1. Polly Parrot squawks every 12 seconds.
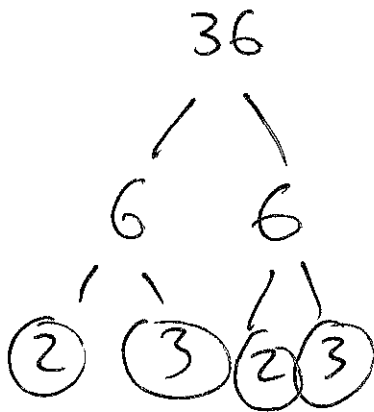Mr Toad croaks every 21 seconds.
They both make a noise at the same time.

After how many seconds will they next make a noise at the same time?

LCM

$12 = 2 \times 2 \times 3$

$21 = 3 \times 7$

$LCM = 2 \times 2 \times 3 \times 7$
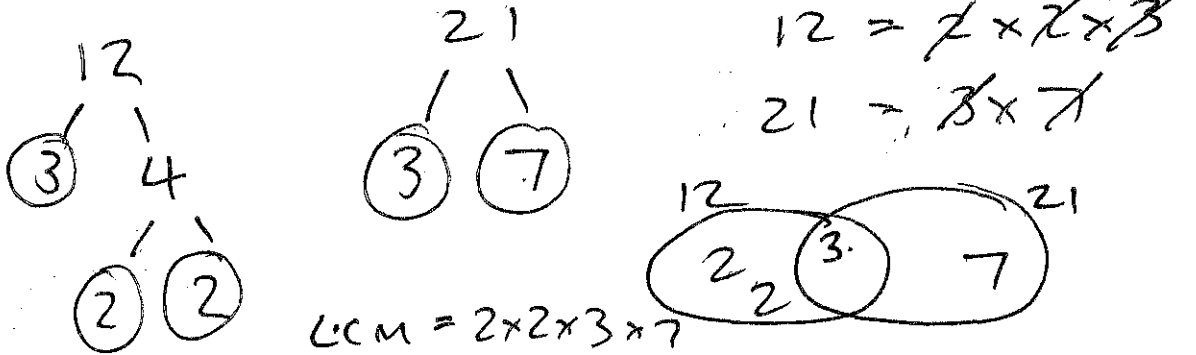
Answer ....84.............................. seconds

(Total 2 marks)

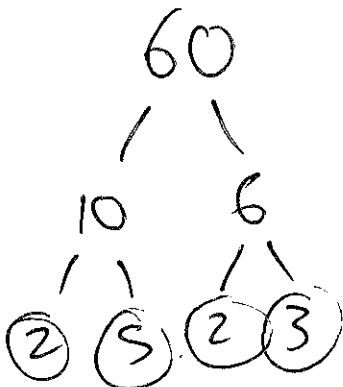**2.** (a) Express 36 as a product of its prime factors.

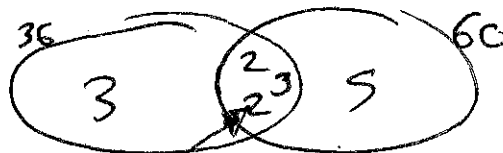$36 = 2 \times 2 \times 3 \times 3$

Answer $2 \times 2 \times 3 \times 3$

(3)

(b) Find the Highest Common Factor (HCF) of 36 and 60.

$60 = 2 \times 2 \times 3 \times 5$
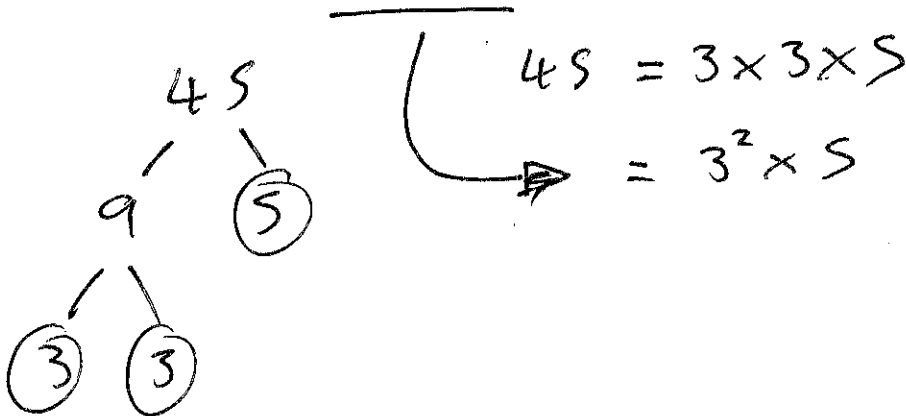$36 = 2 \times 2 \times 3 \times 3$

$HCF = 2 \times 2 \times 3$

Answer ......12........

