



HCF and LCM



REVISE THIS TOPIC



1 Work out the highest common factor (HCF) of 12 and 20 [2 marks]

1	12	1	20
2	6	2	10
3	4	4	5

Answer 4



2 Work out the lowest common multiple (LCM) of 6 and 8 [2 marks]

6	12	18	24
8	16	24	

Answer 24



3 Work out the highest common factor (HCF) of 15 and 18 [2 marks]

1	15	1	18
3	5	2	9
		3	6

Answer 3





4 Work out the lowest common multiple (LCM) of 9 and 12 [2 marks]

9 18 27 36
12 24 36

Answer 36



5 Work out the highest common factor (HCF) of 28 and 35 [2 marks]

1 28 1 35
2 14 5 7
4 7

Answer 7



6 Work out the lowest common multiple (LCM) of 15 and 20 [2 marks]

15 30 45 60
20 40 60

Answer 60



7 Work out the highest common factor (HCF) of 16 and 40 [2 marks]

1 16 1 40 5 8
2 8 2 20
4 4 4 10

Answer 8





8 Work out the highest common factor (HCF) of 12, 18, and 21 [2 marks]

1	12	1	18	1	21
2	6	2	9	3	7
4	3	3	6		

Answer 3

9 Work out the lowest common multiple (LCM) of 10, 30 and 40 [2 marks]

10	20	30	40	50	60	70	80	90	100	110	120
30	60	90	120								
40	80	120									

Answer 120

10 Work out the highest common factor (HCF) of 15, 30 and 45 [2 marks]

1	15	1	30	5	6	1	45
3	5	2	15			3	15
		3	10			5	9

Answer 15

11 Work out the lowest common multiple (LCM) of 5, 6 and 9 [2 marks]

5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
6	12	18	24	30	36	42	48	54	60	66	72	78	84	90			
9	18	27	36	45	54	63	72	90									

Answer 90



Turn over ▶





12 There are 120 students in Year 11 and 72 students in Year 10.

All of the students are split into groups for revision.
Year 11 students must not be in the same group as Year 10 students.
All of the group sizes must be the same.

Work out the maximum possible group size and how many groups there will be.

[4 marks]

1	120	6	20	1	72	8	9
2	60	8	15	2	36		
3	40	10	12	3	24	$120 \div 24 = 5$	
4	30			4	18	$72 \div 24 = 3$	
5	24			6	12	$5 + 3 = 8$	

Maximum Group Size 24

Number of Groups 8

13 The 90A bus and the 95B bus both stop at the bus station at 12:00pm.

90A returns to the station every 18 minutes
95B returns to the station every 8 minutes.

Work out the next time when both buses return to the station at the same time.

[3 marks]

18	36	54	72				
8	16	24	32	40	48	56	72

$72 \text{ mins} = 1 \text{ hr } 12 \text{ mins}$

$12:00 + 1 \text{ h } 12 \text{ mins}$

Answer 1:12 pm





14

Sophie checks her bike for repairs every 8 days
Susan check her bike for repairs every 6 days.

They both check their bikes on the 1st of May.
Work out the next date on which both Sophie and Susan check their bikes for repairs. [3 marks]

8 16 24
6 12 18 24

1st May + 24 days

Answer 25th of May

15

Jason, Billy and Kim are running laps of an athletics track.

Jason runs each lap in 4 minutes.
Billy runs each lap in 6 minutes.
Kim runs each lap in 4 and a half minutes.

All three runners start running laps from the same point at 1:40 pm.

Work out the next time when all three runners will complete a lap together. [3 marks]

4 8 12 16 20 24 28 32 36
6 12 18 24 30 36
4.5 9 13.5 18 22.5 27 31.5 36

1:40pm + 36 mins

Answer 2:16 pm



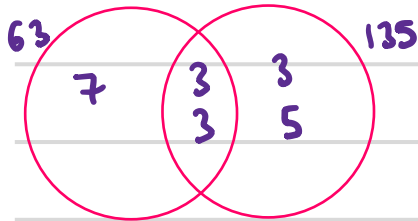
16

Work out the highest common factor (HCF) of 63 and 135

[2 marks]

$$63 = 3 \times 3 \times 7$$

$$135 = 3 \times 3 \times 3 \times 5$$



$$3 \times 3 = 9$$

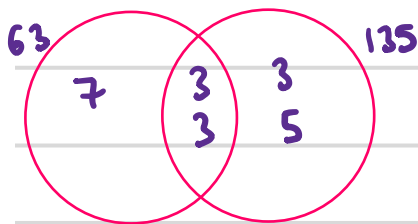
Answer _____

9

17

Work out the lowest common multiple (LCM) of 63 and 135

[2 marks]



