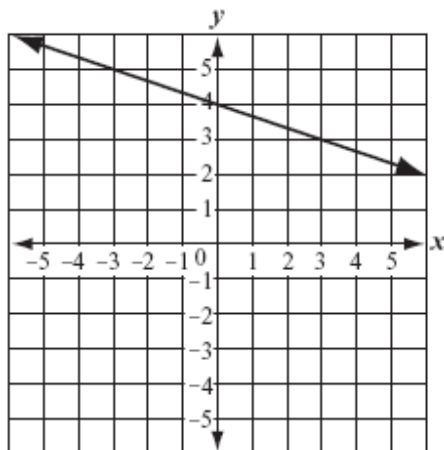
**2007, Mathematics - Grade 8**  
**Question 17: Multiple-Choice**  
**Reporting Category: Patterns, Relations, and Algebra**  
 Standard: 8.P.10



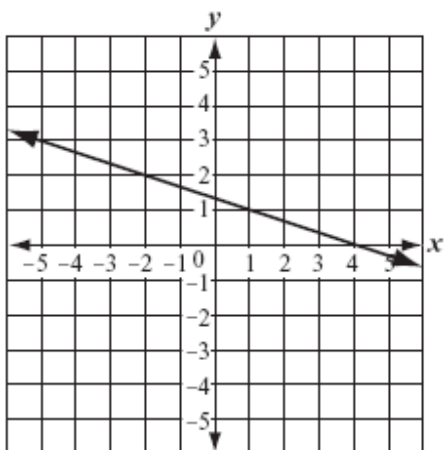
Which of the following lines appears to have a  $y$ -intercept of 4 and a slope of  $\frac{1}{3}$ ?



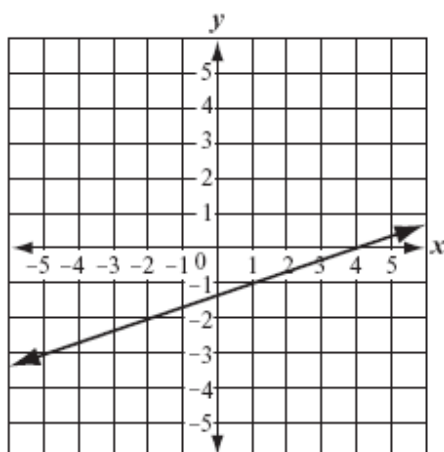
B.



C.



D.



---

**2007, Mathematics - Grade 8**

**Question 21: Short-Answer**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.7



What is the value of  $x$  that makes the equation below true?

$$2x - 3 = 11$$

---

**2007, Mathematics - Grade 8**

**Question 23: Multiple-Choice**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.2



What is the value of the expression below when  $x = 3$  and  $y = 5$ ?

$$2x^2 + 3y$$

- A. 27
- B. 33
- C. 51
- D. 53

---

**2007, Mathematics - Grade 8**

**Question 27: Multiple-Choice**

**Reporting Category: Patterns, Relations, and Algebra**

Standard: 8.P.5



What is the slope of the line represented by the equation below?

$$y = \frac{1}{2}x + 3$$

- A.  $\frac{1}{3}$
  - B.  $\frac{1}{2}$
  - C. 2
  - D. 3
- 

**2007, Mathematics - Grade 8**  
**Question 32: Multiple-Choice**  
**Reporting Category: Patterns, Relations, and Algebra**  
Standard: 8.P.8



Andrea went to an amusement park.

- The cost of admission was \$5.
- The cost for each ride was \$0.75.

The equation below shows  $c$ , Andrea's total cost to go to the amusement park and go on  $r$  rides.

$$c = 5 + 0.75r$$

Based on the equation, which of the following statements is true?

- A. As the value of  $r$  increases, the value of  $c$  increases.
  - B. As the value of  $r$  decreases, the value of  $c$  stays the same.
  - C. As the value of  $c$  decreases, the value of  $r$  increases.
  - D. As the value of  $c$  increases, the value of  $r$  stays the same.
-

[E-mail this page](#) | [Print View](#) | [Print Pdf](#)

*Massachusetts Department of  
Elementary & Secondary Education*

[Search](#) · [Site Index](#) · [Policies](#) · [Site Info](#) ·  
[Contact ESE](#)