(2)

(Total 5 marks)

3. 36 expressed as a product of its prime factors is $2^2 \times 3^2$

(a) Express 45 as a product of its prime factors.
Write your answer in index form.

$$45 = 3 \times 3 \times 5$$
$$= 3^2 \times 5$$

45

9   5

3   3

Answer .... $3^2 \times 5$ ....

(3)

(b) What is the Highest Common Factor (HCF) of 36 and 45?

$$36 = 2 \times 2 \times 3 \times 3$$
$$45 = 3 \times 3 \times 5$$

36   45

2
2   3 3   5

4

$$HCF = 3 \times 3$$
$$= 9$$
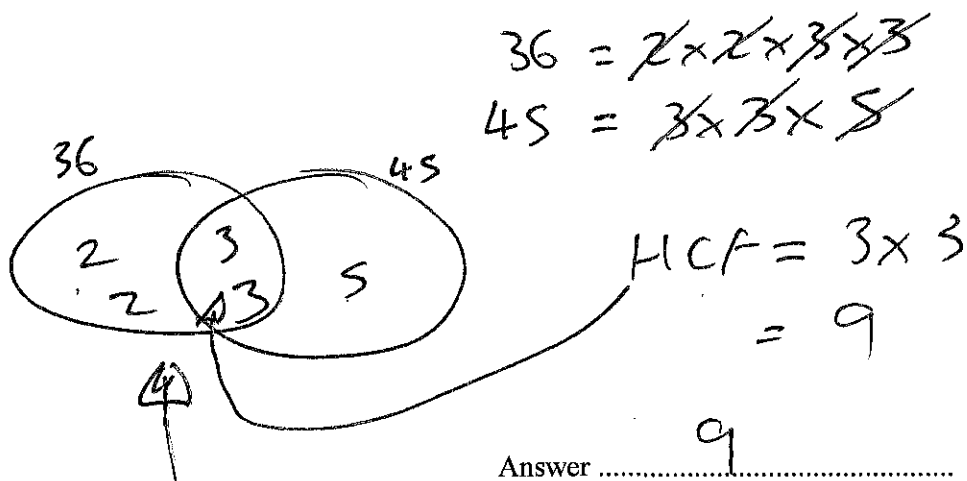
Answer .... 9 ....

(1)

(c) What is the Least Common Multiple (LCM) of 36 and 45?

$$LCM = 2 \times 2 \times 3 \times 3 \times 5$$
$$= 180$$

Answer .... 180 ....

(1)
(Total 5 marks)

4. (a) Express 144 as the product of its prime factors.
Write your answer in index form.

144
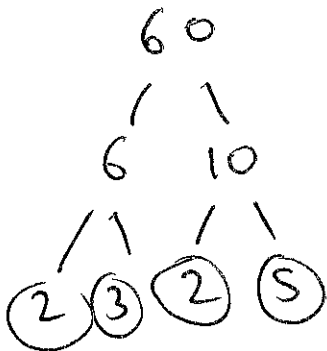12   12
(3) 4   (3) 4
(2)(2) (2)(2)
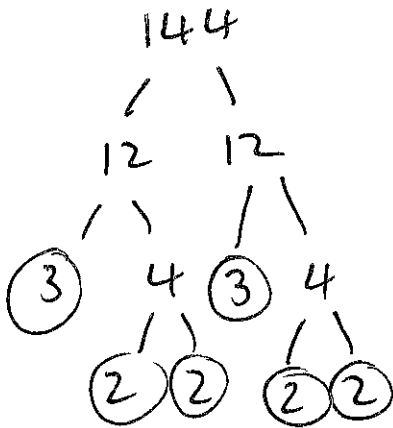
$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$
$= 2^4 \times 3^2$

Answer .... $2^4 \times 3^2$ ....

(3)

(b) Find the Highest Common Factor (HCF) of 60 and 144.

