Solutions by
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GCSE (9-1) Grade 4
HCF and LCM



Instructions

Use **black** ink or ball-point pen.
Fill in the boxes at the top of this page with your name.
Answer **all** questions.
Answer the questions in the spaces provided
- there may be more space than you need.

Show all your working out

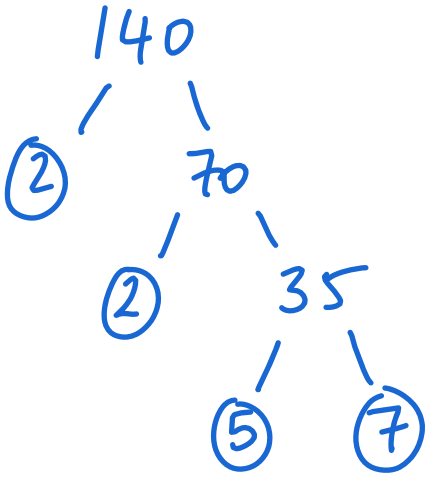
Information

The marks for **each** question are shown in brackets.
Use this as a guide as to how much time to spend on each question.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed

Advice

Read each question carefully before you start to answer it
Attempt every question
Check your answers if you have time at the end

1. Write 140 as the product of its prime factors.



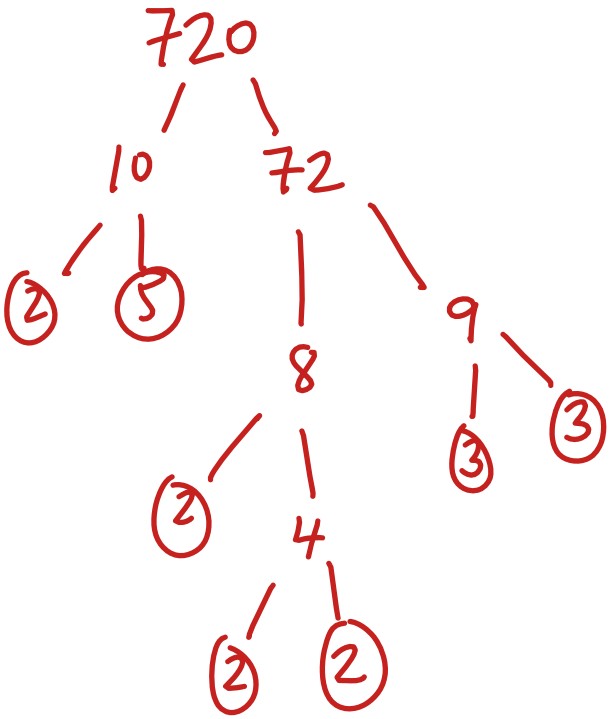
$2 \times 2 \times 5 \times 7$

.....

(2 marks)

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2. Write 720 as a product of its prime factors.



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

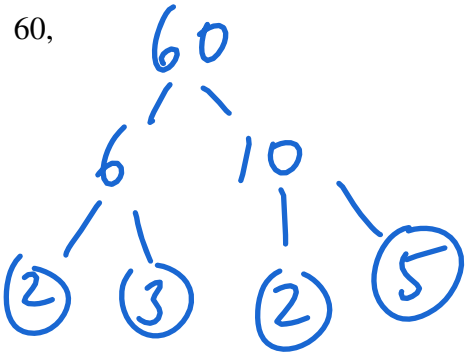
.....

(2 marks)

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3. (a) Express the following numbers as products of their prime factors.

