

1

Here are four number cards.



Which two number cards are **factors of 42**?

and

1 mark

2

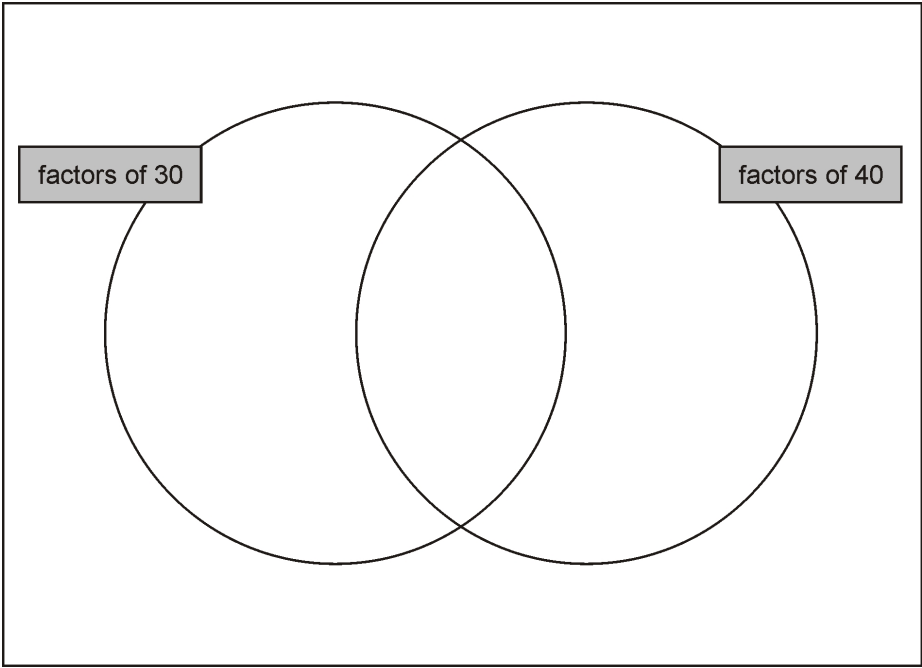
Write these numbers in the correct places on the diagram.

5

6

7

8



2 marks

3

Write the missing numbers.

Factors of 20 = {1, ....., ....., ....., ....., 20}

1 mark

4

Write all the factors of 30 which are **also** factors of 20

.....

2 marks

**5** Circle all the **multiples of 8** in this list of numbers.

18      32      56      68      72

1 mark

**6** Here is a sorting diagram with four sections, **A**, **B**, **C** and **D**.

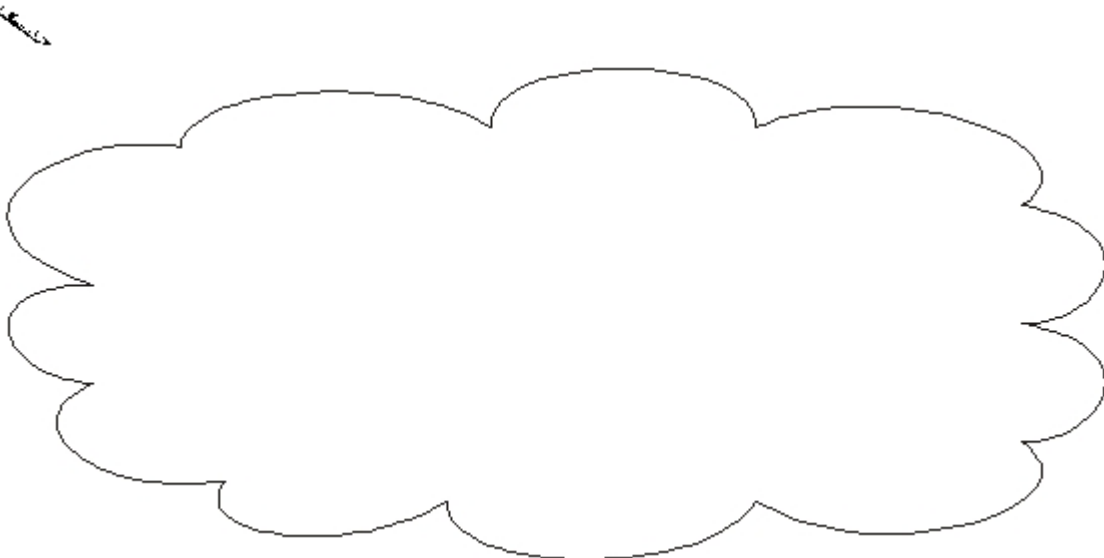
|                      | multiple of 10 | not a multiple of 10 |
|----------------------|----------------|----------------------|
| multiple of 20       | <b>A</b>       | <b>B</b>             |
| not a multiple of 20 | <b>C</b>       | <b>D</b>             |

Write a number that could go in section **C**.

1 mark

Section **B** can never have any numbers in it.

Explain why.



1 mark

**7** Here are six digit cards.



Use **all six** digit cards to make three multiples of 3



1 mark

**8** Here is a number chart.

Circle the **smallest** number on the chart that is a multiple of **both** 2 and 7



|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

1 mark

Here is the same number chart.

