# Expanding Brackets - Worksheet

**Skill**

**Group A - Expanding a single bracket**

Expand and simplify:

**1)** $3(x + 4)$        **2)** $3(x + 5)$        **3)** $6(x + 5)$

**4)** $-6(x + 5)$        **5)** $-6(x - 5)$        **6)** $6x(x - 5)$

**7)** $6x(5 - 2x)$        **8)** $6y(5 - 2y + 3x)$        **9)** $-6x(2x - 3y - 5)$

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**Group B - Expanding double brackets**

Expand and simplify:

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

**4)** $(x - 3)(x - 5)$        **5)** $(x - 3)^2$        **6)** $(x - 4)^2$

**7)** $(2x + 1)(x + 1)$        **8)** $(2x + 1)(x + 2)$        **9)** $(2x + 1)(x - 2)$

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**Group C - Multiple brackets**

Expand and simplify:

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

**4)** $(x - 1)(x - 2)(x - 3)$        **5)** $(2x + 1)(x - 3)^2$        **6)** $(x - 3)^3$

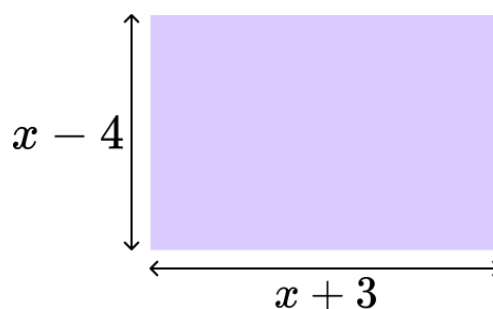**7)** $(2x - 3)^3$        **8)** $(2x + 3)^3$        **9)** $(x - 1)(2x + 3)^3$
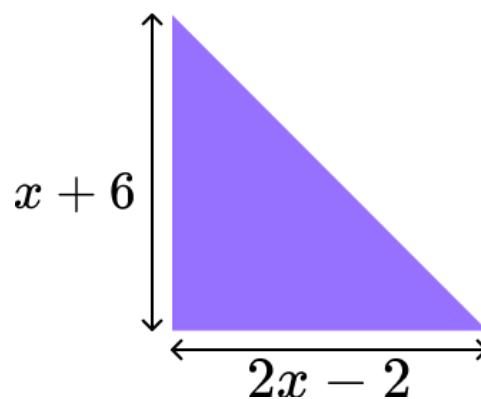
## Expanding Brackets - Worksheet

### Applied

**1)** The length of the rectangle is $x + 3$ and the width is $x - 4$.

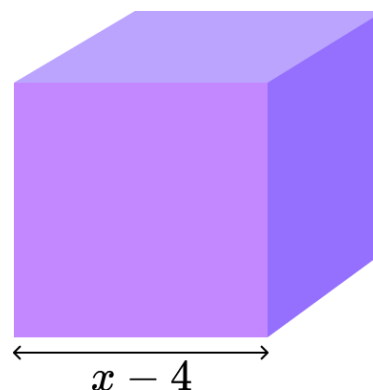Write an expression for the area of the rectangle in expanded form.

$$x - 4$$

$$x + 3$$

**2)** The base of the triangle is equal to $2x - 2$ and the height is $x + 6$.

Write an expression for the area of the triangle in expanded form.

$$x + 6$$

$$2x - 2$$

**3)** The base of the cube is equal to $x - 4$.

Write an expression for the volume of the cube in expanded form.

$$x - 4$$

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## Expanding Brackets - Exam Questions

**1)** **(a)** Expand: $3(x - 2)$ ...................
**(1)**

**(b)** Expand: $4x(2x - 7)$ ...................
**(1)**

**(c)** Expand and simplify: $5(x - 3) - 3(x + 5)$ ...................
**(2)**
**(4 marks)**

**2)** **(a)** Expand: $x(3 - x)$ ...................
**(1)**

**(b)** Expand and simplify: $(x - 2)(x - 7)$ ...................
**(2)**

**(c)** Expand and simplify: $(2x - 1)(x + 2)$ ...................
**(2)**
**(5 marks)**

**3)** **(a)** Expand: $-2(9 - 3x)$ ...................
**(1)**

**(b)** Expand and simplify: $(3x - 1)(x + 3)$ ...................
**(2)**

**(c)** Expand and simplify: $(x - 2)^3$ ...................
**(3)**
**(6 marks)**
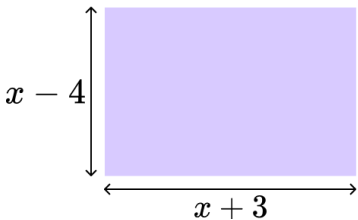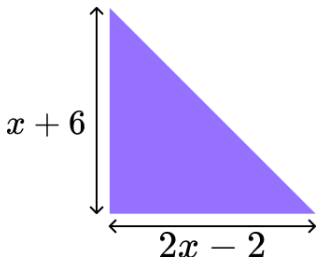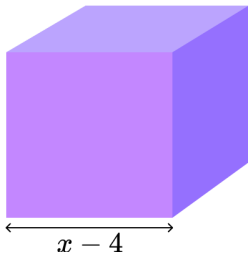
## Expanding Brackets - Answers

