

Name: \_\_\_\_\_

## GCSE (1 – 9)

### HCF and LCM

#### Instructions

- Use **black** ink or ball-point pen.
- Answer all Questions.
- Answer the Questions in the spaces provided  
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

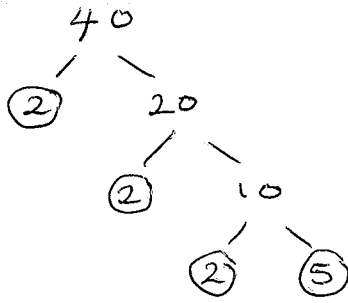
#### Information

- The marks for each Question are shown in brackets  
– *use this as a guide as to how much time to spend on each Question.*

#### Advice

- Read each Question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every Question.
- Check your answers if you have time at the end

1 Write 40 as a product of its prime factors.



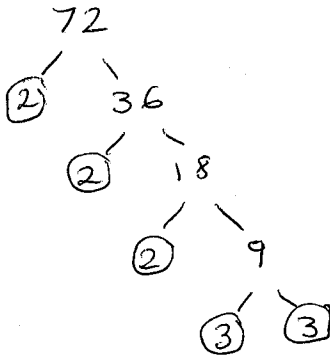
$$2 \times 2 \times 2 \times 5$$

or  $2^3 \times 5$

$$2^3 \times 5$$

(Total for question 1 is 2 marks)

2 Write 72 as a product of its prime factors.



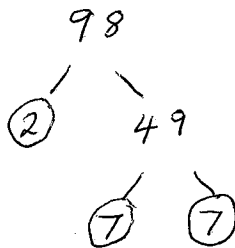
$$2 \times 2 \times 2 \times 3 \times 3$$

or  $2^3 \times 3^2$

$$2^3 \times 3^2$$

(Total for question 2 is 2 marks)

3 Write 98 as a product of its prime factors.



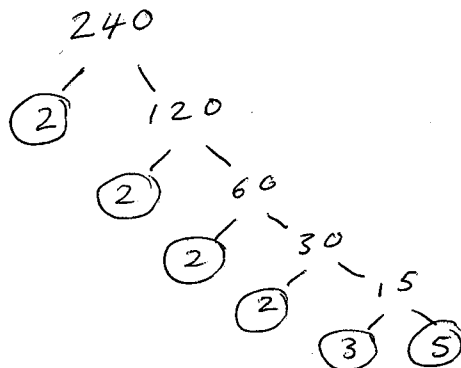
$$2 \times 7 \times 7$$

or  $2 \times 7^2$

$$2 \times 7^2$$

(Total for question 3 is 2 marks)

4 Write 240 as a product of its prime factors.



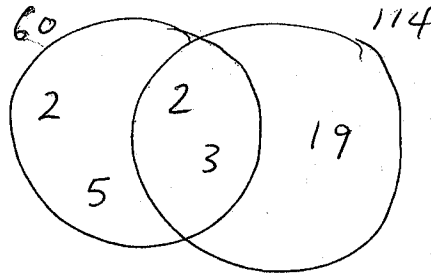
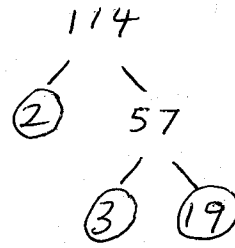
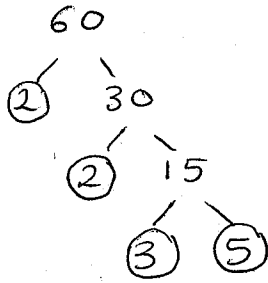
$$2 \times 2 \times 2 \times 2 \times 3 \times 5$$

or  $2^4 \times 3 \times 5$

$$2^4 \times 3 \times 5$$

(Total for question 4 is 2 marks)

