

Simplify the following expressions

1.  $r(5r + r^2)$

$$5r^2 + r^3$$

3.  $-4x(8 + 3x)$

$$-32x - 12x^2$$

5.  $7ag(g^3 + 2ag)$

$$7ag^4 + 14a^2g^2$$

7.  $-2b^2(3b^2 - 4b + 9)$

$$-6b^4 + 8b^3 - 18b^2$$

9.  $\frac{2}{3}a^2b(6a^3 - 4ab + 9b^2)$

$$4a^5b - \frac{8}{3}a^3b^2 + 6a^2b^3$$

11.  $4x^2(x + 2) + 3x(5x^2 + 2x - 6) - 5(3x^2 - 4x)$

$$4x^3 + 8x^2 + 15x^3 + 6x^2 - 18x - 15x^2 + 20x$$

$$19x^3 - x^2 + 2x$$

13.  $(8p - 2)(6p + 2)$

$$48p^2 + 16p - 12p - 4$$

$$48p^2 + 4p - 4$$

15.  $(5n + 6)(5n - 6)$

$$25n^2 - 30n + 30n - 36$$

$$25n^2 - 36$$

2.  $w(2w^3 - 9w^2)$

$$2w^4 - 9w^3$$

4.  $5y(-2y^2 - 7y)$

$$-10y^3 - 35y^2$$

6.  $-3np(n^2 - 2p)$

$$-3n^3p + 6np^2$$

8.  $6x^3(5 + 3x - 11x^2)$

$$30x^3 + 18x^4 - 66x^5$$

10.  $3w(6w - 4) + 2(w^2 - 3w + 5)$

$$18w^2 - 12w + 2w^2 - 6w + 10$$

$$20w^2 - 18w + 10$$

11.  $4x^2(x + 2) + 3x(5x^2 + 2x - 6) - 5(3x^2 - 4x)$

$$4x^3 + 8x^2 + 15x^3 + 6x^2 - 18x - 15x^2 + 20x$$

$$19x^3 - x^2 + 2x$$

12.  $(x - 3)(6x - 2)$

$$6x^2 - 2x - 18x + 6$$

$$6x^2 - 20x + 6$$

14.  $(2a - 1)(8a - 5)$

$$16a^2 - 10a - 8a + 5$$

$$16a^2 - 18a + 5$$

16.  $(4p - 1)^2$

$$(4p - 1)(4p - 1)$$

$$16p^2 - 4p - 4p + 1$$

$$16p^2 - 8p + 1$$

17.  $(7x-6)(5x+6)$   
 $35x^2 + 42x - 30x - 36$   
 $35x^2 + 12x - 36$

19.  $(n^2 + 6n - 4)(2n - 4)$   
 $2n(n^2 + 6n - 4) - 4(n^2 + 6n - 4)$   
 $2n^3 + 12n^2 - 8n - 4n^2 - 24n + 16$   
 $2n^3 + 8n^2 - 32n + 16$

21.  $(m^2 - 7m - 6)(7m^2 - 3m - 7)$

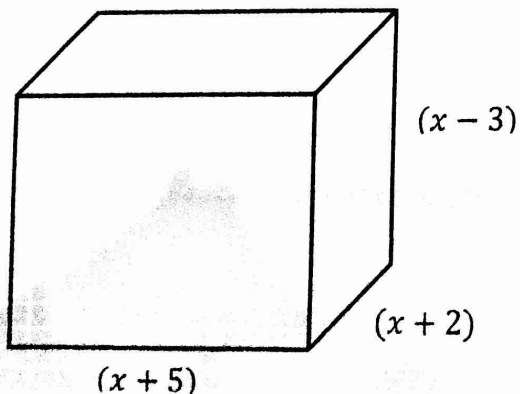
$m^2 - 7m - 6$	
$7m^2$	$7m^4 - 49m^3 - 42m^2$
$-3m$	$-3m^3 \quad 21m^2 \quad 18m$
$-7$	$-7m^2 \quad 49m \quad 42$

$7m^4 - 52m^3 - 28m^2 + 67m + 42$

23. Write and simplify an expression to represent the area of the rectangle.

$A = l \cdot w$   
 $A = (4x^2 + 6x - 3)(3x)$

$A = 12x^3 + 18x^2 - 9x \text{ units}^2$



$V = l \cdot w \cdot h$   
 $V = (x+5)(x+2)(x-3)$   
 $V = (x^2 + 2x + 5x + 10)(x-3)$   
 $V = (x^2 + 7x + 10)(x-3)$   
 $V = x^3 - 3x^2 + 7x^2 - 21x + 10x - 30$   
 $V = x^3 + 4x^2 - 11x - 30 \text{ units}^3$

18.  $(4a+2)(6a^2 - a + 2)$   
 $4a(6a^2 - a + 2) + 2(6a^2 - a + 2)$   
 $24a^3 - 4a^2 + 8a + 12a^2 - 2a + 4$   
 $24a^3 + 8a^2 + 6a + 4$

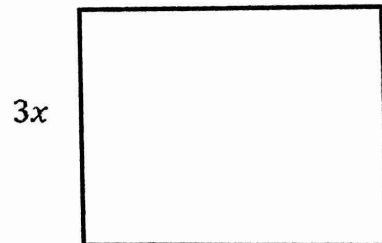
20.  $(6n^2 - 6n - 5)(7n^2 + 6n - 5)$

$6n^2 - 6n - 5$	
$7n^2$	$42n^4 - 42n^3 - 35n^2$
$6n$	$36n^3 - 36n^2 - 30n$
$-5$	$-30n^2 + 30n + 25$

$42n^4 - 6n^3 - 10n^2 + 25$

22.  $(x-4)(x+7) - (x+2)(x+1)$   
 $(x^2 + 7x - 4x - 28) - (x^2 + x + 2x + 2)$   
 $x^2 + 3x - 28 - (x^2 + 3x + 2)$   
 $-30$

$4x^2 + 6x - 3$



24. Write and simplify an expression to represent the volume of the prism.