



EXAM PAPERS PRACTICE

GCSE OCR Math J560

LCM / HCF / Prime
Factors

Answers

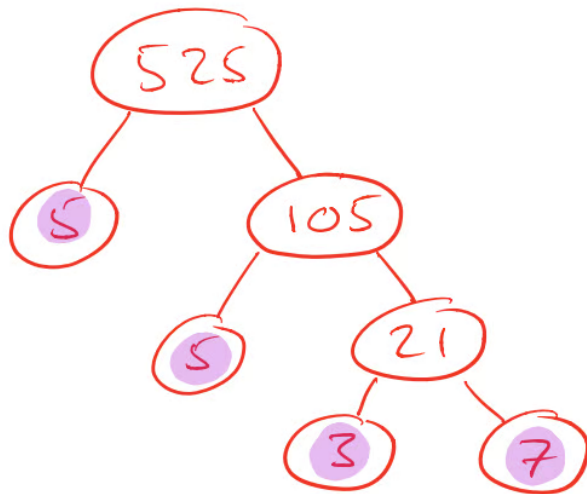
*"We will help you to
achieve A Star "*



Answer 1

Write 525 as a product of its prime factors.

FACTOR TREE



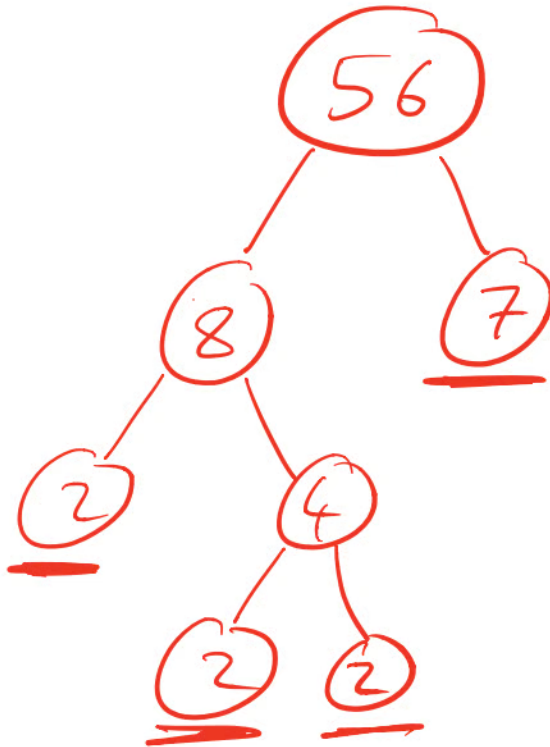
$$\begin{array}{r} 105 \\ 5 \overline{)525} \\ \underline{5} \\ 21 \\ 5 \overline{)105} \\ \underline{5} \\ 21 \\ \underline{5} \\ 21 \\ \underline{5} \\ 21 \end{array}$$

$$525 = \underline{3 \times 5 \times 5 \times 7}$$
$$\left(= 3 \times 5^2 \times 7 \right)$$



Answer 2

Express 56 as the product of its prime factors.



$$\underline{56 = 2 \times 2 \times 2 \times 7}$$



Answer 3

Trams leave Piccadilly

to Eccles every 9 minutes

to Didsbury every 12 minutes

A tram to Eccles and a tram to Didsbury both leave Piccadilly at 9 am.

At what time will a tram to Eccles and a tram to Didsbury next leave Piccadilly at the same time?

Need to find LCM of 9 and 12.

9	12
18	24
27	36
36	⋮
45	
54	
⋮	

→ THE TWO TRAMS WILL
LEAVE AT THE SAME
TIME AFTER 36 MINS

AT 9:36 AM



Answer 4

Rita is going to make some cheeseburgers for a party.
She buys some packets of cheese slices and some boxes of burgers.

There are 20 cheese slices in each packet.
There are 12 burgers in each box.

Rita buys exactly the same number of cheese slices and burgers.

(i) How many packets of cheese slices and how many boxes of burgers does she buy?

CHEESE		BURGERS
20	1	12
40	2	24
60	3	36
80	4	48
⋮	5	60
		⋮

3 packets of cheese slices

5 boxes of burgers

Rita wants to put one cheese slice and one burger into each bread roll.
She wants to use all the cheese slices and all the burgers.

