1   D

2   C

3   D

4   A

5   A

6   B

7   The simplified expression is $x + 2$

8

a) $2a + 8b$

b) $10x^2 + x - 3$

9

a) $5x^3y^4 - 3x^6$

b) $m^{18}n^{23}$

10

a) $4a^2(3a^2 - 4a + 2)$

b) $(x - 7)(6x + 5)$

11   Dimensions of the big rectangle
$Length = x + 2 + 4 = x + 6$
$Width = x + 1 + x = 2x + 1$

Area of the big rectangle
$A = l \times w$
$A = (x + 6)(2x + 1)$
$A = 2x^2 + x + 12x + 6$
$A = 2x^2 + 13x + 6$

Area of the plot of land
$A = l \times w$
$A = (x + 2)(x + 1)$
$A = x^2 + x + 2x + 2$
$A = x^2 + 3x + 2$

Area of shaded part
$A = (2x^2 + 13x + 6) - (x^2 + 3x + 2)$
$A = 2x^2 + 13x + 6 - x^2 - 3x - 2$
$A = x^2 + 10x + 4$

Answer: The simplified algebraic expression representing the area of the shaded part is $x^2 + 10x + 4$ m^2.

12   Finding the width of the room
$2width = Perimeter - 2(length)$
$2w = (20x + 14) - 2(7x + 9)$
$2w = 20x + 14 - 14x - 18$
$2w = 6x - 4$

$w = (6x - 4) \div 2$
$w = 3x - 2$

Area of the room
$A = l \times w$
$A = (7x + 9)(3x - 2)$
$A = 21x^2 - 14x + 27x - 18$
$A = 21x^2 + 13x - 18$

Answer: The simplified algebraic expression representing the area of the room is $21x^2 + 13x - 18$.

563306 – Mathematics – Chapter 2 – Algebraic Expressions
Practice Test - Version B

PART 1: MULTIPLE CHOICE (EACH QUESTION IS WORTH 4 MARKS)

1 Given the 3 polynomials: 4|0

  A: $3x - 5$
  B: $-2x + 3$
  C: $x + 1$

What is the value of A − 2B + 3C?

 A) $2x + 4$ C) $10x - 1$

 B) $2x - 1$ D) $10x - 8$

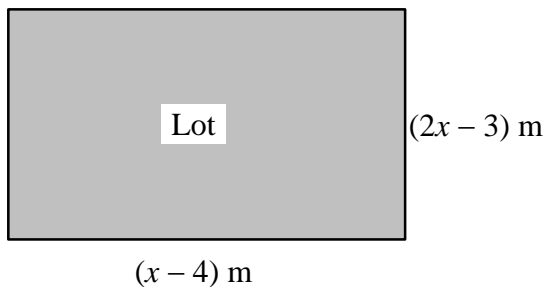**2** What is the area of a square if each one of its sides measures (6a − 3b) cm? 4|0

 A) $(36a^2 - 9b^2)$ cm^2 C) $(36a^2 - 36ab + 9b^2)$ cm^2

 B) $(36a^2 - 18ab + 9b^2)$ cm^2 D) $(36a^2 + 9b^2)$ cm^2

3 To calculate the area of this piece of land, Emily did the following operation: 4|0

    $(x - 4)\,(2x - 3)$

Lot $(2x - 3)$ m

$(x - 4)$ m

What is the result of this calculation?

 A) $(2x^2 + 11x - 12)$ m^2 C) $(2x^2 - 11x - 12)$ m^2

 B) $(2x^2 + 12)$ m^2 D) $(2x^2 - 11x + 12)$ m^2

4 To calculate the volume of a prism Matt did the following operation: 4|0
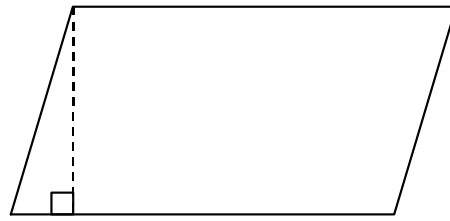
  $5\,(2x + 3)\,(3x - 5)$

Which algebraic expression below corresponds to the volume of the prism?

 A) $30x^2 - 5x - 75$ C) $25x - 75$

 B) $30x^2 + 95x - 75$ D) $150x^2 - 25x - 375$

5 To determine the length of the parallelogram on the right, Lucy will divide its area by its height:

$$(12xy^2 - 4xy + 20x^2y) \div 4xy$$

4	0

What result should she get?

A) $3y - 1 + 5x$

B) $3y^2 - 1 + 5x^2$

C) $3y + 5x$

D) $-xy + 5x$

6 The rule of a polynomial is $P(x) = 4x^2 - 10x + 12$.

4	0

What is the value of this polynomial if x = -5?

A) P(-5) = 462

B) P(-5) = 162

C) P(-5) = 62

D) P(-5) = -38

PART 2: SHORT ANSWERS (EACH QUESTION IS WORTH 4 MARKS)

7 Simplify the following algebraic expression:

4	3	2	1	0

$$\frac{81x^4 - 45x^3 + 27x^2}{9x^2} - (3x - 1)^2$$

The simplified expression is _____.

8 Simplify or expand each expression below.

4	3	2	1	0

a) $(4a + 5b) - (2a - 3b)$

b) $(5x + 3)(2x - 1)$

a) _____

b) _____

9 Simplify each expression below.

4	3	2	1	0

a) $\dfrac{30x^5y^8 - 18x^8y^4}{6x^2y^4}$

b) $\dfrac{(m^3n^5)^5}{m^{-3}n^2}$

a) _____

b) _____

10 Factor each of the following polynomials.

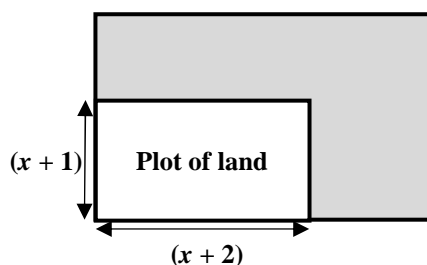a) $12a^4 - 16a^3 + 8a^2$

b) $6x(x-7) + 5(x-7)$

a) _____

b) _____

PART 3: EXTENDED ANSWERS (EACH QUESTION IS WORTH 10 MARKS)

11 A rectangular plot of land has a length of $(x + 2)$ metres and a width of $(x+1)$ metres.

Its length is increased by 4 meters and its width by x metres, creating the shaded part illustrated in the diagram below.

$(x + 1)$ **Plot of land**

$(x + 2)$

What simplified algebraic expression can be used to represent the area of the shaded part?
Show all your work.

Answer: The simplified algebraic expression for the area of the shaded part is _____ m^2

12 | The perimeter of a rectangular room shown in the diagram below is given by the polynomial $(20x + 14)$. The length of that room is $(7x + 9)$.

(7x + 9)

What simplified algebraic expression represents the area of that room?

Show all your work.

Answer: The simplified algebraic expression for the area of the room is _____.