Name: SOLUTIONS

GCSE (1 - 9) Expanding Triple Brackets	Solutions:

These questions represent all of the times that this topic has appeared in unlocked Pearson Edexcel GCSE maths papers as of July 2023. More questions can be found at examq.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2018, Paper 3H, Q9
2	Edexcel, GCSE, Autumn 2019, Paper 2H, Q15
3	Edexcel, GCSE, Autumn 2020, Paper 3H, Q12
4	Edexcel, GCSE, Summer 2017, Paper 1H, Q10
5	Edexcel, GCSE, Summer 2019, Paper 3H, Q18

Expanding Triple Brackets (Questions from Edexcel GCSE Past Papers)

1

(a) Expand and simplify $(x - 2)(2x + 3)(x + 1)$

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

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

$2x^3 - x^2 - 6x$

$2x^2 - x - 6$

$2x^3 + x^2 - 7x - 6$

$2x^3 + x^2 - 7x - 6$

(3)

$$\frac{y^4 \times y^n}{y^2} = y^{-3}$$

(b) Find the value of n.

$\frac{y^4 \times y^n}{y^2} = y^2 \times y^n = y^{-3}$

$2 + n = -3$

$n = -5$

$n = -5$

(2)

(c) Solve $5x^2 - 4x - 3 = 0$

Give your solutions correct to 3 significant figures.

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$a = 5$ $b = -4$ $c = -3$

$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(5)(-3)}}{2(5)} =$

$x = 1.27$ or $x = -0.472$

(3)

(Total for Question 9 is 8 marks)

[Edexcel, GCSE, Autumn 2018, Paper 3H, Q9]

2

Expand and simplify $(3x + 2)(2x + 1)(x - 5)$

$(3x+2)(2x+1) = 6x^2 + 7x + 2$

$(x-5)(6x^2+7x+2) = 6x^3+7x^2+2x$
$-30x^2 - 35x - 10$

$6x^3 - 23x^2 - 33x - 10$

$6x^3 - 23x^2 - 33x - 10$

(Total for Question 15 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 2H, Q15]

3

(a) Express $\frac{x}{x+2} + \frac{2x}{x-4}$ as a single fraction in its simplest form.

$$\frac{x(x-4) + 2x(x+2)}{(x+2)(x-4)} = \frac{x^2 - 4x + 2x^2 + 4x}{(x+2)(x-4)}$$

$$\frac{3x^2}{(x+2)(x-4)}$$

$$\frac{3x^2}{(x+2)(x-4)}$$

(3)

(b) Expand and simplify $(x - 3)(2x + 3)(4x + 5)$

$$(2x+3)(4x+5) = 8x^2 + 22x + 15$$

$$(x-3)(8x^2 + 22x + 15) = 8x^3 + 22x^2 + 15x$$
$$-24x^2 - 66x - 45$$
$$8x^3 - 2x^2 - 51x - 45$$

$$8x^3 - 2x^2 - 51x - 45$$

(3)

(Total for Question 12 is 6 marks)

[Edexcel, GCSE, Autumn 2020, Paper 3H, Q12]

4

Show that $(x + 1)(x + 2)(x + 3)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are positive integers.

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

$(x+1)(x^2+5x+6) =$

$x^3 + 5x^2 + 6x$

$x^2 + 5x + 6$

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

(Total for Question 10 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 1H, Q10]

5

(a) Show that $(2x + 1)(x + 3)(3x + 7)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are integers.

$(2x+1)(3x+7) = 6x^2 + 17x + 7$

$(x+3)(6x^2+17x+7) =$

$6x^3 + 17x^2 + 7x$

$+18x^2 + 51x + 21$

$6x^3 + 35x^2 + 58x + 21$

(3)

(b) Solve $(1-x)^2 < \frac{9}{25}$

$1 - 2x + x^2 < \frac{9}{25}$

$x^2 - 2x + \frac{16}{25} < 0$

$25x^2 - 50x + 16 < 0$

$(5x - 2)(5x - 8) < 0$

$\frac{2}{5} < x < \frac{8}{5}$

$0.4 < x < 1.6$

(3)

(Total for Question 18 is 6 marks)

[Edexcel, GCSE, Summer 2019, Paper 3H, Q18]