Name:

Exam Style Questions

Expanding Three Brackets

Corbettmaths

Equipment needed: Calculator, pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Video 15

Answers and Video Solutions

1. Expand and simplify $(x+2)(x+3)(x+6)$

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

$x^3+5x^2+6x+6x^2+30x+36$

$x^3+11x^2+36x+36$

$x^3+11x^2+36x+36$

(4)

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2. Expand and simplify $(y+1)(y-2)(y+3)$

$(y^2-y-2)(y+3)$

$y^3-y^2-2y+3y^2-3y-6$

y^3+2y^2-5y-6

y^3+2y^2-5y-6

(4)

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

$(x^2 - 7x + 10)(x - 1)$

$x^3 - 7x^2 + 10x + 7x - x^2 - 10$

$x^3 - 8x^2 + 17x - 10$

$x^3 - 8x^2 + 17x - 10$

(4)

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4. Expand and simplify $(x-4)(x-5)(x+12)$

$(x^2 - 9x + 20)(x + 12)$

$x^3 - 9x^2 + 20x + 12x^2 - 108x + 240$

$x^3 + 3x^2 - 88x + 240$

$x^3 + 3x^2 - 88x + 240$

(4)

5. Given that $(x+2)(x+a)(x+4) \equiv x^3 + 11x^2 + 38x + 40$

Circle the value of a

3 (5) 8 10

$2 \times a \times 4 = 40$

$8 \times a = 40 \quad a = 5$

(1)

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6. Given that $(x+5)(x-4)(x+c) \equiv x^3 - 8x^2 - 29x + 180$

Circle the value of c

9 (−9) 20 −20

$5 \times (-4) \times c = 180$

$-20 \times c = 180$

$c = -9$

(1)

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7. Given that $(x+p)(x+5)^2 \equiv x^3 + 17x^2 + 95x + 175$

Circle the value of p

3 (7) 9 35

$p \times 5^2 = 175$

$p \times 25 = 175$

$p = 7$

(1)

8. Given that $(x+8)(x+3)(x+a) \equiv x^3 + bx^2 + cx - 120$

Find the values of the integers *a*, *b* and *c*

$8 \times 3 \times a = -120$

$24a = -120$

$a = -5$

$(x+8)(x+3)(x-5)$

$(x^2 + 11x + 24)(x-5)$

$x^3 + 11x^2 + 24x - 5x^2 - 55x - 120$

$x^3 + 6x^2 - 31x - 120$

a = -5

b = 6

c = -31

(3)

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9. Expand and simplify $(2y+3)(y+1)(3y-1)$

$(2y^2 + 5y + 3)(3y - 1)$

$6y^3 + 15y^2 + 9y - 2y^2 - 5y - 3$

$6y^3 + 13y^2 + 4y - 3$

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

$(10x^2 - 3x - 1)(2x - 3)$

$20x^3 - 6x^2 - 2x - 30x^2 + 9x + 3$

$20x^3 - 36x^2 + 7x + 3$

$20x^3 - 36x^2 + 7x + 3$

(4)

11. Expand and simplify $(y + 3)(y + 1)^2$

$(y+3)(y+1)(y+1)$

$(y+3)(y^2 + 2y + 1)$

$y^3 + 2y^2 + y + 3y^2 + 6y + 3$

$y^3 + 5y^2 + 7y + 3$

$y^3 + 5y^2 + 7y + 3$

(4)

12. Expand and simplify $(x+2)^3$

$(x+2)(x+2)(x+2)$

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

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

$x^3+6x^2+12x+8$

$x^3+6x^2+12x+8$

(4)

13. Expand and simplify $(2w-3)^3$

$(2w-3)(2w-3)(2w-3)$

$(4w^2-6w-6w+9)(2w-3)$

$(4w^2-12w+9)(2w-3)$

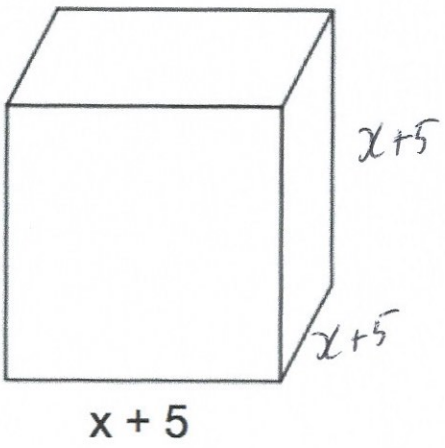
$8w^3-24w^2+18w-12w^2+36w-27$

$8w^3-36w^2+54w-27$

$8w^3-36w^2+54w-27$

(4)

14. Shown below is a cube with side length x + 5 cm.



Show that the volume of the cube is $x^3 + 15x^2 + 75x + 125$

$(x+5)(x+5)(x+5)$

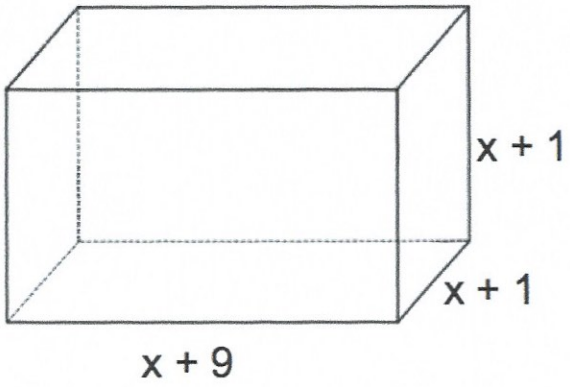
$(x^2 + 10x + 25)(x+5)$

$x^3 + 10x^2 + 25x + 5x^2 + 50x + 125$

$x^3 + 15x^2 + 75x + 125$

(3)

15. Shown below is a cuboid.



Form an expression for the volume of the cuboid.
Expand and simplify the expression.

$(x+9)(x+1)(x+1)$

$(x^2+10x+9)(x+1)$

$x^3+10x^2+9x+10x+x^2+9$

$x^3+11x^2+19x+9$

$x^3+11x^2+19x+9$

.....

(4)

16. Given that $(ax+1)(x-3)(x+b) \equiv 2x^3 - 3x^2 - 8x - 3$

Find the values of *a* and *b*

$a = 2$

$1 \times (-3) \times b = -3$

$-3 \times b = -3$

$b = 1$

a = 2

b = 1

(3)

17. Expand and simplify $(x+4)(x+3y)^2$

$(x+4)(x+3y)(x+3y)$

$(x+4)(x^2+3xy+3xy+9y^2)$

$(x+4)(x^2+6xy+9y^2)$

$x^3+6x^2y+9xy^2+4x^2+24xy+36y^2$

$x^3+6x^2y+9xy^2+4x^2+24xy+36y^2$

(4)