60
6   10
(2)(3) (2) (5)

$144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$
$60 = 2 \times 2 \times 3 \times 5$

60 144
5 (2 2 3) 2 2
                3
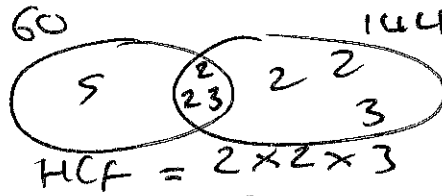
HCF $= 2 \times 2 \times 3$

Answer .... $= 12$ ....

(2)

(Total 5 marks)

5. (a) Express 108 as a product of its prime factors.
Give your answer in index form.

108
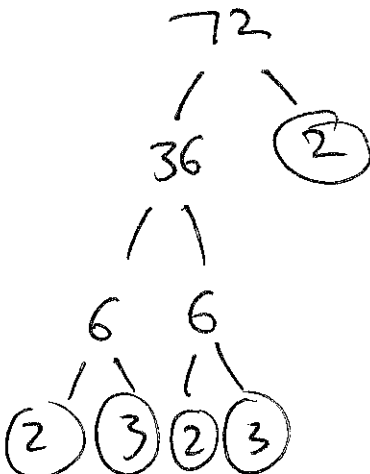54   (2)
9   6
(3)(3) (3)(2)
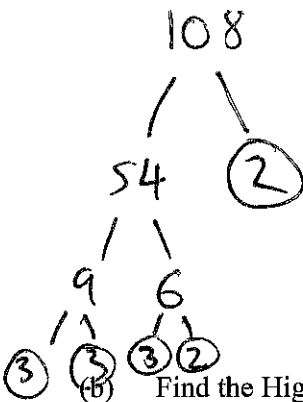
$108 = 2 \times 2 \times 3 \times 3 \times 3$
$= 2^2 \times 3^3$

Answer .... $2^2 \times 3^3$ ....

(3)

(b) Find the Highest Common Factor (HCF) of 108 and 72.

72
36   (2)
6   6
(2)(3)(2)(3)

$108 = 2 \times 2 \times 3 \times 3 \times 3$
$72 = 2 \times 2 \times 2 \times 3 \times 3$

72 108
2 (2 3) 3
   (2 3)

HCF $= 2 \times 2 \times 3 \times 3$

Answer .... 36 ....

(2)

(Total 5 marks)

3

6.   (a)   Express 60 as a product of its prime factors.
Give your answer in index form.

$$60 = 2 \times 2 \times 3 \times 5$$
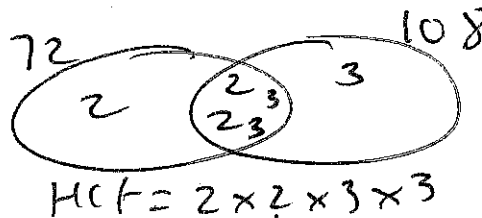$$= 2^2 \times 3 \times 5$$

Answer ......$2^2 \times 3 \times 5$......

(3)

(b)   Find the Highest Common Factor (HCF) of 120 and 32.

So $120 = 2 \times 2 \times 2 \times 3 \times 5$ (Extra 2)
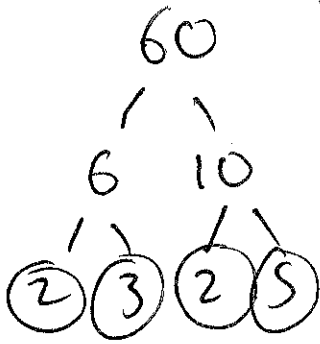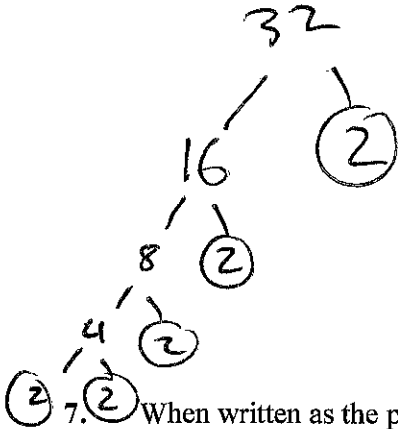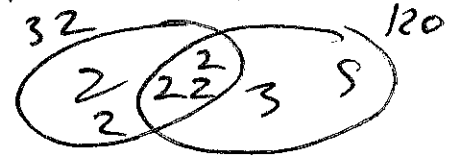
$32 = 2 \times 2 \times 2 \times 2 \times 2$
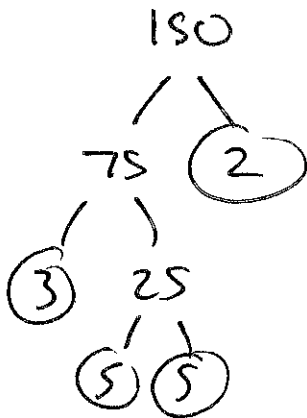
$HCF = 2 \times 2 \times 2$

Answer ......8......

