Student's Name: .....

Teacher's Name: .....

Barker College

(DXC) Mr Chua
(LMD) Mrs de Gorter *
(PDJ) Ms Jouliany
(LZM) Mr Mildren
(DZP) Mr Peattie
(RJW) Mr Williams

Thursday 7th March 2019
Period 3AB or 5
Time Allowed: 50 minutes

YEAR 9
MATHEMATICS
5.3
ASSESSMENT 1

165 copies

Algebra
Products and Factors

INSTRUCTIONS TO STUDENTS

* **Write ALL answers in the space provided.**
* **ALL NECESSARY working for each question must be shown to gain full marks.**
* **Marks may not be awarded for careless or badly arranged working.**
* **DIAGRAMS ARE NOT TO SCALE**
* **Write in blue or black pen**
* **Board-approved, non-programmable calculators may be used.**

TOTAL: [63 marks]

* * * *

1. Simplify fully:

(a) $-3m-10m+m$ 1

(b) $3xy+4yx+2x^2$ 2

(c) $4k\times-3k\times-2p$ 2

2. Expand and simplify if possible:

(a) $3(4-2x)$ 1

(b) $(x-5)(x+1)$ 2

(c) $(5-c)(5+c)$ 2

(d) $(h-2)^2$ 2

3. Factorise $-3x + 6$ by taking out the highest negative factor. 1

4. Factorise:

(a) $4k^2 - 8k$ 1

(b) $6(m + 2) + x\,(m + 2)$ 1

(c) $bcy - 3ax + axc - 3by$ 2

5. Expand and simplify:

(a) $12 - 4(x + 4)$ 2

(b) $2h - 4 - 3(h - 2)(h - 4)$ 3

6. Fully factorise:

(a) $x^2 + 12x + 20$ 2

(b) $36 - f^2$ 2

(c) $12 - 27x^2$ 2

(d) $12x^2 - 5x - 2$ 3

(e) $2x^2 + 6x + 4$ 3

7. Simplify:

(a) $\frac{7}{x} + \frac{4}{x}$ 1

(b) $\frac{3h}{6} - \frac{4+h}{3}$ 2

(c) $\frac{7}{y} \times \frac{5y}{14x}$ 2

(d) $\frac{3}{x^2} \div \frac{4}{x}$ 2

8. In this list of expressions, two expressions can be factorised and two cannot be factorised. For each one, either factorise or write 'cannot be factorised'.

(a) $x^2 + 6x + 10$ 1

(b) $x^2 - 7x - 8$ 1

(c) $x^2 - 81$ 1

(d) $x^2 + 36$ 1

9. Factorise and simplify:

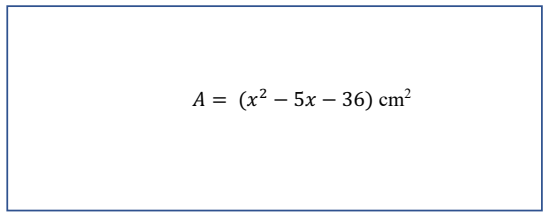
(a) $\frac{4x-12}{x^2-9} \times \frac{7x+21}{4}$ 3

(b) $\frac{8y}{x^2-x} + \frac{4m}{x}$ 3

10. Bob says that the area of this square is $(x^2 - 9)$ cm^2. 2
Is he correct? Justify your answer.

$(x - 3)$ cm

11. (i) Given the area of this rectangle is $(x^2 - 5x - 36)$ cm², and the fact that the length is $(x + 4)$ cm, find the width of the rectangle. 2



(ii) Hence, find the perimeter of this rectangle in simplest form. 2

12. **Factorise** $9(x - 3)^2 - (6 + x)^2$ 3

13. Factorise and simplify $\frac{x-2}{x^2-x-30} - \frac{3-x}{x^2+8x+15}$ 3

END OF PAPER

Year 9 5.3 Assessment Task 1

1a) $-12m$

b) $7xy + 2x^2$

c) $24k^2p$

2a) $12 - 6x$

b) $x^2 - 4x - 5$

c) $25 - c^2$

d) $h^2 - 4h + 4$

3) $-3(x - 2)$

4a) $4k(k - 2)$

b) $(m + 2)(6 + x)$

c) $ax(c - 3) + by(c - 3)$

$= (ax + by)(c - 3)$

5a) $-4 - 4x$

b) $2h - 4 - 3(h^2 - 6h + 8)$

$= -3h^2 + 20h - 28$

6a) $(x + 10)(x + 2)$

b) $(6 - f)(6 + f)$

c) $3(4 - 9x^2)$

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

d) $12x^2 - 8x + 3x - 2$

$= 4x(3x - 2) + 1(3x - 2)$

$= (4x + 1)(3x - 2)$

e) $2(x^2 + 3x + 2)$

$= 2(x + 2)(x + 1)$

7a) $\frac{11}{x}$

b) $\frac{3h - 2(4 + h)}{6}$

$= \frac{h - 8}{6}$

c) $\frac{5}{2x}$

d) $\frac{3}{x^2} \times \frac{x}{4}$

$= \frac{3}{4x}$

8a) cannot be factorised

b) $(x - 8)(x + 1)$

c) $(x + 9)(x - 9)$

d) cannot be factorised

9a) $\frac{4(x - 3)}{(x + 3)(x - 3)} \times \frac{7(x + 3)}{4}$

$= 7$

b) $\frac{8y}{x(x - 1)} + \frac{4m}{x}$

$= \frac{8y + 4m(x - 1)}{x(x - 1)}$

$= \frac{8y + 4mx - 4m}{x(x - 1)}$

10) No. True area $= x^2 - 6x + 9$

11i) $(x - 9)$

ii) $4x - 10$

12) $[3(x - 3) + (6 + x)][3(x - 3) - (6 + x)]$

$= (3x - 9 + 6 + x)(3x - 9 - 6 - x)$

$= (4x - 3)(2x - 15)$

13) $\frac{x - 2}{(x - 6)(x + 5)} - \frac{3 - x}{(x + 5)(x + 3)}$

$= \frac{(x - 2)(x + 3) - (3 - x)(x - 6)}{(x - 6)(x + 5)(x + 3)}$

$= \frac{2x^2 - 8x + 12}{(x + 6)(x + 5)(x + 3)}$