



University of the State of New York
State Education Department

New York State Testing Program Mathematics Test 2013 Turnkey Training

**Grade 6 Short-response (2-point)
Sample Question**

Guide Set

1 What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

Answer _____

Common Core Learning Standard Assessed: 6.EE.2c

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = \frac{1}{2}$.*

1 What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

$$\begin{aligned} & 2 \times 3^3 + 4 \times 3^2 - 3 \times 3^2 - 6 \times 3 \\ & = 2 \times 27 + 4 \times 9 - 3 \times 9 - 6 \times 3 \\ & = 54 + 36 - 27 - 18 \\ & = 90 - 27 - 18 \\ & = 63 - 18 = 45 \end{aligned}$$

Answer 45

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

Answer 45

$$\begin{aligned} & 2x^3 + 4x^2 - 3x^2 - 6x \\ & 2 \cdot 3^3 + 4 \cdot 3^2 - 3 \cdot 3^2 - 6 \cdot 3 \\ & 2 \times 27 + 4 \times 9 - 3 \times 9 - 6 \times 3 \\ & 54 + 36 - 27 - 18 \\ & 90 - 27 - 18 \\ & 63 - 18 \\ & 45 \end{aligned}$$

Paper	RF Number	Score	Notes
g01	N/A	2	Score Point 2 This response answers the question correctly and demonstrates a thorough understanding of the mathematical concepts. Three is correctly substituted into the expression, the order of operations is correctly followed, all calculations and the final answer are correct.



What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

$$2 \times 3^3 = 54 \quad 4 \times 3^2 = 36 \quad 3 \times 3^2 = 27 \quad 6 \times 3 = 18$$
$$54 + 36 = 90 \quad 90 - 27 = 63 \quad 63 - 18 = 45$$

Answer 45

Paper	RF Number	Score	Notes
g02	N/A	2	Score Point 2 This response answers the question correctly and indicates that the student has completed the task correctly, using mathematically sound procedures. The individual operations are calculated separately; however, they are all done correctly and in the proper order, resulting in the correct answer.

1

What is the value of $2x^2 + 9x - 3x^2 - 6x$ when $x = 3$?

Show your work.

Answer 45

$54 + 36$
 $90 - 63 - 18 =$

$2 \times 27 = 54$

$+ 36$

 84

$3 \times 9 = 27$
 $- 27$

 0
 $- 18$

 45

$3 \times 3 \times 3 = 27$

$\begin{array}{r} 27 \\ \times 2 \\ \hline 54 \end{array}$

$4 \times 9 = 36$

$3 \times 3 = 9$

$6 \times 3 = 18$

$2 \times (3 \times 3 \times 3) =$

2×27
 54
 $+ 36$

 90
 $- 27$

 63
 $- 18$

 45

$\begin{array}{r} 27 \\ \times 2 \\ \hline 54 \end{array}$

$4(3 \times 3) = 36$
 $4 \times 9 = 36$

$3(3 \times 3) =$
 $3 \times 9 = 27$

6×3
 18

Guide Paper 3

Paper	RF Number	Score	Notes
g03	N/A	2	<p>Score Point 2</p> <p>This response answers the question correctly and demonstrates a thorough understanding of the mathematical concepts. The individual operations are calculated separately; however, they are done correctly and in the proper order, resulting in the correct answer. One calculation shown is incorrect ($4(3 \times 3 =) 9$), but the following line shows the correct calculation and this inaccurate statement within the work does not detract from the demonstration of a thorough understanding.</p>

1

What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

$$\begin{array}{r} 27 \\ \times 2 \\ \hline 54 \end{array}$$

Answer 81

a
 s
 P
 P
 P

$$\begin{aligned}
 & 2 \cdot 3^3 + 4 \cdot 3^2 - 3 \cdot 3^2 - 6 \cdot 3 \\
 & 2 \cdot 27 + 4 \cdot 3^2 - 3 \cdot 3^2 - 6 \cdot 3 \\
 & 2 \cdot 27 + 4 \cdot 9 - 3 \cdot 3^2 - 6 \cdot 3 \\
 & 2 \cdot 27 + 4 \cdot 9 - 3 \cdot 9 - 6 \cdot 3 \\
 & 54 + 4 \cdot 9 - 3 \cdot 9 - 6 \cdot 3 \\
 & 54 + 36 - 3 \cdot 9 - 6 \cdot 3 \\
 & 54 + 36 - 27 - 18 \\
 & 90 - 9
 \end{aligned}$$

$$\begin{array}{r} 27 \\ - 18 \\ \hline 9 \end{array}$$

Paper	RF Number	Score	Notes
g04	N/A	1	<p>Score Point 1</p> <p>This response is only partially correct. Three is correctly substituted into the expression; the operations on the exponents are performed first, followed by the multiplication operations. The numbers 54 and 36 are correctly added. However, instead of subtracting 27 from 90 or subtracting 18 from -27, 18 is subtracted from 27, resulting in an incorrect answer. The absence of the first subtraction symbol does not detract from the partial understanding of the problem.</p>

Paper	RF Number	Score	Notes
g05	N/A	1	<p>Score Point 1</p> <p>This response is only partially correct. Three is correctly substituted into the expression, the exponents are simplified first and then the multiplication operations are completed. However, the multiplication error, $6 \times 3 = 12$, and the subtraction error, $27 - 12 = 16$ and the change of -27 to 27 result in an incorrect answer. The absence of the multiplication symbols does not detract from the demonstrated level of understanding.</p>