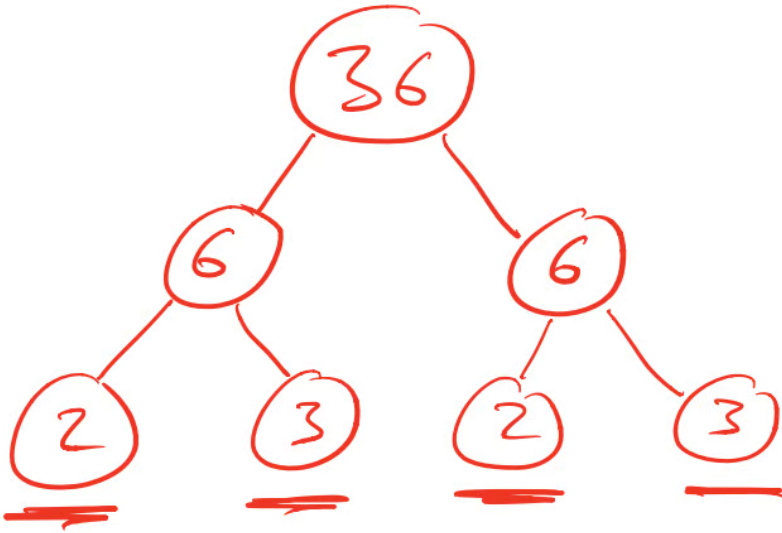
(ii) How many bread rolls does Rita need?

(From Part (i)) 60 bread rolls



Answer 5

Write 36 as a product of its prime factors.



$$\underline{\underline{36 = 2 \times 2 \times 3 \times 3}}$$



Answer 6

Buses to Acton leave a bus station every 24 minutes.

Buses to Barton leave the same bus station every 20 minutes.

A bus to Acton and a bus to Barton both leave the bus station at 9:00 am.

When will a bus to Acton and a bus to Barton next leave the bus station at the same time?

OBVIOUS WAY

<u>A</u>	<u>B</u>
0	0
24	20
48	40
72	60
96	80
120	100
144	120
168	

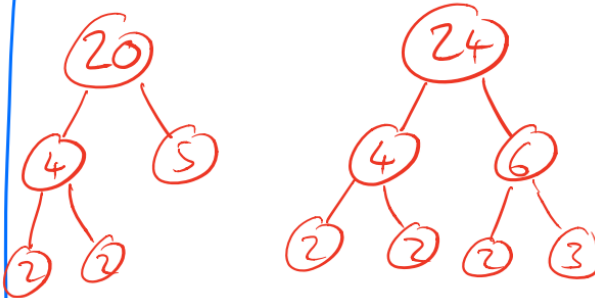
120 minutes = 2hrs

THEY LEAVE THE
AT SAME TIME

AT 11:00AM

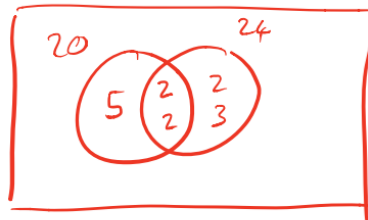
USING
LOWEST COMMON MULTIPLES

FIND PRIME FACTORS:



$20 = 2 \times 2 \times 5$

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



HCF = $5 \times 2 \times 2 \times 2 \times 3$

= $10 \times 4 \times 3$

= 10×12

= 120



Answer 7

Matt and Dan cycle around a cycle track.

Each lap Matt cycles takes him 50 seconds.

Each lap Dan cycles takes him 80 seconds.

Dan and Matt start cycling at the same time at the start line.

Work out how many laps they will each have cycled when they are next at the start line together.

NEED TO FIND THE LCM OF 50 AND 80

	<u>MATT</u>	<u>DAN</u>	
1	50	80	1
2	100	160	2
3	150	240	3
4	200	320	4
5	250	400	5
6	300		
7	350		
8	400		

Matt.....8.....laps
Dan.....5.....laps



Answer 8

Martin thinks of two numbers.

He says,

“The Highest Common Factor (HCF) of my two numbers is 6
The Lowest Common Multiple (LCM) of my two numbers is a multiple of 15”

(b) Write down **two** possible numbers that Martin is thinking of.

6x

(2) 12

(3) 18

(4) 24

(5) 30 = 15 × 2

6 30



Answer 9

Ali is planning a party.

He wants to buy some cakes and some sausage rolls.

The cakes are sold in boxes.
There are 12 cakes in each box.
Each box of cakes costs £2.50

The sausage rolls are sold in packs.
There are 8 sausage rolls in each pack.
Each pack of sausage rolls costs £1.20

Ali wants to buy more than 60 cakes and more than 60 sausage rolls.
He wants to buy exactly the same number of cakes as sausage rolls.

