1) Simplify the following expressions

a) $(3x + 4) + (5x + 2)$ **b)** $(2 - 3yz) + (7 + 6yz)$ **c)** $(5x + 7) - (2x - 1)$

2) Multiply

a) $(4x)(7x^2)$ **b)** $(-6m^2n^3)(-7mn^2)$ **c)** $(2xy)(-3x^2y^3)(-3x^2)$

3) Expand and simplify

a) $2(x - 4) + 5(x + 3)$ **b)** $4(2x - 7) - 5(4x + 9)$ **c)** $4x + 3(2x - 5) + 6(1 - 5x)$

4) Expand and simplify

a) $(x + 1)(x + 5)$ **b)** $(x - 4)(x - 3)$ **c)** $(c + 2)(c - 8)$

d) $(a - 3)(2a - 5)$

e) $(x - 5)(4x + 3)$

f) $(3a - 5)(3a + 5)$

g) $2(x + 3)(x + 5)$

h) $-2(4y + 1)(y - 3)$

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

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

k) $(x + 6)(x + 4) + (x + 2)(x + 3)$

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

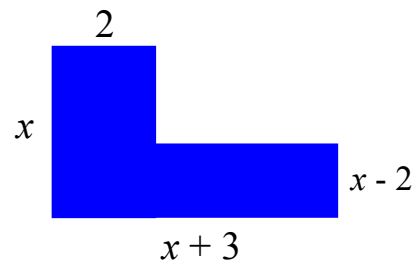**m)** $12 - 2(3y - 2)(3y + 2) - (2y + 5)(y - 4)$

5)a) $(2x + 3)^2$
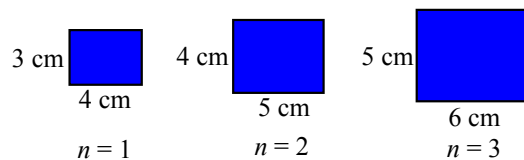
b) $(2x + 3)^3$

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

d) $(x^2 - 4x + 1)(x^2 + 3x + 5)$

6) Write and simplify an expression for the area of the following figure.

2

x

$x - 2$

$x + 3$

7) The diagrams show the first three rectangles in a pattern.

a) State the area of the 4th rectangle.

3 cm

4 cm

$n = 1$

4 cm

5 cm

$n = 2$

5 cm

6 cm

$n = 3$

b) Write a product of two binomials to represent the area of the nth rectangle in terms of n.

c) State the area of the 28th rectangle

Answers

1)a) $8x + 6$ **b)** $3yz + 9$ **c)** $3x + 8$
2)a) $28x^3$ **b)** $42m^3n^5$ **c)** $18x^5y^4$
3)a) $7x + 7$ **b)** $-12x - 73$ **c)** $-20x - 9$
4)a) $x^2 + 6x + 5$ **b)** $x^2 - 7x + 12$ **c)** $c^2 - 6c - 16$
d) $2a^2 - 11a + 15$ **e)** $4x^2 - 17x - 15$ **f)** $9a^2 - 25$
g) $2x^2 + 16x + 30$ **h)** $-8y^2 + 22y + 6$ **i)** $3x^2 + 13xy + 4y^2$
j) $-6a^2 - ab + 12b^2$ **k)** $2x^2 + 15x + 30$
l) $12x^2 + 3x + 20$ **m)** $-20y^2 + 3y + 40$
5)a) $4x^2 + 12x + 9$ **b)** $8x^3 + 36x^2 + 54x + 27$
c) $x^3 + 7x^2 + 10x - 8$ **d)** $x^4 - x^3 - 6x^2 - 17x + 5$
6) $x^2 + x - 2$
7)a) 42 cm² **b)** $A = (n + 2)(n + 3)$ **c)** 930 cm²