5 Find the highest common factor (HCF) of 60 and 114

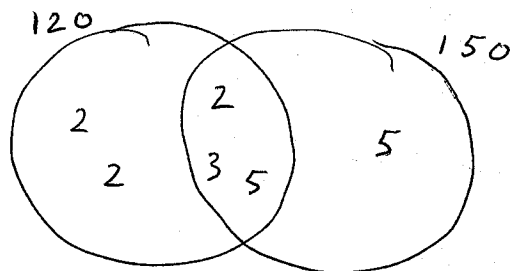
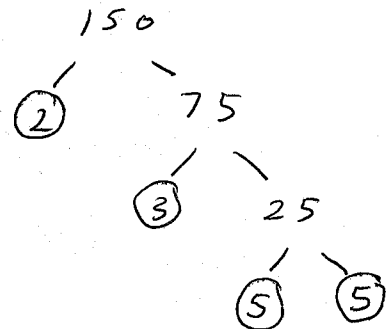
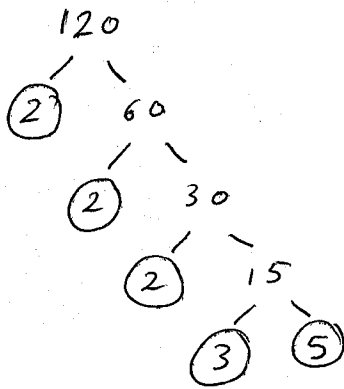


$$HCF = 2 \times 3 = 6$$

6

(Total for question 5 is 3 marks)

6 Find the lowest common multiple (LCM) of 120 and 150

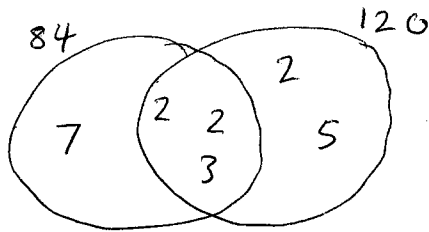
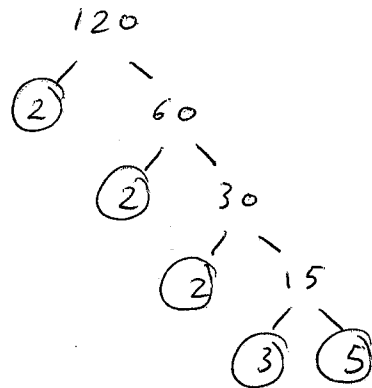
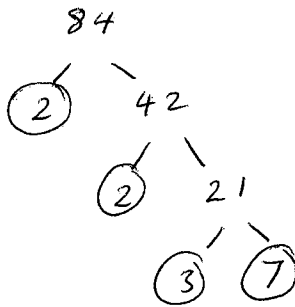


$$\begin{aligned} LCM &= 120 \times 5 \\ &= 600 \end{aligned}$$

600

(Total for question 6 is 3 marks)

7 Find the highest common factor (HCF) of 84 and 120

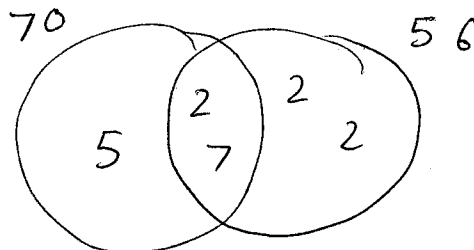
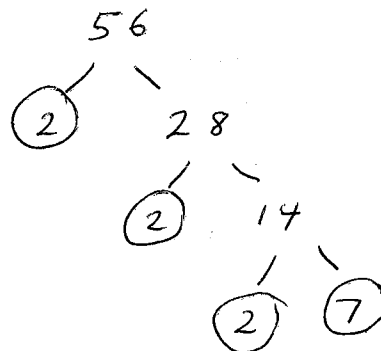
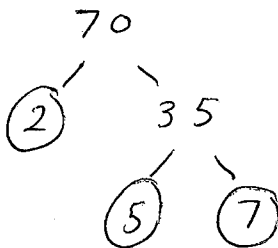


$$\begin{aligned} \text{HCF} &= 2 \times 2 \times 3 \\ &= 12 \end{aligned}$$

12

(Total for question 7 is 3 marks)

8 Find the lowest common multiple (LCM) of 70 and 56



$$\begin{aligned} \text{LCM} &= 70 \times 2 \times 2 \\ &= 280 \end{aligned}$$

280

(Total for question 8 is 3 marks)

9 Two buses, bus A and bus B, both use the same bus stop.

Bus A runs every 10 minutes.