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

Answer _____

945

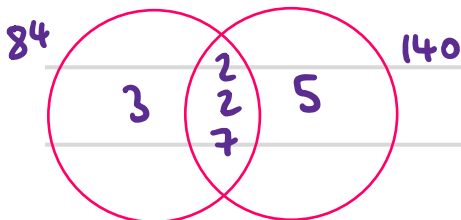
18

Work out the highest common factor (HCF) of 84 and 140

[2 marks]

$$84 = 2 \times 2 \times 3 \times 7$$

$$140 = 2 \times 2 \times 5 \times 7$$



$$2 \times 2 \times 7$$

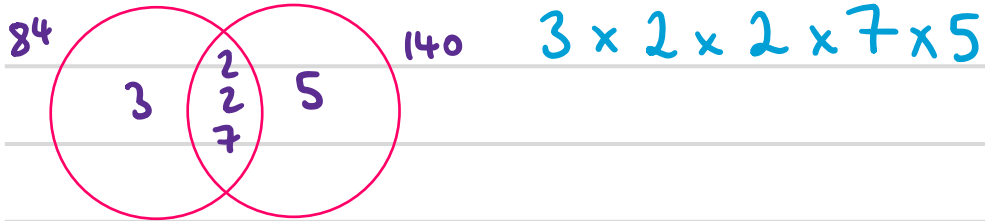
Answer _____

28





19 Work out the lowest common multiple (LCM) of 84 and 140 [2 marks]



Answer 420

20 Work out the highest common factor (HCF) of 150 and 550 [2 marks]

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

$$550 = 2 \times 5 \times 5 \times 11$$



Answer 50

21 Work out the lowest common multiple (LCM) of 150 and 550 [2 marks]



Answer 1650



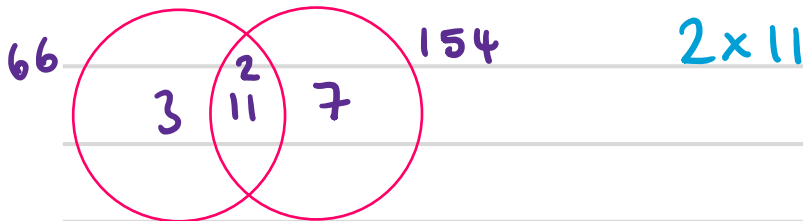
Turn over ►



22 Work out the highest common factor (HCF) of 66 and 154 [2 marks]

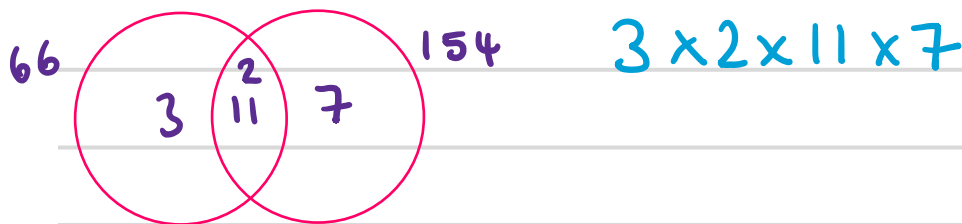
$$66 = 2 \times 3 \times 11$$

$$154 = 2 \times 7 \times 11$$



Answer 22

23 Work out the lowest common multiple (LCM) of 66 and 154 [2 marks]



Answer 462

24 Work out the highest common factor (HCF) of 78 and 390 [2 marks]

$$78 = 2 \times 39$$

$$390 = 2 \times 5 \times 39$$



Answer 78

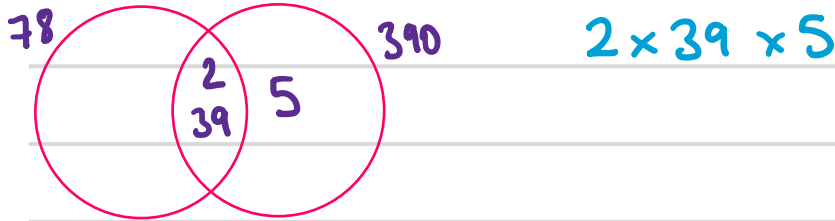




25

Work out the lowest common multiple (LCM) of 78 and 390

[2 marks]



