Aberdare Community School

Mathematics Department

WJEC GCSE

Higher – Non Calculator

Algebra

Algebra skills - end of paper

Name: .....

Set: .....

Date: .....

Teacher: .....

17. Expand the following expression, simplifying your answer as far as possible.

$$(x + 8)\,(x - 2)$$

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[2]

21. *(a)* Simplify the expression $2x^4y^6 \times 6x^2y^3$.

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[2]

(b) Simplify $81^{-\frac{3}{4}}$.

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[2]

26. Simplify the following expression.

$$\frac{21a^{\frac{7}{2}}(a+1)^{-\frac{3}{2}}}{7a^{-\frac{3}{2}}(a+1)^{\frac{5}{2}}}$$

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[3]

19.

(c) Given that $x^2 + 6x + a = (x + b)^2$ find a and b.

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[3]

15.

(d) Simplify $(3ab^7)^3$.

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[2]

16. Expand the following expression, simplifying your answer as far as possible.

$$(x + 8)\,(x - 2)$$

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[2]

Examiner only

12. *(a)* Expand and simplify $(3x - 2)(5x + 7)$.

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[2]

Examiner only

(f) Prove that $\frac{3x}{11} + \frac{x-3}{3} + \frac{4x+5}{2} \equiv \frac{172x+99}{66}$.

[4]

Examiner only

18.

(b) Simplify $\frac{x^2 - x - 6}{x^2 + 9x + 14}$.

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[3]

Examiner only

(d) Simplify

(i) $81^{-\frac{1}{2}}$,

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(ii) $125^{\frac{2}{3}}$.

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[4]

Examiner only

12. *(a)* Which is the greater $(n + 1)^2$ or $n^2 + 2n + 2$?
You **must** show **all** your working.

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[3]

Examiner only

15. *(a)* Simplify **each** of the following.

(i) $(3x^5y^2)^3$

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(ii) $\dfrac{24\times y^{\frac{5}{2}}\times y^{-\frac{1}{2}}}{8\times y^4}$

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[4]

Examiner only

16.

(c) Simplify $\dfrac{2x^2 + 5x - 7}{10x + 35}$.

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[4]

16.

(b) Prove that $\frac{2x+3}{4} - \frac{3x-2}{3} + \frac{1}{6} \equiv \frac{19-6x}{12}$.

[5]

Examiner only

13. Show that $(2x + 7)(x - 4) + x(x + 1) + 4 \equiv 3(x^2 - 8)$.

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[3]

Examiner only

14. *(a)* Simplify $(3x + 7y)(2x - 5y) + xy$. [3]

Examiner only

19. The point (2, 26) lies on the curve $y = kx^2 + 3x$, where k is a constant.
Find the coordinates of the points where the curve $y = kx^2 + 3x$ intersects the x-axis. [6]

(b) Show that the following identity is true. [5]

Examiner only

$$\frac{3x+2}{5} - \frac{5x-2}{4} + \frac{7}{10} \equiv \frac{32-13x}{20}.$$

END OF PAPER