

1) Expand and simplify each of the following

a) $(x - 2)(x + 3)$

b) $(y + 6)(y + 2)$

c) $(x + 4)(x - 5)$

d) $(x - 8)(x - 6)$

e) $(x - 2y)(x + 2y)$

f) $(2x + 1)(x - 3)$

g) $(2x - 7y)(2x - 5y)$

h) $(3 - 2s)(2 - 3s)$

i) $2(x - 7)(2x + 1)$

j) $(x + 3)(x + 6) - 2(x + 1)$

k) $-(m + 7)(m - 1) + 4(2m + 1)(3m - 4)$

l) $-6(2x + 1)(6x + 1) + 3(4x - 3)^2$

2) Factor each of the following, if possible

a) $x^2 + 3x$

b) $2x^2 + 10x$

c) $3x^2 + 6x$

d) $3x + 6y$

e) $17ac - 34ad$

f) $16x^2y^2 - 24xy$

g) $27x^3y^3 + 18x^2y^2 + 9xy$

h) $2x(x + 7) + 3(x + 7)$

i) $a(b - 7) + 2(b - 7)$

j) $4s(r + u) - 3(r + u)$

k) $y(x + s) + z(x + s)$

l) $ax + ay + 3x + 3y$

m) $4x^2 + 6xy + 12y + 8x$

n) $9x^2 - 6x + 6x - 4$

o) $16x^2 - 12xy - 12xy + 9y^2$

p) $3x^2 + 6x - 2x + 10$

3) Factor each of the following, if possible

a) $x^2 + 5x + 6$

b) $x^2 + 12x + 27$

c) $x^2 - 3x - 18$

d) $d^2 - 12d + 35$

e) $c^2 - 11c + 30$

f) $x^2 - x - 72$

g) $3x^2 - 12x - 36$

h) $-2x^2 + 2x + 4$

i) $6x^2 - 42x + 72$

j) $2x^2 + 7x + 3$

k) $6x^2 + 11x + 4$

l) $6x^2 + 10x - 4$

m) $2d^2 - 11d - 6$

n) $6x^2 - 29x + 35$

o) $4r^2 - 20r + 25$

p) $-6x^2 - 34x + 12$

q) $6x^2 - 5xy - 4y^2$

r) $x^4 - 7x^2 - 18$

4) Expand each of the following

a) $(x + 3)^2$

b) $(x - 6)^2$

c) $(3x + 2y)^2$

d) $(3x + y)(3x - y)$

e) $(v - 2)(v + 2)$

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

5) Factor each of the following

a) $x^2 - 25$

b) $y^2 - 49$

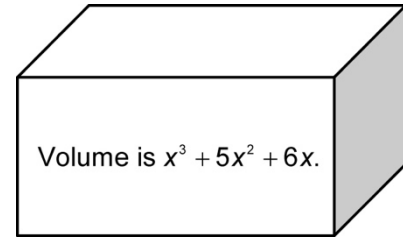
c) $36x^2 - y^2$

d) $x^2 + 14x + 49$

e) $x^2 - 6x + 9$

f) $4x^2 - 12xy + 9y^2$

6) Determine expressions to represent the dimensions of this rectangular prism.



7) A square has side length $4a$. One dimension is increased by 6 and the other is decreased by 6.

a) Write an algebraic expression to represent the area of the resulting rectangle.

b) Expand this expression and simplify.

ANSWERS:

1)a) x^2+x-6 **b)** $y^2+8y+12$ **c)** x^2-x-20 **d)** $x^2-14x+48$ **e)** x^2-4y^2 **f)** $2x^2-5x-3$ **g)** $4x^2-24xy+35y^2$
h) $6s^2-13s+6$ **i)** $4x^2-26x-14$ **j)** $x^2+7x+16$ **k)** $23m^2-26m-9$ **l)** $-24x^2-120x+21$

2)a) $x(x+3)$ **b)** $2x(x+5)$ **c)** $3x(x+2)$ **d)** $3(x+2y)$ **e)** $17a(c-2d)$ **f)** $8xy(2xy-3)$ **g)** $9xy(3x^2y^2+2xy+1)$ **h)** $(x+7)(2x+3)$
i) $(b-7)(a+2)$ **j)** $(r+u)(4s-3)$ **k)** $(x+s)(y+z)$ **l)** $(a+3)(x+y)$ **m)** $2(x+2)(2x+3y)$ **n)** $(3x+2)(3x-2)$ **o)** $(4x-3y)^2$ **p)** not factorable

3)a) $(x+3)(x+2)$ **b)** $(x+3)(x+9)$ **c)** $(x-6)(x+3)$ **d)** $(d-5)(d-7)$ **e)** $(c-5)(c-6)$ **f)** $(x-9)(x+8)$ **g)** $3(x-6)(x+2)$
h) $-2(x-2)(x+1)$ **i)** $6(x-4)(x-3)$ **j)** $(x+3)(2x+1)$ **k)** $(2x+1)(3x+4)$ **l)** $2(x+2)(3x-1)$ **m)** $(d-6)(2d+1)$
n) $(2x-5)(3x-7)$ **o)** $(2r-5)(2r-5)$ **p)** $-2(3x-1)(x+6)$ **q)** $(3x-4y)(2x+y)$ **r)** $(x-3)(x+3)(x^2+2)$

4)a) x^2+6x+9 **b)** $x^2-12x+36$ **c)** $9x^2+12xy+4y^2$ **d)** $9x^2-y^2$ **e)** v^2-4 **f)** x^2-36

5)a) $(x-5)(x+5)$ **b)** $(y-7)(y+7)$ **c)** $(6x-y)(6x+y)$ **d)** $(x+7)^2$ **e)** $(x-3)^2$ **f)** $(2x-3y)^2$

6) $x(x+3)(x+2)$

7)a) $(4a+6)(4a-6)$ **b)** $16a^2-36$