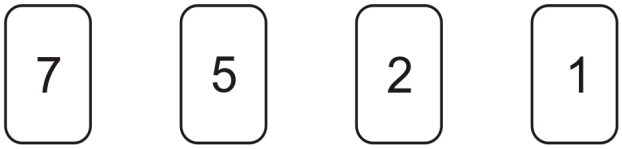
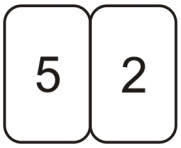
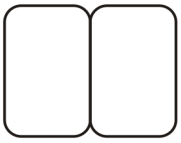
1 Here are four digit cards.

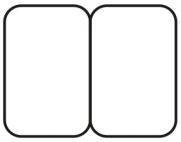


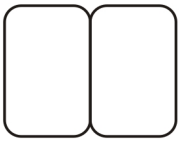
Choose two cards each time to make the following two-digit numbers.

The first one is done for you.

an even number 

a multiple of 9 

a square number 

a factor of 96 

2 marks

2 $1^3 + 7^2 =$

1 mark

3 36 and 64 are both square numbers.

They have a sum of 100.

Find two **square** numbers that have a sum of **130**.

 **and**

1 mark

4 $3^3 - 3^2 =$

1 mark

5 Here are three digit cards

1	5	6

Choose two cards each time to make the following two-digit numbers.

The first one is done for you.

an even number | 5 | 6 |

a prime number | | |

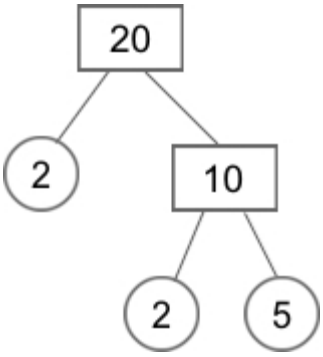
a common factor of 60 and 90 | | |

a common multiple of 5 and 13 | | |

2 marks

6 Any number can be written as a product of its prime factors, for example:

$20 = 2 \times 2 \times 5$



Write 90 as a product of its prime factors.

90 = _____

1 mark

7 Put these values in order with the smallest first

5^2 3^2 3^3 2^3

smallest largest

1 mark

8 Lara chooses a **square number**.

She rounds it to the nearest hundred.

Her answer is 200

Write **all** the possible square numbers Lara could have chosen.

.....

2 marks

9 Write a cross on the numbers that are <u>not</u> square numbers.

1^3 2^3 3^3 4^3 5^3

1 mark

10 Write the **three prime numbers** which multiply to make **231**

$\square \times \square \times \square = 231$

1 mark

11 Emma thinks of two **prime** numbers.

She adds the two numbers together.

Her answer is 36

Write **all** the possible pairs of prime numbers Emma could be thinking of.

.....

2 marks

12 Chen chooses a **prime** number.

He multiplies it by 10 and then rounds it to the nearest hundred.

His answer is **400**.

Write **all** the possible prime numbers Chen could have chosen.

.....

2 marks

13 Here are some number cards.

Joe picks two **even** numbers.
Dev picks two **odd** numbers.

Joe gives one of his cards to Dev.
Dev gives one of his cards to Joe.

Joe says,

'Now my cards are both square numbers'.

Dev says,

'Now my cards are both multiples of 5'.

What numbers did they each start with?

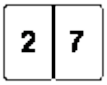
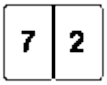
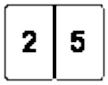
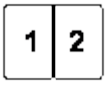
Joe started with ☐ and ☐

Dev started with ☐ and ☐

2 marks

Mark schemes

1 Award **TWO** marks for all three numbers correct as shown:

- a multiple of 9  **OR** 
- a square number 
- a factor of 96 

If the answer is incorrect, award **ONE** mark for two numbers correct.

Up to 2

[2]

2 50

[1]

3 49 **AND** 81

OR

121 **AND** 9

Numbers may be given in either order.

U1

[1]

4 18

[1]

5 All three correct
61
15
65

2

or

Any two correct

1

[2]

6 $2 \times 3 \times 3 \times 5$

Numbers can be written in any order

[1]

7 2^3 3^2 5^2 3^3

Accept 8, 9, 25, 27

[1]

8 Award **TWO** marks for all three numbers, as shown:

169 **AND** 196 **AND** 225

Accept numbers written in any order.

*All three numbers and no incorrect numbers must be given for the award of **TWO** marks.*

*Accept for **TWO** marks:*

- 13^2 ***AND*** 14^2 ***AND*** 15^2

OR

- *13 × 13* ***AND*** *14 × 14* ***AND*** *15 × 15*

If the answer is incorrect, award **ONE** mark for:

- two numbers correct and none incorrect

OR

- three numbers correct and one incorrect.

*Accept for **ONE** mark:*

*13 **AND** 14 **AND** 15*

Up to 2 (U1)

[2]

9 1^3 ~~2^3~~ ~~3^3~~ 4^3 ~~5^3~~

Accept any unambiguous indication

[1]

10 3 **AND** 7 **AND** 11

Accept numbers in any order.

[1]

11 All four pairs of prime numbers listed, ie:

- 5 and 31

  7 and 29

  13 and 23

  17 and 19

For 2m, accept all prime numbers listed in pair order, ie:

- *5, 31, 7, 29, 13, 23, 17, 19*

2

or

Three or four correct pairs of prime numbers listed and not more than one incorrect pair of numbers

For 1m, accept all eight prime numbers listed, and no other numbers, without any indication of how the numbers are paired, eg:

- *5, 7, 13, 17, 19, 23, 29, 31*

1

[2]

12 Gives only the three correct prime numbers in any order, ie:

- 37, 41, 43

2

or

Gives at least two correct prime numbers **and** not more than one incorrect number, eg:

- 37, 39, 41, 43
- 39, 41, 43
- 41, 43

1

[2]

13 Award **TWO** marks for

Joe **10** **AND** **16**

Joe's even numbers may be given in either order.

AND

Dev **9** **AND** **15**

Dev's odd numbers may be given in either order.

If the answer is incorrect, award **ONE** mark for:

- three numbers correctly attributed

OR

- 9 **AND** 10 **AND** 15 **AND** 16 with some or all attributed to the wrong child.

Up to 2 (U1)

[2]