|  | Question | Answer |
|---|---|---|
|  | Skill Questions |  |
| Group A | Expand and simplify:<br><br>**1)** $3(x + 4)$<br><br>**2)** $3(x + 5)$<br><br>**3)** $6(x + 5)$<br><br>**4)** $- 6(x + 5)$<br><br>**5)** $- 6(x - 5)$<br><br>**6)** $6x(x - 5)$<br><br>**7)** $6x(5 - 2x)$<br><br>**8)** $6y(5 - 2y + 3x)$<br><br>**9)** $- 6x(2x - 3y - 5)$ | <br><br>**1)** $3x + 12$<br><br>**2)** $3x + 15$<br><br>**3)** $6x + 30$<br><br>**4)** $- 6x - 30$<br><br>**5)** $- 6x + 30$<br><br>**6)** $6x^2 - 30x$<br><br>**7)** $30x - 12x^2$<br><br>**8)** $30y - 12y^2 + 18xy$<br><br>**9)** $- 12x^2 + 18xy + 30x$ |
| Group B | Expand and simplify:<br><br>**1)** $(x + 3)(x + 4)$<br><br>**2)** $(x + 3)(x + 5)$<br><br>**3)** $(x + 3)(x - 5)$<br><br>**4)** $(x - 3)(x - 5)$<br><br>**5)** $(x - 3)^2$<br><br>**6)** $(x - 4)^2$<br><br>**7)** $(2x + 1)(x + 1)$<br><br>**8)** $(2x + 1)(x + 2)$<br><br>**9)** $(2x + 1)(x - 2)$ | <br><br>**1)** $x^2 + 7x + 12$<br><br>**2)** $x^2 + 8x + 15$<br><br>**3)** $x^2 - 2x - 15$<br><br>**4)** $x^2 - 8x + 15$<br><br>**5)** $x^2 - 6x + 9$<br><br>**6)** $x^2 - 8x + 16$<br><br>**7)** $2x^2 + 3x + 1$<br><br>**8)** $2x^2 + 5x + 2$<br><br>**9)** $2x^2 - 3x - 2$ |

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## Expanding Brackets - Answers

| Group C | Expand and simplify: | |
|---|---|---|
| | **1)** $(x + 1)(x + 2)(x + 3)$ | **1)** $x^3 + 6x^2 + 11x + 6$ |
| | **2)** $(x - 1)(x + 2)(x + 3)$ | **2)** $x^3 + 4x^2 + x - 6$ |
| | **3)** $(x - 1)(x - 2)(x + 3)$ | **3)** $x^3 - 7x + 6$ |
| | **4)** $(x - 1)(x - 2)(x - 3)$ | **4)** $x^3 - 6x^2 + 11x - 6$ |
| | **5)** $(2x + 1)(x - 3)^2$ | **5)** $2x^3 - 11x^2 + 12x + 9$ |
| | **6)** $(x - 3)^2$ | **6)** $x^3 - 9x^2 + 27x - 27$ |
| | **7)** $(2x - 3)^3$ | **7)** $8x^3 - 36x^2 + 54x - 27$ |
| | **8)** $(2x + 3)^3$ | **8)** $8x^3 + 36x^2 + 54x + 27$ |
| | **9)** $(x - 1)(2x + 3)^3$ | **9)** $8x^4 + 28x^3 + 18x^2 - 27x - 27$ |

## Expanding Brackets - Answers

| | Question | Answer |
|---|---|---|
| | **Applied Questions** | |
| **1)** | The length of the rectangle is $x + 3$ and the width is $x - 4$. <br><br> $x - 4$ (vertical) <br> $x + 3$ (horizontal) <br><br> Write an expression for the area of the rectangle in expanded form. | $x^2 - x - 12$ |
| **2)** | The base of the triangle is equal to $2x - 2$ and the height is $x + 6$. <br><br> $x + 6$ <br> $2x - 2$ <br><br> Write an expression for the area of the triangle in expanded form. | $x^2 + 5x - 6$ |
| **3)** | The base of the cube is equal to $x - 4$. <br><br> $x - 4$ <br><br> Write an expression for the volume of the cube in expanded form. | $x^3 - 12x^2 + 48x - 64$ |

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## Expanding Brackets - Mark Scheme

|  | Question | Answer |  |
|---|---|---|---|
|  | Exam Questions |  |  |
| 1) (a) | Expand: $3(x - 2)$ | (a) $3x - 6$ | (1) |
| (b) | Expand: $4x(2x - 7)$ | (b) $8x^2 - 28x$ | (1) |
| (c) | Expand and simplify: $5(x - 3) - 3(x + 5)$ | (c) $5x - 15 - 3x - 15$ <br> $= 2x - 30$ | (1) <br> (1) |
| 2) (a) | Expand: $x(3 - x)$ | (a) $3x - x^2$ | (1) |
| (b) | Expand and simplify: $(x - 2)(x - 7)$ | (b) $x^2 - 7x - 2x + 14$ <br> $= x^2 - 9x + 14$ | (1) <br> (1) |
| (c) | Expand and simplify: $(2x - 1)(x + 2)$ | (c) $2x^2 + 4x - x - 2$ <br> $= 2x^2 + 3x - 2$ | (1) <br> (1) |
| 3) (a) | Expand: $- 2(9 - 3x)$ | (a) $- 18 + 6x$ | (1) |
| (b) | Expand and simplify: $(3x - 1)(x + 3)$ | (b) $3x^2 + 9x - x - 3$ <br> $= 3x^2 + 8x - 3$ | (1) <br> (1) |
| (c) | Expand and simplify: $(x - 2)^3$ | (c) $(x - 2)(x^2 - 4x + 4)$ <br> $x^3 - 2x^2 - 4x^2 + 8x + 4x - 8$ <br> $x^3 - 6x^2 + 12x - 8$ | (1) <br> (1) <br> (1) |