

## L2 Algebra Revision #4

1. Make  $t$  the subject of:  $2p = \frac{3t - 1}{5}$

2. Write as one log:  $\log_x(8k) - 2 \log_x(2w)$

3. Simplify:  $\sqrt{36x^{-6}}$

4. The roll of a school is growing at a rate given by the equation:

$$R = 3t^2 + t + 520$$

where  $R$  is the roll and  $t$  is the time from the present in years.

Assuming the roll continues to grow in this way calculate how many years it will take for the ABC College roll to reach 600.

5. Solve:  $2z > 4(z + 1)$

6. Solve:  $\log_x(32) = 2.5$

7. Solve:  $10x^2 = 31x - 15$

8. A rectangle is 4 times as wide as it is high. How long is the short side if the area is the same as the perimeter?

## Answers: L2 Algebra Revision #4

1. Make  $t$  the subject of:  $2p = \frac{3t-1}{5}$        $10p = 3t - 1$

$10p + 1 = 3t$        $t = \frac{10p + 1}{3}$

2.  $\log_x(3k) - 2 \log_x(2w)$        $= \log_x(3k) - \log_x((2w)^2)$

$= \log_x(3k) - \log_x((2^2)(w^2))$        $= \log_x(8k) - \log_x(4w^2)$

$= \log_x\left(\frac{8k}{4w^2}\right)$       **must simplify numbers**       $= \log_x\left(\frac{2k}{w^2}\right)$

3.  $\sqrt{36x^{-6}}$        $= \sqrt{36} \sqrt{x^{-6}}$        $= 6x^{-3}$  or  $\frac{6}{x^3}$

4.  $600 = 3t^2 + t + 520$        $0 = 3t^2 + t - 80$

Calculator       $t = 5$  or  $-5.3333$

(negative time is meaningless)      **5 years**

5.  $2z > 4(z + 1)$        $2z > 4(z + 1)$        $2z > 4z + 4$        $-4 > 2z$

$z < -2$

6.  $\log_x(32) = 2.5$       If  $y = b^x$  then  $\log_b y = x$        $32 = x^{2.5}$

$x = \sqrt[2.5]{32}$       your calculator can do this (also  $= \sqrt[5]{(32^2)}$ )       **$x = 4$**

7.  $10x^2 - 31x + 15 = 0$       calculator       **$x = 0.6$  or  $2.5$**

8. Call the short side  $x$ .      Area =  $x \times 4x = 4x^2$ . Perimeter =  $x + 4x + x + 4x = 10x$

Area = perimeter so  $4x^2 = 10x$

Rearranging:  $4x^2 - 10x = 0$       Solving:  $x = 0$  or  $2.5$

A side of 0 means no rectangle, so can be ignored.      **Short side = 2.5**

(4 and 8 are Merit)