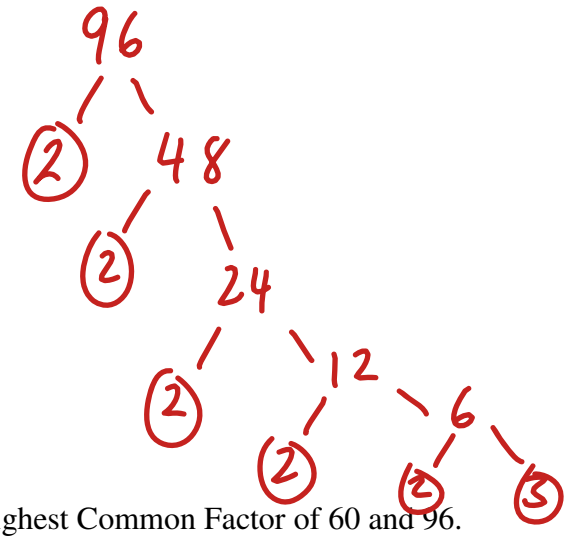
(i) 60,



$2^2 \times 3 \times 5$

.....

(ii) 96.



$2^5 \times 3$

.....

(4)

(b) Find the Highest Common Factor of 60 and 96.

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

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

$2 \times 2 \times 3$

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

12

.....

(1)

(c) Work out the Lowest Common Multiple of 60 and 96.

$2 \times 2 \times 2 \times$ HCF $\times 5 = 480$

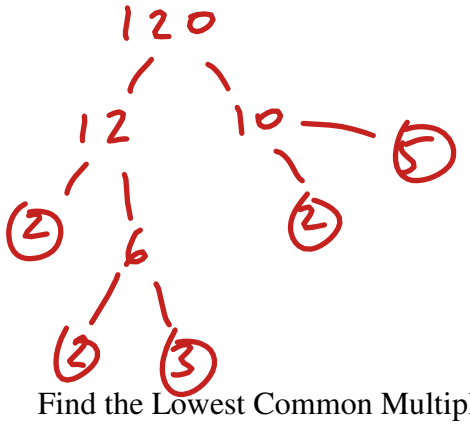
HCF: 12

.....

(2)

(7 marks)

4. (a) Express 120 as the product of powers of its prime factors.



$2^3 \times 3 \times 5$

(3)

(b) Find the Lowest Common Multiple of 120 and 150.

120 240 360 480 600 720
150 300 450 600 750

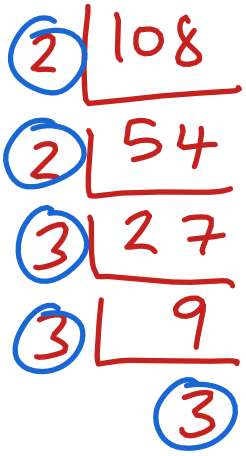
600

(2)

(5 marks)

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5. (a) Express 108 as the product of powers of its prime factors.



$2^2 \times 3^3$

(3)

(b) Find the Highest Common Factor (HCF) of 108 and 24

108	
1	108
2	54
3	36
4	27
6	18
9	12

24	
1	24
2	12
3	8
4	6

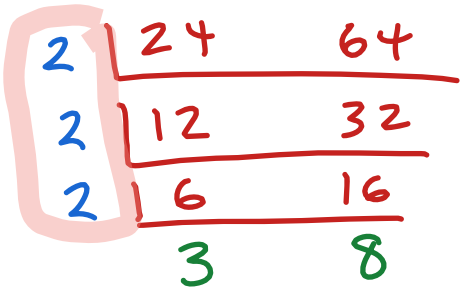
12

(1)

(4 marks)

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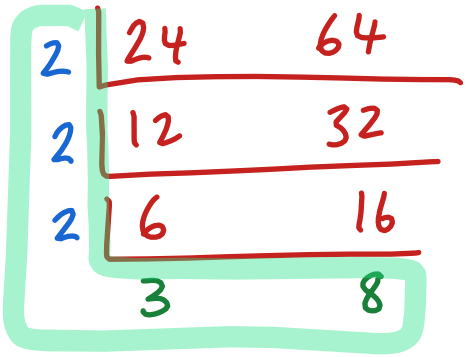
6. (a) Work out the Highest Common Factor (HCF) of 24 and 64



$2 \times 2 \times 2 = 8$

(2)