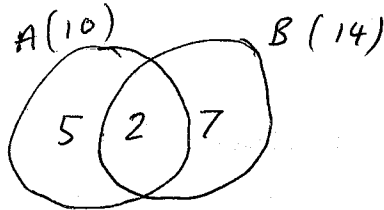
$$10 = 2 \times 5$$

Bus B runs every 14 minutes.

$$14 = 2 \times 7$$

Both buses are at the bus stop at 11 am.

What time will both buses next both be at the bus stop.



$$\begin{aligned} \text{LCM} &= 14 \times 5 \\ &= 70 \end{aligned}$$

70 minutes after 11 am

12:10 pm

(Total for question 9 is 3 marks)

10 Light A flashes every 8 seconds.

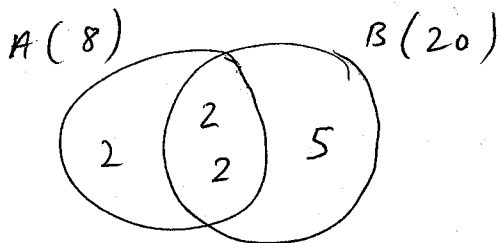
$$8 = 2 \times 2 \times 2$$

Light B flashes every 20 seconds.

$$20 = 2 \times 2 \times 5$$

Both lights flash at the same time.

Work out how long it will take for both lights to flash at the same time again.



$$\text{LCM} = 20 \times 2 = 40$$

40

seconds

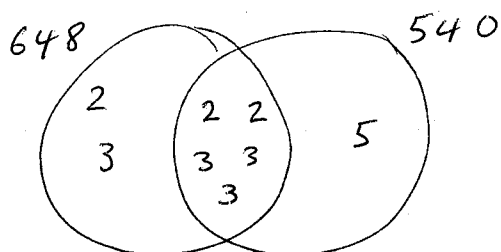
(Total for question 10 is 3 marks)

11

$648 = 2^3 \times 3^4$

$540 = 2^2 \times 3^3 \times 5$

(a) Write down the highest common factor (HCF) of 648 and 540.



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

$$4 \times 27$$

$$\underline{108}$$

(1)

(b) Find the lowest common multiple (LCM) of 648 and 540.

$648 \times 5$

$$\left[ \frac{6480}{2} = 3240 \right]$$

$$\underline{3240}$$

(2)

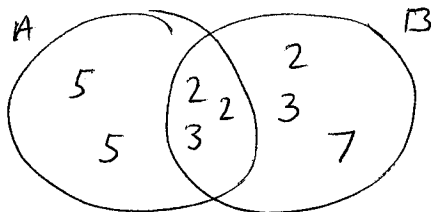
**(Total for question 11 is 3 marks)**

12

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

$B = 2^3 \times 3^2 \times 7$

(a) Write down the highest common factor (HCF) of A and B.



$$2 \times 2 \times 3$$

$$\underline{12}$$

(1)

(b) Find the lowest common multiple (LCM) of A and B.

$$2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 7$$

$$8 \times 9 \times 25 \times 7$$

$$72 \times 175$$

$$\begin{array}{r} 175 \\ \times 72 \\ \hline 350 \\ 12250 \\ \hline 12600 \end{array}$$

$$\underline{12600}$$

(2)

**(Total for question 12 is 3 marks)**

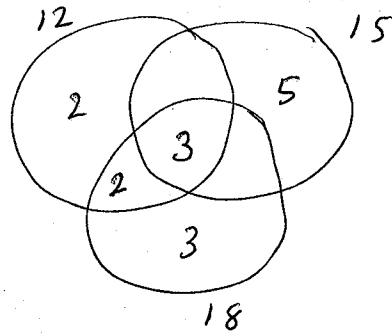
- 13 Find the lowest common multiple (LCM) of 12, 15 and 18.

