Timester Challenge

Expanding Cubic Expressions

Expand and simplify

$$(x^2 + 4x + 4)(x + 3)$$

Bronze

Expand and simplify

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

Silver

Paul says that

$(x + 1)(x + 2)(x + 3) = x^3 - 6x^2 + 11x - 6$

Is he correct?

Gold

Expand and simplify

a) $(x + 4)(x + 7)(x + 2)$

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

Bronze

Expand and simplify

$$(x - 4)^3$$

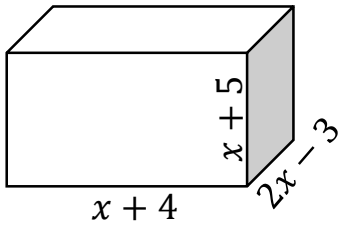
Silver

Expand and simplify

$$(2x + 4)^3$$

Silver

Write an expression in it's simplest form for the volume of this cuboid.



Gold

Timester Challenge

Expanding Cubic Expressions

Answers

Expand and simplify

$(x^2 + 4x + 4)(x + 3)$

$= x^3 + 4x^2 + 4x + 3x^2 + 12x + 12$

$= x^3 + 7x^2 + 16x + 12$

Bronze

Expand and simplify

a) $(x + 4)(x + 7)(x + 2)$

$= (x^2 + 4x + 7x + 28)(x + 2)$

$= (x^2 + 11x + 28)(x + 2)$

$= x^3 + 11x^2 + 28x + 2x^2 + 22x + 56$

$= x^3 + 13x^2 + 50x + 56$

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

$= (x^2 - 3x + x - 3)(x - 4)$

$= (x^2 - 2x - 3)(x - 4)$

$= x^3 - 2x^2 - 3x - 4x^2 + 8x + 12$

$= x^3 - 6x^2 + 5x + 12$

Bronze

Expand and simplify

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

$= (2x^2 + 5x + 6x + 30)(3x - 2)$

$= (6x^2 + 11x + 30)(3x - 2)$

$= 6x^3 + 33x^2 + 90x - 12x^2 - 22x - 60$

$= 6x^3 + 21x^2 + 68x - 60$

Silver

Expand and simplify

$(x - 4)^3 = (x - 4)(x - 4)(x - 4)$

$= (x^2 - 8x + 16)(x - 4)$

$= x^3 - 8x^2 + 16x - 4x^2 + 32x - 64$

$= x^3 - 12x^2 + 48x - 64$

Silver

Expand and simplify

$(2x + 4)^3 = (2x + 4)(2x + 4)(2x + 4)$

$= (4x^2 + 16x + 16)(2x + 4)$

$= 8x^3 + 32x^2 + 32x + 16x^2 + 64x + 64$

$= 8x^3 + 48x^2 + 96x + 64$

Silver

Paul says that

$(x + 1)(x + 2)(x + 3) = x^3 + 6x^2 + 11x + 6$

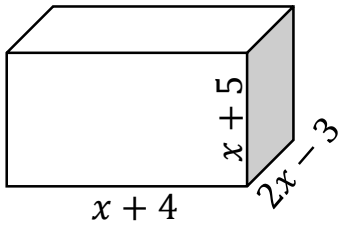
Is he correct? Yes $(x^2 + 3x + 2)(x + 3)$

$= x^3 + 3x^2 + 2x + 3x^2 + 9x + 6$

$= x^3 + 6x^2 + 11x + 6$

Gold

Write an expression in it's simplest form for the volume of this cuboid.



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

$= (x^2 + 9x + 20)(2x - 3)$

$= 2x^3 + 18x^2 + 40x - 3x^2 - 27x - 60$

$= 2x^3 + 15x^2 + 13x - 60$

Gold