(b) Work out the Lowest Common Multiple (LCM) of 24 and 64



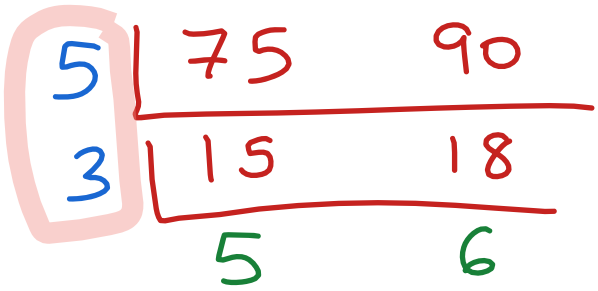
$2 \times 2 \times 2 \times 3 \times 8 = 192$

(2)

(4 marks)

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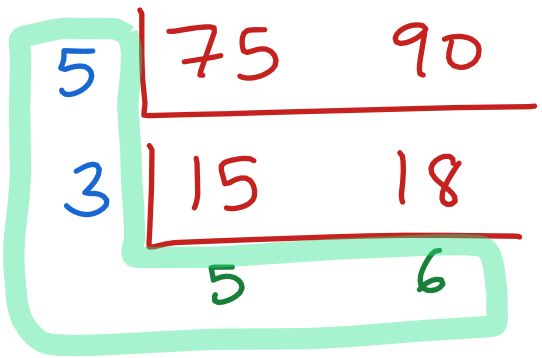
7. (a) Find the Highest Common Factor of 75 and 90.



$5 \times 3 = 15$

(2)

(b) Find the Lowest Common Multiple of 75 and 90.



$5 \times 3 \times 5 \times 6 = 450$

(2)

(4 marks)

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8. (a) Express 84 as a product of its prime factors.

84
2 x 42
2 x 21
3 x 7

2x2x 3x7 .....

(3)

(b) Find the Highest Common Factor (HCF) of 84 and 35

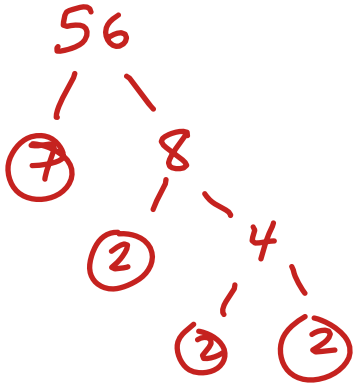
7 .....

(2)

(5 marks)

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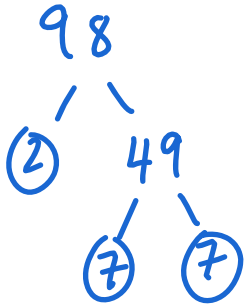
9. (a) Express 56 as the product of its prime factors.

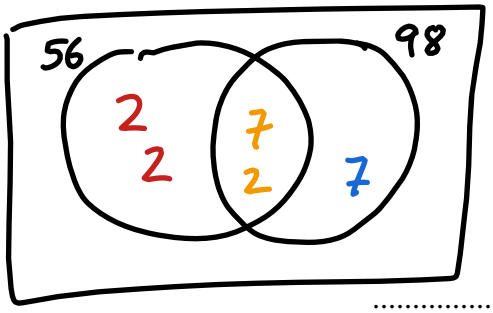


$2^3 \times 7$ .....

(2)

(b) Find the Lowest Common Multiple of 56 and 98





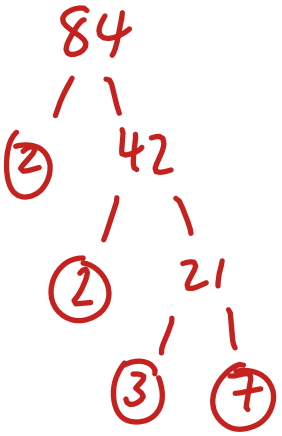
2x2x7x2x7 =392 .....