$$\cancel{12 \times 2}$$

$$12 = 2 \times 2 \times 3$$

$$15 = 3 \times 5$$

$$18 = 2 \times 3 \times 3$$



$$\begin{aligned} \text{LCM} &= 18 \times 2 \times 5 \\ &= 18 \times 10 \\ &= 180 \end{aligned}$$

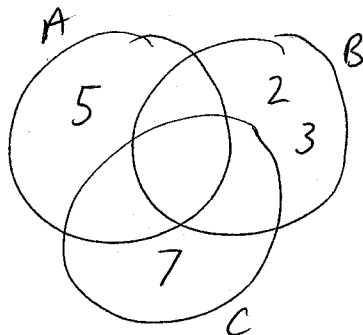
180

(Total for question 13 is 3 marks)

- 14 Light A flashes every 5 seconds. 5  
Light B flashes every 6 seconds.  $2 \times 3$   
Light C flashes every 7 seconds. 7

All three lights flash at the same time.

Work out how long it will take for all three lights to flash at the same time again.



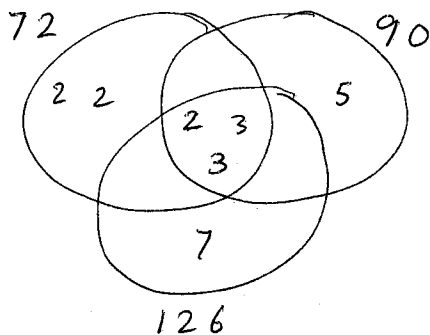
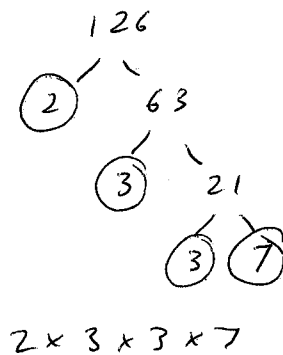
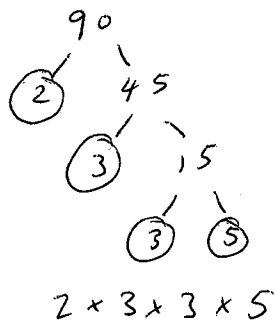
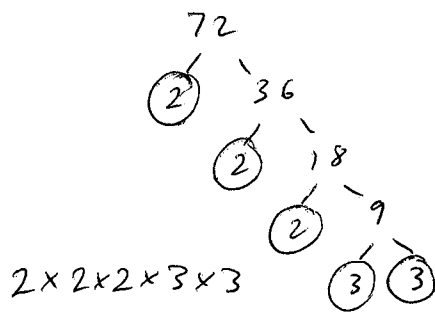
$$\begin{aligned} 7 \times 5 \times 6 \\ 35 \times 6 = 210 \end{aligned}$$

210

..... seconds

(Total for question 14 is 3 marks)

15 Find the highest common factor (HCF) of 72, 90 and 126



$$\begin{aligned} \text{HCF} &= 2 \times 3 \times 3 \\ &= 2 \times 9 \\ &= 18 \end{aligned}$$

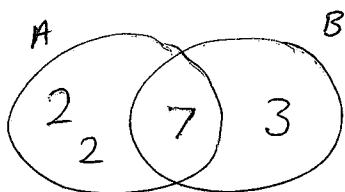
18

(Total for question 15 is 3 marks)

16 Kenny is thinking of two numbers **greater than 10**.

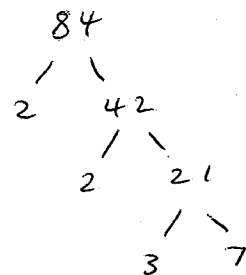
He says: "The highest common factor (HCF) of my two numbers is 7  
The lowest common multiple (LCM) of my two numbers is 84"

Write down the two numbers that Kenny is thinking of.



$$\begin{aligned} A &= 2 \times 2 \times 7 \\ &= 28 \end{aligned}$$

$$\begin{aligned} B &= 3 \times 7 \\ &= 21 \end{aligned}$$



21 and 28

(Total for question 16 is 3 marks)