

Algebra 1 SOL Released Questions:

Operations with Polynomials

What is the quotient of  $(15x^2 - 8x - 12)$  and  $(3x + 2)$ ? Assume the denominator does not equal zero.

A  $45x^3 + 6x^2 - 52x - 24$

B  $15x^2 - 5x - 10$

C  $5x + 6$

D  $5x - 6$

PIG 2009

Which expression is equivalent to

$$(4x^2 - 3x + 9) + (7x^2 - 11) + (-x^2 + 7x - 2)?$$

A  $10x^2 + 4x - 4$

B  $10x^2 - 10x - 22$

C  $10x^6 + 4x^2 - 4$

D  $11x^2 + 4x + 4$

2010

Which polynomial is equivalent to  $\frac{8x^3 + 12x}{2x}$  when  $x \neq 0$ ?

A  $4x^2 + 6$

B  $4x^2 + 6x$

C  $4x^2 + 12x$

D  $4x^4 + 6x^2$

2010

Which expression is equivalent to  $4x(2x^2 - x - 3)$ ?

F  $6x^2 - 5x - 7$

G  $6x^3 - 5x^2 + 7x$

H  $8x^2 - 4x + 12$

J  $8x^3 - 4x^2 - 12x$

2010

Which expression is equivalent to  $3x^2(4x^2 + 2x + 1)$ ?

F  $7x^2 + 5x + 4$

G  $7x^4 + 5x^3 + 4x^2$

H  $12x^2 + 6x + 3$

J  $12x^4 + 6x^3 + 3x^2$

2009

Based on the models for  $x^2$ ,  $x$ , and  $1$ , which product is represented by the diagram?

A  $(x+1)(x+3)$   
 B  $(2x+3)(x+1)$   
 C  $(2x^2+3)(x+1)$   
 D  $(x^2+x)(2x^2+3x)$

2009

Which polynomial is equivalent to the following expression?

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

A  $x^2 + 3x + 4$   
 B  $x^2 - 7x + 6$   
 C  $x^2 - 3x - 6$   
 D  $x^2 - 7x + 4$

2009

If  $x \neq 0$ , what is the quotient when the following division is performed?

$2x \overline{) 6x^3 + 4x^2 + 2x}$

F  $3x^2 + 2x$   
 G  $3x^2 + 2x + 1$   
 H  $6x^3 + 4x^2$   
 J  $6x^2 + 4x + 2$

2008

Which is equivalent to the following expression?

$3a(2a + b)$

F  $6a^2 + b$   
 G  $6a^2 + 3ab$   
 H  $5a^2 + b$   
 J  $5a^2 + 3ab$

2008

If  $x \neq 0$ , which is equivalent to the following expression?

$\frac{2x^4 - 6x^3 + 4x^2 + 10x}{2x}$

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

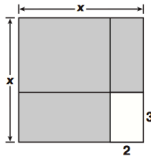
2008

Which is equivalent to the following expression?

$(3x + 1)(4x - 1)$

A  $12x^2 - 1$   
 B  $12x^2 - x - 1$   
 C  $12x^2 + x - 1$   
 D  $12x^2 + 7x - 1$

2008



The figure above is composed of rectangles. Which expression represents the shaded area?

- A  $4x - 10$
- B  $x^2 - 6$
- C  $x^2 - 5x + 6$
- D  $x^2 + 5x - 6$

2007

Which polynomial is equivalent to the following expression?

$$(2x^2 - 5x + 6) + (5x^2 - 3x + 4)$$

- F  $7x^2 - 8x + 10$
- G  $7x^2 - 2x + 10$
- H  $7x^2 - 8x + 2$
- J  $7x^2 - 2x + 2$

2007

Which expression is equivalent to

$$-4a(3a - 5b)?$$

- A  $-12a^2 + 20ab$
- B  $-12a^2 - 20ab$
- C  $-12a^2 + 20a$
- D  $-12a^2 + 9ab$

2008

Which is equivalent to  $(2a + 3b - 2c) + (3a - 4b - c) + (a - 5b + 4c)$ ?

- F  $5a - 6b + c$
- G  $6a - 6b - c$
- H  $6a - 6b + c$
- J  $6a^2 - 6b^2 + c^2$

2008

Given the models below, which figure represents  $(x + 2)(x + 3)$ ?

$\square = x^2$     $\square = x$     $\square = 1$

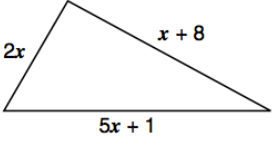
- A
- B
- C
- D

2008

$(3xy)(5x^2 + 2xy + 3y^2)$  is equivalent to —

- F  $15x^3y + 6x^2y^2 + 9xy^3$
- G  $15x^3y + 2xy + 3y^2$
- H  $15x^2y + 6x^2y^2 + 9xy^2$
- J  $15x^2 + 5xy + 3y^2$

2008



What is the perimeter of the triangle shown in the drawing?

A  $7x + 9$   
 B  $8x + 9$   
 C  $8x^3 + 9$   
 D  $10x^3 + 9$

2005

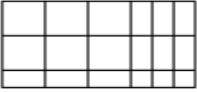
Which expression is equivalent to  $2x^3y(x^2y - 3xy^2)$ ?

