

Introduction to Brackets

Part 1: Expand the following brackets

| | | |
|-------------|-------------|-------------|
| $3(x + 2)$ | $4(x + 7)$ | $5(x + 11)$ |
| $12(x + 3)$ | $11(3 + x)$ | $5(a + b)$ |

Part 2: Expand the following brackets

| | | |
|------------|-------------|-------------|
| $3(x - 4)$ | $5(x - 2)$ | $7(x - 11)$ |
| $4(x - 8)$ | $12(x - 3)$ | $7(x - y)$ |

Part 3: Expand the following brackets

| | | |
|--------------|--------------|--------------|
| $4(2x + 3)$ | $5(3x + 7)$ | $2(5x + 1)$ |
| $11(3x + 2)$ | $7(3x - 5)$ | $11(2x - 9)$ |
| $3(4 - 5x)$ | $7(8 - 2x)$ | $5(3x - 4y)$ |
| $-2(x + 7)$ | $-5(2x - 7)$ | $-4(5 - 9x)$ |

Extension: Expand and simplify the following brackets

| | | |
|-------------------------|-----------------------|-----------------------|
| $5 + 3(2x + 1)$ | $7(3x + 2) + 7x$ | $4(3x + 2) - 5$ |
| $3(x + 3) + 3(x + 1)$ | $5(2x + 3) - 11x$ | $5 - 3(2x - 7)$ |
| $4(2x - 3) + 3(2x - 1)$ | $4(x - 5) - 3(x - 2)$ | $7x + 3(2x - 4) - 11$ |

Expand the following brackets

Part 1:

| | | |
|-------------|------------|------------|
| $x(x + 5)$ | $x(x + 7)$ | $x(x + 9)$ |
| $x(x + 11)$ | $b(b + 3)$ | $d(4 + d)$ |

Part 2:

| | | |
|------------|-------------|-------------|
| $x(x - 4)$ | $b(b - 7)$ | $c(c - 11)$ |
| $x(x + 9)$ | $b(11 - b)$ | $x(x - y)$ |

Part 3:

| | | |
|-------------|-------------|-------------|
| $3x(x + 2)$ | $5x(x + 9)$ | $7c(c + 2)$ |
| $4c(c - 8)$ | $5x(x - 2)$ | $7x(4 - x)$ |

Part 4:

| | | |
|--------------|--------------|--------------|
| $3x(2x + 9)$ | $7x(2x + 3)$ | $9x(2x + 7)$ |
| $5x(4 + 2x)$ | $7x(3 - 2x)$ | $3x(5x - 2)$ |

Extension: Expand and simplify the following

| | |
|---------------------------|---------------------------|
| $4x + 4x(2x + 1)$ | $3x + 2x(3x + 1)$ |
| $3x(2x + 5) + 7x^2$ | $4 + 5x(3x - 2)$ |
| $7x(3x + 2) + 3x(9x + 7)$ | $3x(2x + 9) + 7x(3x - 2)$ |
| $4x(3x - 9) + 2x(7x - 3)$ | $5x(3x + 2) - 3x(10 - 9)$ |

Solve the following equations

Fundamental Equations

Part 1:

Find the solutions to the following equations

| | | | |
|---------------|--------------|--------------|---------------|
| $x + 5 = 11$ | $x + 2 = 13$ | $a - 7 = 11$ | $b - 2 = 12$ |
| $x + 22 = 55$ | $10 - x = 5$ | $a + a = 8$ | $x - 10 = -2$ |
| $3x = 33$ | $2x = 20$ | $5x = 40$ | $2x = 7$ |
| $10x = 5$ | $11x = 110$ | $17x = 34$ | $0.5x = 5$ |

Extension 1: Think of as many simple equations you can which have a solution of:

$$x = 4$$

Extension 2: Find the solution to the following equations

| | | | |
|--------------|--------------|---------------|-------------|
| $x + 5 = 2$ | $x - 3 = -1$ | $x + 4 = -7$ | $5 - x = 8$ |
| $b + 7 = -2$ | $b + b = -6$ | $4 - b = -11$ | $8 = x + 9$ |

Extension 3: Think of as many simple equations you can which have a solution of:

$$x = -2$$

Part 2:

Find the solutions to the following equations

| | | | |
|----------------|----------------|----------------|---------------------|
| $3x + 2 = 11$ | $5x + 2 = 22$ | $5 + 7x = 19$ | $3x - 5 = 10$ |
| $11x - 3 = 30$ | $2x + 1 = 201$ | $4 = 2x + 2$ | $2x + 2 = 3$ |
| $4a - 10 = 30$ | $8x + 2 = 58$ | $4x = 4$ | $2 = 5x + 12$ |
| $3a + 1 = 10$ | $5b + 2 = 32$ | $7c - 11 = 10$ | $x + x + x = 2 + x$ |

Extension: For each of the following solutions think of a matching EASY AND DIFFICULT EQUATION

| | | | | |
|---------|---------|---------|------------|----------|
| $x = 3$ | $x = 7$ | $x = 2$ | $x = 0.25$ | $x = -1$ |
|---------|---------|---------|------------|----------|