Answer 390

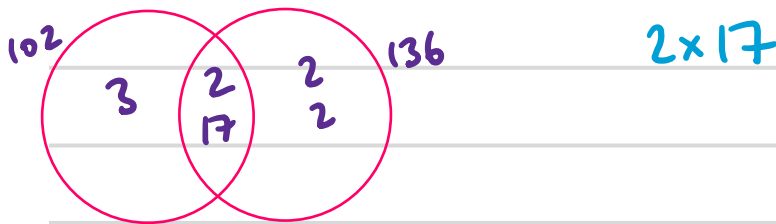
26

Work out the highest common factor (HCF) of 102 and 136

[2 marks]

$$102 = 2 \times 3 \times 17$$

$$136 = 2 \times 2 \times 2 \times 17$$

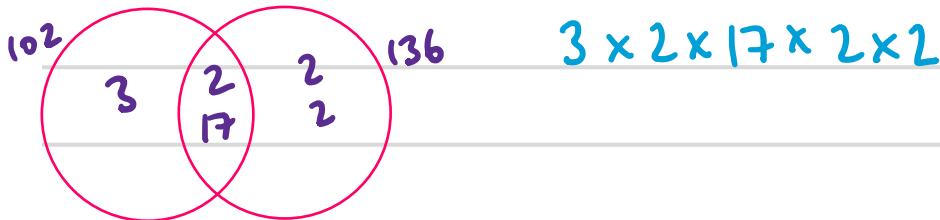


Answer 34

27

Work out the lowest common multiple (LCM) of 102 and 136

[2 marks]



Answer 408



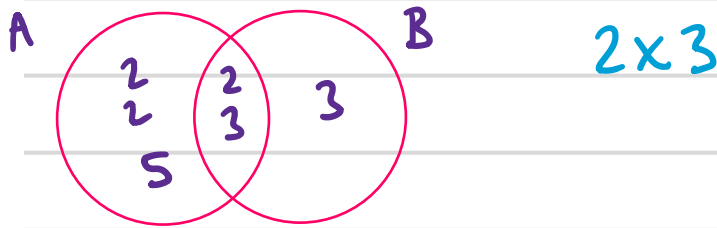
28 $A = 2^3 \times 3 \times 5$
 $B = 2 \times 3^2$

28 (a) Work out the highest common factor (HCF) of A and B .
Give your answer as an integer.

[2 marks]

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

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

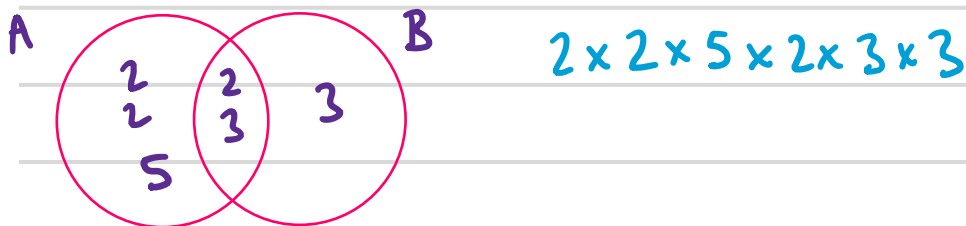


Answer

6

28 (b) Work out the lowest common multiple (LCM) of A and B .
Give your answer as an integer.

[2 marks]



Answer

360



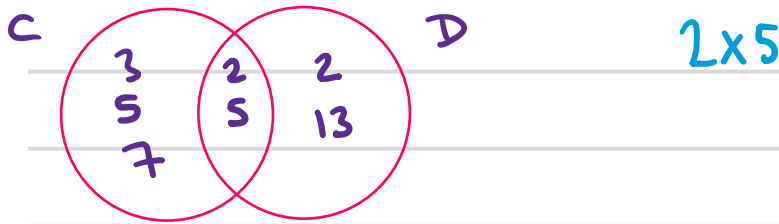


29 $C = 2 \times 3 \times 5^2 \times 7$
 $D = 2^2 \times 5 \times 13$

29 (a) Work out the highest common factor (HCF) of C and D . [2 marks]
Give your answer as an integer.