What is the least amount of money Ali will have to pay?

FIND A COMMON MULTIPLE OF 12 AND 8
(> 60)

<u>12</u>	<u>8</u>
1 12	1 8
2 24	2 16
3 36	3 24
4 48	4 32
5 60	5 40
6 72	6 48
84	7 56
⋮	8 64
	9 72

$$\begin{aligned} \text{Cost} &= 6 \times 2.50 + 9 \times 1.20 \\ &= \underline{\underline{\pounds 25.80}} \end{aligned}$$



Answer 10

John buys some boxes of pencils and some packets of pens for people to use at a conference.

There are 40 pencils in a box.

There are 15 pens in a packet.

John gives one pencil and one pen to each person at the conference.

He has no pencils left.

He has no pens left.

How many boxes of pencils and how many packets of pens did John buy?

SAME NUMBER OF PENS AND PENCILS.
(FIND LOWEST COMMON MULTIPLE OF 40 AND 15)

PENCILS	PENS
① 40	① 15
② 80	② 30
③ 120	③ 45
④ 160	④ 60
⑤ 200	⑤ 75
⋮	⑥ 90
	⑦ 105
	⑧ 120

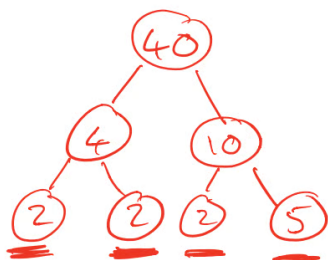
⇒ 3 BOXES OF PENCILS
8 PACKETS OF PENS



Answer 11

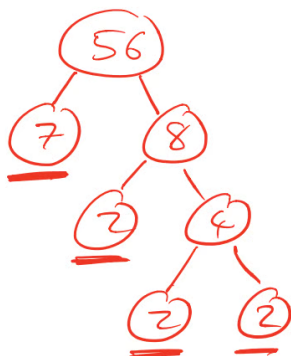
(a) Find the lowest common multiple (LCM) of 40 and 56

- Find Prime Factors
- Use Venn Diagram

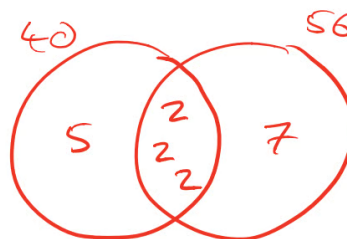


$$40 = 2 \times 2 \times 2 \times 5$$

$$56 = 2 \times 2 \times 2 \times 7$$



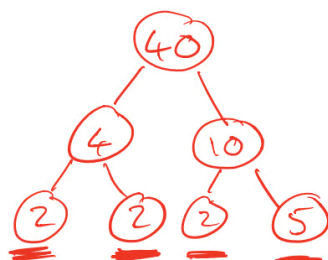
$$\begin{aligned} \text{LCM} &= 2 \times 2 \times 2 \times 5 \times 7 \\ (\text{Union}) &= \underline{\underline{280}} \end{aligned}$$



Answer 12

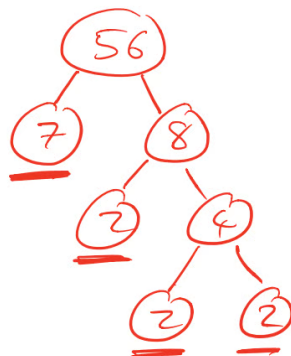
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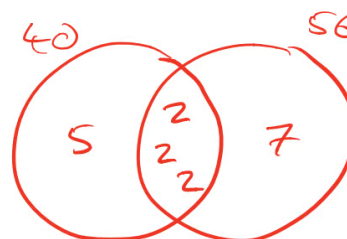


$$40 = 2 \times 2 \times 2 \times 5$$

$$56 = 2 \times 2 \times 2 \times 7$$



$$\begin{aligned} \text{LCM} &= 2 \times 2 \times 2 \times 5 \times 7 \\ (\text{Union}) &= \underline{\underline{280}} \end{aligned}$$





Answer 13

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

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

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

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

$$B = 2 \times 2 \times 3 \times 5 \times 5$$

$$\begin{aligned} \text{HCF} &= 2 \times 2 \times 3 \times 5 \\ &= \underline{\underline{60}} \end{aligned}$$