(2)

(Total 5 marks)

7. When written as the product of prime factors $225 = 3^2 \times 5^2$

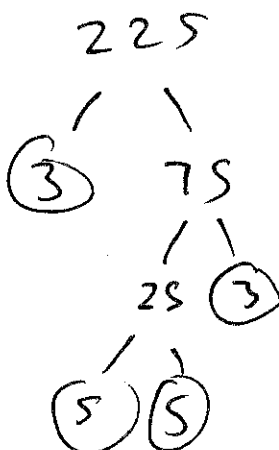(a)   Write 150 as the product of prime factors.
Give your answer in index form.

$$150 = 2 \times 3 \times 5 \times 5$$
$$= 2 \times 3 \times 5^2$$
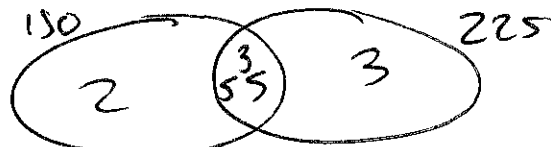
Answer ......$2 \times 3 \times 5^2$......

(3)

(b)   Work out the highest common factor (HCF) of 225 and 150.

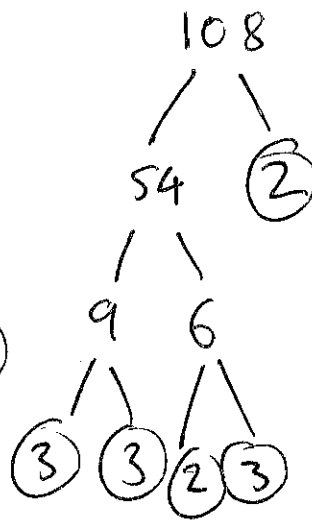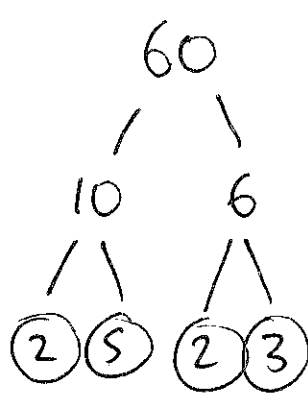$150 = 2 \times 3 \times 5 \times 5$
$225 = 3 \times 3 \times 5 \times 5$

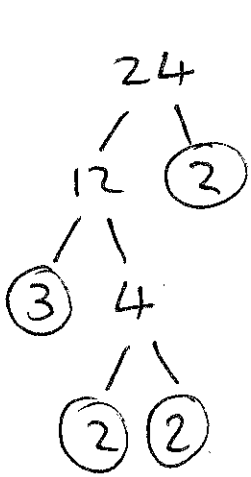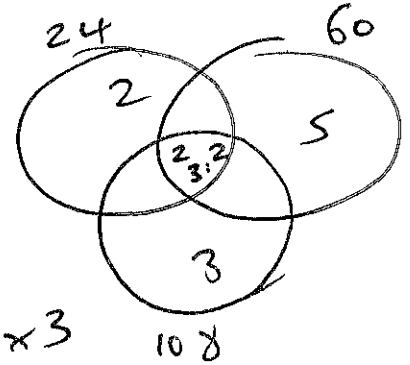$HCF = 3 \times 5 \times 5$

Answer ...= ...75...

(2)

(Total 5 marks)

4

8. Find the Highest Common Factor (HCF) of 24, 60 and 108.

24

12   (2)

(3) 4

(2) (2)

60

10   6

(2)(5) (2)(3)

108

54   (2)

9   6

(3) (3) (2)(3)

$24 = 2 \times 2 \times 2 \times 3$

$60 = 2 \times 2 \times 3 \times 5$

$108 = 2 \times 2 \times 3 \times 3 \times 3$

24   60

2   2,2
      3,   5

3

108

$HCF = 2 \times 2 \times 3$

Answer .... 12 ....

(Total 3 marks)