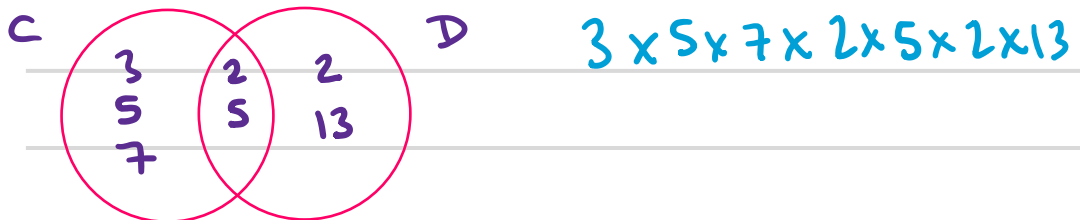
$C = 2 \times 3 \times 5 \times 5 \times 7$

$D = 2 \times 2 \times 5 \times 13$



Answer 10

29 (b) Work out the lowest common multiple (LCM) of C and D . [2 marks]
Give your answer as an integer.



Answer 27300



30

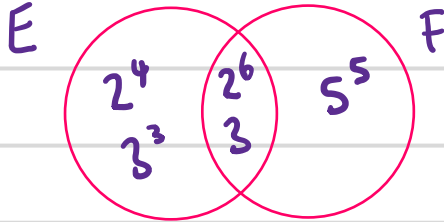
$$E = 2^{10} \times 3^4$$

$$F = 2^6 \times 3 \times 5^5$$

30 (a)

Work out the highest common factor (HCF) of E and F .
Give your answer in index form.

[2 marks]



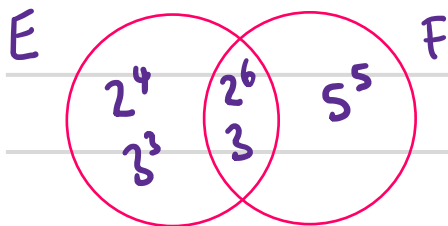
Answer

$$2^6 \times 3$$

30 (b)

Work out the lowest common multiple (LCM) of E and F .
Give your answer in index form.

[2 marks]



$$2^4 \times 3^3 \times 2^6 \times 3 \times 5^5$$

Answer

$$2^{10} \times 3^4 \times 5^5$$



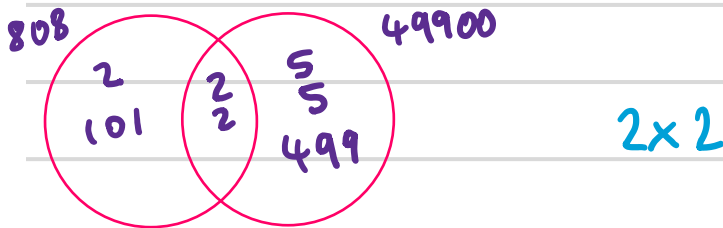
31 101 and 499 are prime numbers.

Work out the highest common factor (HCF) of 808 and 49900

[2 marks]

$$808 = 2 \times 2 \times 2 \times 101$$

$$49900 = 2 \times 2 \times 5 \times 5 \times 499$$



Answer 4

32 Sarah thinks of two integers that are both less than 100.

The highest common factor of Sarah's integers is 18

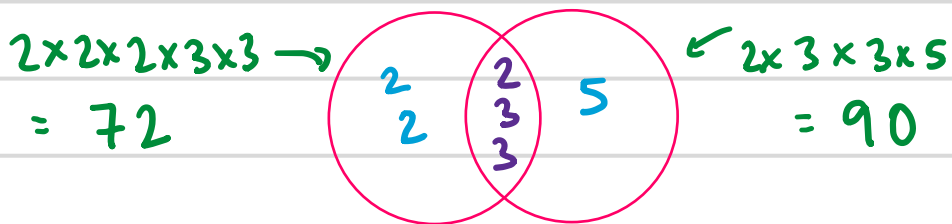
The lowest common multiple of Sarah's integers is 360

Work out the two integers that Sarah is thinking of.

[3 marks]

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

$$360 = 2 \times 3 \times 3 \times 2 \times 2 \times 5$$



Answer 72 and 90

