YEAR 1 | MATHEMATICS | MIXED EXAM QUESTIONS – WEEK 4

Question	1	2	3	4	5	6	7	Total
Marks								
Max Marks	3	3	5	8	5	3	13	40

1. Rearrange the formula $c = \sqrt{\frac{a+b}{2}}$ to make a the subject.

(3)

2. Show that $\frac{5\sqrt{2}+2}{3\sqrt{2}+4}$ can be expressed in the form $m + n\sqrt{2}$, where m and n are integers.

(3)

3. Express each of the following in the form 7^k:

(a) $\sqrt[4]{7}$,

(1)

(b) $\frac{1}{7\sqrt{7}}$,

(2)

(c) $7^4 \times 49^{10}$.

(2)

4. Simplify

(a) $\frac{(4x)^2 \times 2x^3}{x}$,

(2)

(b) $(36x^{-2})^{-\frac{1}{2}}$.

(3)

(c) $\frac{(4x^5y)^3}{(2xy^2) \times (8x^{10}y^4)}$.

(3)

5. Point C has coordinates $(c, 2)$ and point D has coordinates $(6, d)$.

The link $y + 4x = 11$ is the perpendicular bisector of CD.

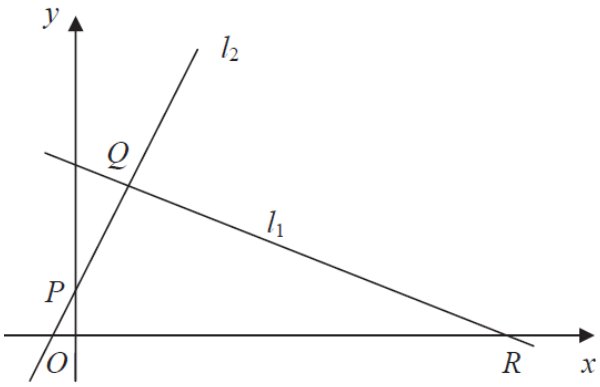
Find c and d.

(5)

6. Simplify fully $\frac{8a}{3a+6} \times \frac{5a+10}{3a^2} \div \frac{4}{15a^3}$

(3)

7.



The points $Q(1,3)$ and $R(7.0)$ lie on the line l_1, as shown in Figure 2.

The length of QR is $a\sqrt{5}$.

(a) Find the value of a.

(3)

The line l_2 is perpendicular to l_1, passes through Q and crosses the y-axis at the point P, as shown in Figure 2.

Find

(b) an equation for l_2,

(5)

(c) the coordinates of P,

(1)

(d) the area of ΔPQR.

(4)