F  $2x^5y^2 - 6x^4y^3$   
 G  $3x^5y^2 - 5x^4y^3$   
 H  $2x^6y^2 - 6x^3y^2$   
 J  $2x^6y - 6x^3y^3$

2004

$\square = x^2$     $\square = x$     $\square = 1$

Consider the models above.



What polynomial is represented by this diagram?

A  $6x^2 + 12x$   
 B  $2x^2 + 3x + 1$   
 C  $6x^2 + 9x + 3$   
 D  $9x^2 + 6x + 3$

2004

If  $x \neq 0$ , which expression is equivalent to  $\frac{8x^7 - 2x^3 + 2x}{2x}$ ?


A  $6x^6 - x^2$   
 B  $4x^6 - x^2$   
 C  $6x^7 - x^3 + x$   
 D  $4x^6 - x^2 + 1$

2004

Consider the following models.

$\square = x^2$     $\square = x$     $\square = 1$   
 $\blacksquare = -x^2$     $\blacksquare = -x$     $\blacksquare = -1$

What polynomial is represented by the following?



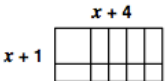
F  $3x^2 - x - 5$   
 G  $3x^2 - 7x - 5$   
 H  $3x^2 + 7x - 5$   
 J  $3x^2 + x - 5$

2003

Consider the following models.

$\square = x^2$     $\square = x$     $\square = 1$

Which expression represents the area of the diagram below?



A  $x^2 + 5x + 4$   
 B  $2x + 5$   
 C  $4x + 10$   
 D  $x^2 + 4$

2003

Which expression is equivalent to  $(9x + 1)(9x - 1)$ ?

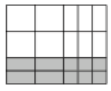
A  $18x$   
 B  $81x^2 - 1$   
 C  $18x^2 - 1$   
 D  $81x^2 - 18x - 1$

2003

Consider the following models

$\square = x^2$     $\square = x$     $\square = 1$   
 $\blacksquare = -x^2$     $\blacksquare = -x$     $\blacksquare = -1$

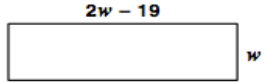
What polynomial is represented by this diagram?



F  $4x^2 - 10x - 6$   
 G  $4x^2 - 2x - 6$   
 H  $4x^2 + 2x - 6$   
 J  $4x^2 + 10x + 6$

2002

The length of a rectangular classroom floor is 19 feet less than twice the width.



Which expression represents the area of the classroom floor?

F  $3w - 19$   
 G  $6w - 38$   
 H  $2w^2 - 19w$   
 J  $2w^2 - 19$

2002

$\frac{12x^5y - 3x^{10}y^3 + 21x^{15}y^4}{3x^5y}$  is equivalent to —

A  $4 - x^5y^2 + 7x^{10}y^3$   
 B  $4xy - x^5y^2 + 7x^{10}y^3$   
 C  $4 - x^5y^3 + 7x^{10}y^4$   
 D  $4xy - x^2y^3 + 7x^3y^4$

2002

Which is equivalent to  $(5x^2 + 4x + 1) + (-7x + 2)$ ?

A  $-2x^2 + 6x + 1$   
 B  $5x^2 - 3x - 1$   
 C  $5x^2 - 3x + 3$   
 D  $5x^2 + 11x + 3$

2001

Which expression is equivalent to  $\frac{8x^4 - 2x^2}{2x^2}$ ?

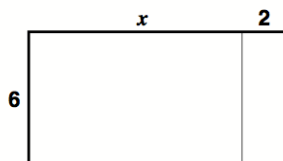
F  $4x^2$   
 G  $6x^2$   
 H  $4x^2 - 1$   
 J  $6x^2 - 1$

2001

Ben's Bakery charges a fee of  $2d + 25$  to deliver  $d$  boxes of baked goods while Dan's Bakery charges  $3d + 20$ . Which expression describes how much more Dan's Bakery charges than Ben's Bakery?

- F  $5d + 45$
- G  $d - 5$
- H  $d + 5$
- J  $-d + 5$

2001



Which expression correctly represents the area of the rectangle above?

- A  $8x$
- B  $6(x + 2)$
- C  $(x + 2)(x + 6)$
- D  $x^2 + 2$

2000

The area of a rectangle is given by  $A = 6x^2y + 4y^2x$  and the width of the rectangle is  $w = 2xy$ . What is the length,  $l$ , of the rectangle if  $l = \frac{A}{w}$ ?

- F  $l = 3x^2y + 2y^2x$
- G  $l = 6x^2y + 4y^2x + 2xy$
- H  $l = 4x + 2y$
- J  $l = 3x + 2y$

2000

Which expression is equivalent to  $\frac{6x^3 - 3x^2 + 5x}{3x}$ ?

- A  $x + 5$
- B  $-2x^2 + 5x$
- C  $2x^2 - x + \frac{5}{3}$
- D  $2x - 3 + \frac{5}{3}$

2000

Which expression is equivalent to  $(3a + b)(2a - 4b)$ ?

- F  $5a - 3b$
- G  $6a^2 - 4b^2$
- H  $5a^2 - 10ab + 5ab^2$
- J  $6a^2 - 10ab - 4b^2$

2000