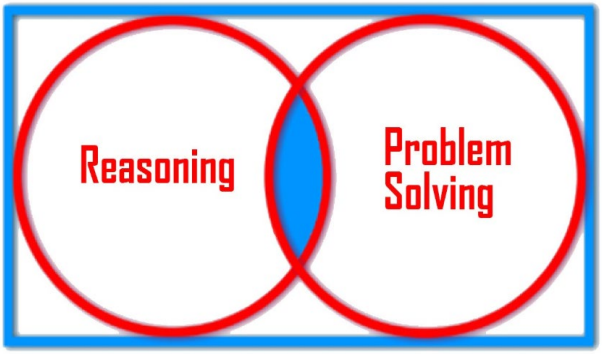
Bridging the Gap

GCSE to A – Level Transition



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Expressions

1 Simplify the following expressions as far as possible

a) $xy - 7y - 5 - 6xy + 3y - 1$

b) $2 + 3(5x + 1) + 4(x - 3) + 2(x + 7)$

c) $5(7 - 3p) - 4(2 - 5p) + 11p$

d) $\frac{1}{2}\left(\frac{3}{4}x + 5\right) + \frac{2}{3}\left(3x - \frac{2}{3}\right)$

e) $-\frac{3}{4}\left(\frac{1}{3}x + \frac{1}{2}y\right) - 5\left(x - \frac{1}{5}y\right)$

f) $3a^2b + (2a^2 \times 6b) + 5a \times 5ab$

g) $12x^{\frac{1}{3}} \times -2x^{\frac{1}{2}} \div 8x^8$

2 Factorise the following expressions fully

a) $a^2 - 17a - 38$

b) $2x^2 + 7x - 15$

c) $15 + x - 2x^2$

d) $2(x + 1) + 3x(x + 1)$

e) $2x^2 + 3xy + y^2$

f) $5x^2 - 6xy - 8y^2$

3 Simplify the expression in the form $ax^2 + bx + c$

a) $2x(2x + 3) + x(5 + 3x) - 10$

b) $5(5 - 6x) + 2x(x - 3)$

c) $1 - x(1 - x) - x(x + 1) + 1$

d) $(x + 2)(x + 3) + (5 + x)(4 + x)$

e) $(2x + 3)(3x + 1) + (x + 1)(x - 2)$

f) $(x + 1)^2 + (2x - 3)^2$

4 Expand the brackets in each expression below

a) $2x(3x-1)(x-5)$

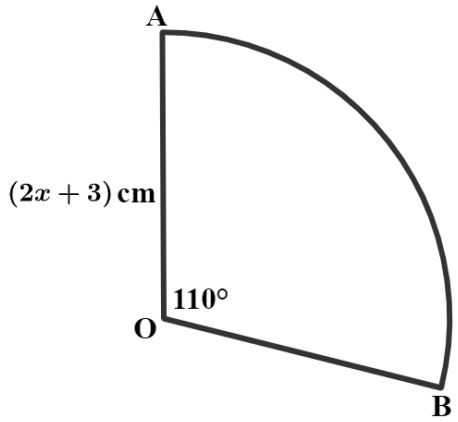
b) $(x+1)(x+1)(x+1)$

c) $(x+1)(x+2)(x+3)$

d) $(x-2)(x-1)(x+4)$

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

5 The sector AOB is shown below



The radius of the sector is $(2x + 3)$ cm and the angle AOB is $110°$.
Write the area of the sector in terms of x.