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

Answer = 6

$$\begin{aligned} & 2x^3 + 4x^2 - 3x^2 - 6x \\ & 2 \cdot 3^3 + 4 \cdot 3^2 - 3 \cdot 3^2 - 6 \cdot 3 \\ & 2 \cdot 9 + 4 \cdot 6 - 3 \cdot 6 - 6 \cdot 3 \\ & 18 + 24 - 18 - 18 \\ & \quad \underbrace{\hspace{1.5cm}} \\ & \quad 42 - 18 - 18 \\ & \quad \quad 24 - 18 \\ & \quad \quad \quad 6 \end{aligned}$$

$$\begin{array}{r} 18 \\ +24 \\ \hline 42 \end{array}$$

Paper	RF Number	Score	Notes
g06	N/A	1	<p>Score Point 1</p> <p>This response is only partially correct and indicates that the student has demonstrated only a partial understanding of the mathematical concepts in the task. Three is correctly substituted into the expression and the order of operations is correct. However, the simplification of the exponential terms is incorrect; the base is multiplied by the exponent. The resultant answer is also incorrect.</p>

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

Answer 261

$$\begin{array}{r}
 3 \\
 36 \\
 \times 6 \\
 \hline
 216
 \end{array}$$

$$\begin{array}{r}
 216 \\
 +144 \\
 \hline
 360
 \end{array}$$

$$\begin{array}{r}
 215 \\
 360 \\
 - 81 \\
 \hline
 279
 \end{array}$$

$$\begin{array}{r}
 12 \\
 \times 12 \\
 \hline
 24 \\
 +120 \\
 \hline
 144
 \end{array}$$

$$\begin{array}{r}
 279 \\
 - 18 \\
 \hline
 261
 \end{array}$$

$$2 \cdot 3^3 + 4 \cdot 3^2 - 3 \cdot 3^2 - 6 \cdot 3$$

$$6^3 + 12^2 - 9^2 - 18$$

$$216 + 144 - 81 - 18$$

$$360 - 81 - 18$$

$$279 - 18$$

Paper	RF Number	Score	Notes
g07	N/A	0	Score Point 0 This response is incorrect. The order of operations is incorrect; the multiplication operations are completed prior to the exponent calculations.

1 What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?
 $23 \quad 43 \quad 33 \quad 63$

Show your work.

Answer 26

$$23^3 + 43^2 - 33^2 - 63$$

$$\begin{array}{r} 23 \\ \times 3 \\ \hline 69 \end{array} + \begin{array}{r} 43 \\ \times 2 \\ \hline 86 \end{array} - \begin{array}{r} 33 \\ \times 2 \\ \hline 66 \end{array}$$

$$\begin{array}{r} \textcircled{14} \\ 69 \\ + 86 \\ \hline 155 \\ - 66 \\ \hline 89 \\ - 63 \\ \hline \boxed{26} \end{array}$$

Paper	RF Number	Score	Notes
g08	N/A	0	Score Point 0 This response is incorrect. An incorrect procedure is used for the substitution of 3 into the expression, the exponents are incorrectly simplified, and the answer is incorrect.



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Mathematics Test

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Grade 6 Short-response (2-point)
Sample Question

Practice Set

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?**Show your work.**Answer 171

$$\begin{aligned}
 &2x^3 + 4x^2 - 3x^2 - 6x \\
 &2(3^3) + 4(3^2) - 3(3^2) - 6(3) \\
 &2(81) + 4(27) - 3(27) - 6(3) \\
 &162 + 108 - 81 - 18 \\
 &270 - 81 - 18 \\
 &189 - 18 \\
 &171
 \end{aligned}$$

$$\begin{array}{r}
 \overset{2}{x} \overset{2}{81} \\
 \times 2 \\
 \hline
 162
 \end{array}
 \quad
 \begin{array}{r}
 \overset{2}{x} \overset{2}{27} \\
 \times 4 \\
 \hline
 108
 \end{array}
 \quad
 \begin{array}{r}
 \overset{2}{x} \overset{2}{27} \\
 \times 3 \\
 \hline
 81
 \end{array}$$

$$\begin{array}{r}
 162 \\
 + 108 \\
 \hline
 270
 \end{array}
 \quad
 \begin{array}{r}
 \overset{16}{270} \\
 - 81 \\
 \hline
 189
 \end{array}$$

$$\begin{array}{r}
 189 \\
 - 18 \\
 \hline
 171
 \end{array}$$

Practice Set 1

1

What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

$2x^3 + 4x^2 - 3x^2 - 6x$
 $2(3)^3 + 4(3)^2 - 3(3)^2 - 6(3)$
 $2(27) + 4(9) - 3(9) - 6(3)$
 $54 + 36 - 27 - 18$

8
9
10
-37
-18
45

54
36
-27
-18
45

Answer 45

Practice Set 2

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

$$\begin{aligned} & 2(3)^3 + 4(3)^2 - 3(3)^2 \\ &= 2(27) + 4(9) - 3(9) \\ &= 54 + 36 - 27 \\ &= 63. \end{aligned}$$

$$\frac{27}{54}$$

$$\begin{array}{r} 840 \\ -27 \\ \hline 63 \end{array}$$

Answer 63**Practice Set 3**

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

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

$$6^3 + 12^2 - 9^2$$

$$18 + 24 - 18 = 24$$

Answer 24

1What is the value of $2x^3 + 4x^2 - 3x^2 - 6x$ when $x = 3$?

Show your work.

~~2×3^3~~

$$3 \times 3 \times 3 = 27$$
$$3 \times 3 = 9 \times 4 = 36$$

$$2 \times 27 = 54$$

Answer 45

$$\begin{array}{r} 54 \\ + 36 \\ \hline 90 \\ - 27 \\ \hline 63 \\ - 18 \\ \hline 45 \end{array}$$

Practice Set 5