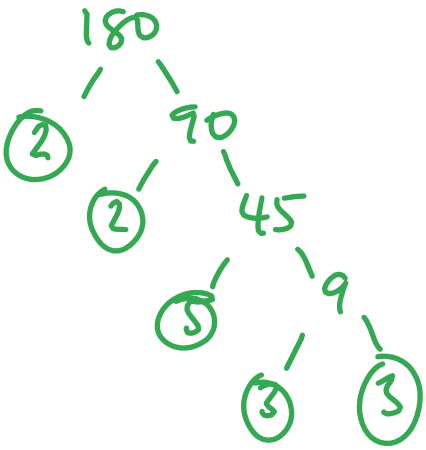
(2)

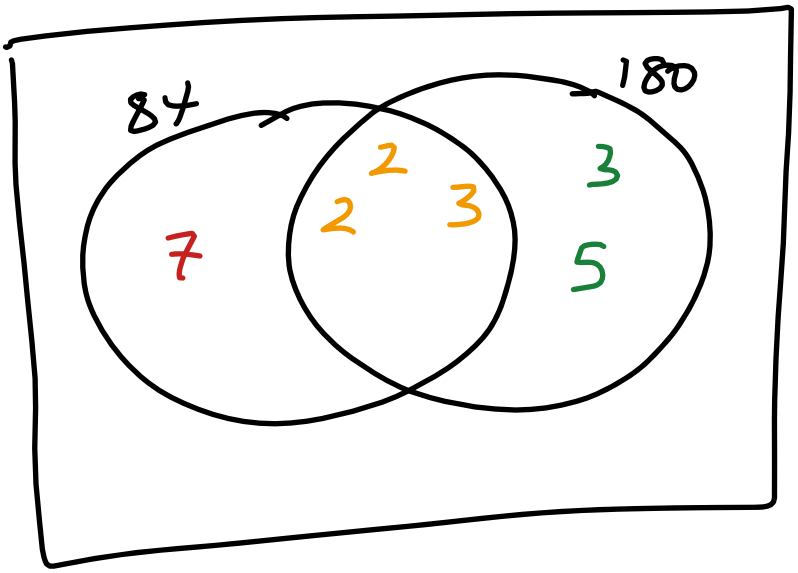
(4 marks)

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10. Find the Highest Common Factor (HCF) of 84 and 180







7 x 2 x 2 x 3 x 3 x 5

= 1260

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(3 marks)

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11. Find the Highest Common Factor (HCF) of 32 and 80

2	32	80
2	16	40
2	8	20
2	4	10
	2	5

2x2x2x2 = 16

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(3 marks)

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12. (a) Find the Lowest Common Multiple (LCM) of 24 and 36

24, 48, 72, 96, 120

36, 72, 108, 144

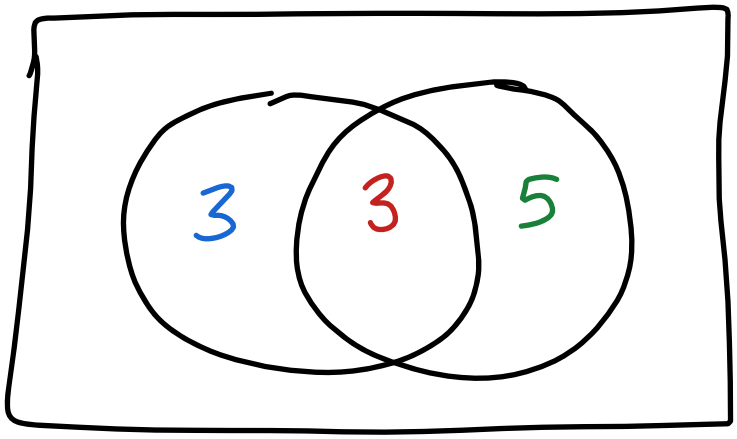
72

.....

(2)

James thinks of two numbers.
He says "The Highest Common Factor (HCF) of my two numbers is 3
The Lowest Common Multiple (LCM) of my two numbers is 45"

(b) Write down two numbers that James could be thinking of.



3 × 3 × 5 = 45

9 and 15

3 × 3 3 × 5

(3)

(5 marks)