



Name: _____



Expand and simplify the following:

a) $(x + 2)(x + 4)(x + 5)$

$$x^3 + 11x^2 + 38x + 40$$

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

$$x^3 - x^2 - 22x + 40$$

b) $(x + 4)(x + 5)(x + 2)$

$$x^3 + 11x^2 + 38x + 40$$

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

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

c) $(x + 6)(x + 4)(x + 3)$

$$x^3 + 13x^2 + 54x + 72$$

g) $(3x + 5)(x + 1)(x + 2)$

$$3x^3 + 14x^2 + 21x + 10$$

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

$$x^3 + 4x^2 - 3x - 18$$

h) $(x - 6)^2(x + 8)$

$$x^3 - 4x^2 - 60x + 288$$

i) Find the value of a if the expansion of $(x + 3)(x - 2)(x + 4)$ is $x^3 + ax^2 - 2x - 24$

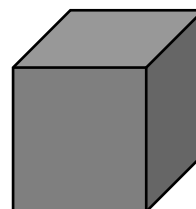
$$a = 5$$

j) Find the value of a if the expansion of $(x + 5)(x - 1)(x + 6)$ is $x^3 + 10x^2 + ax - 24$

$$a = 19$$

Exam question:Show that the volume of the cube shown is $x^3 + 9x^2 + 27x + 27$

$$\begin{aligned}
 &(x + 3)(x + 3)(x + 3) \\
 &= (x^2 + 3x + 3x + 9)(x + 3) \\
 &= (x^2 + 6x + 9)(x + 3) \\
 &= x^3 + 3x^2 + 6x^2 + 18x + 9x + 27 \\
 &= x^3 + 9x^2 + 27x + 27
 \end{aligned}$$

 $x + 3$ 