Circle the **largest** number that is **not** a multiple of 2 or 3 or 5



|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

1 mark

9

Here are four labels.

|      |                |          |                    |
|------|----------------|----------|--------------------|
| even | multiples of 9 | not even | not multiples of 9 |
|------|----------------|----------|--------------------|

Write each label in the correct position on the sorting diagram below.

*Handwritten mark*

|  |    |    |
|--|----|----|
|  |    |    |
|  | 72 | 56 |
|  | 54 | 84 |
|  | 63 | 49 |
|  | 45 | 75 |

1 mark

10

Here is a diagram for sorting numbers.

Write **one number** in each white section of the diagram.

*Handwritten mark*

|                     |                |              |
|---------------------|----------------|--------------|
|                     | less than 1000 | 1000 or more |
| multiples of 20     |                |              |
| not multiples of 20 |                |              |

2 marks

11

The numbers in this sequence increase by 3 each time.

3      6      9      12    ...

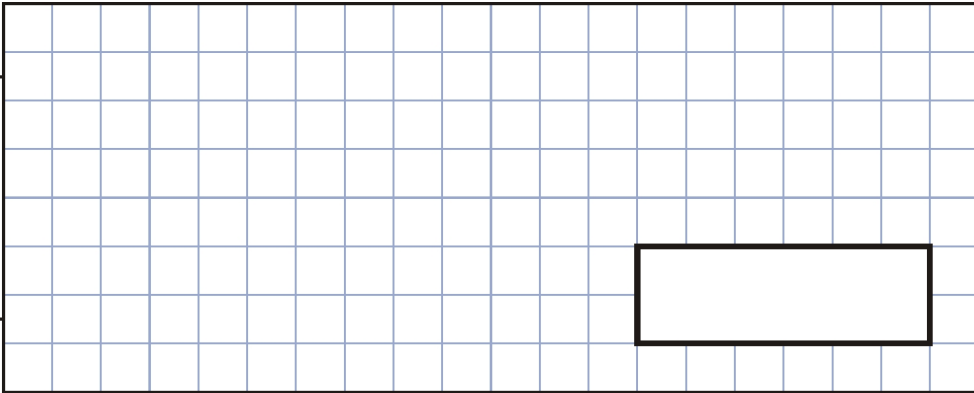
The numbers in this sequence increase by 5 each time.

5      10     15     20    ...

Both sequences continue.

Write a number **greater than 100** which will be in **both** sequences.

Show your method



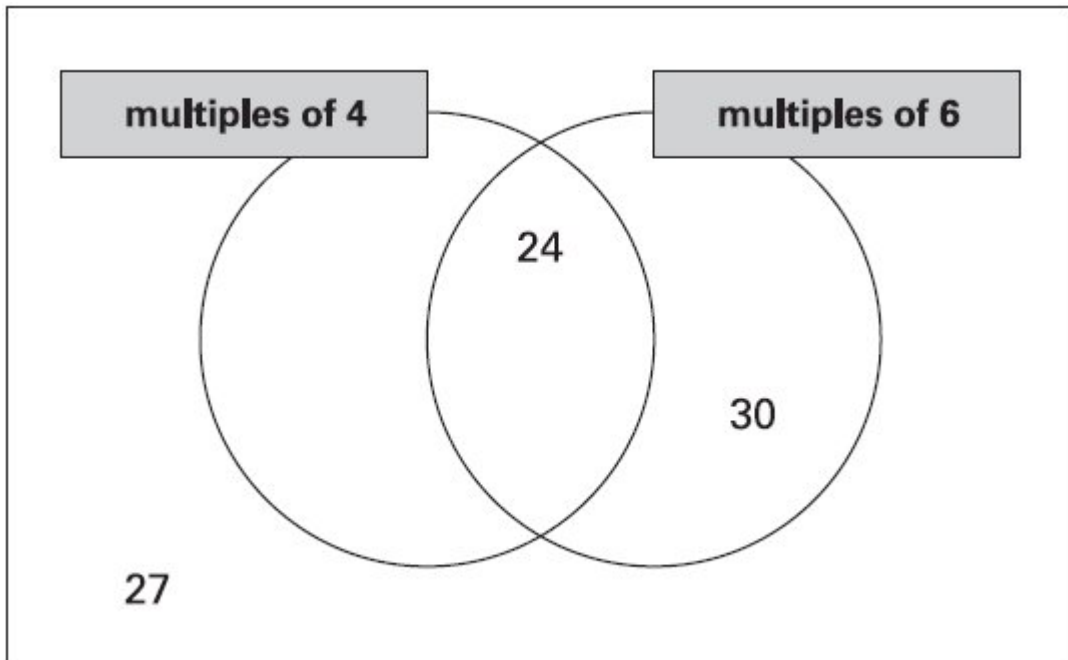
2 marks

12

Write these numbers in the correct places on this sorting diagram.

16      26      36

Handwritten mark



2 marks

13

Circle **one number** on the grid which can be **divided by 9** with a **remainder of 1**.

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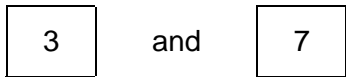
|     |     |     |
|-----|-----|-----|
| 97  | 98  | 99  |
| 107 | 108 | 109 |
| 117 | 118 | 119 |

1 mark

## Mark schemes

1

Cards completed as shown:

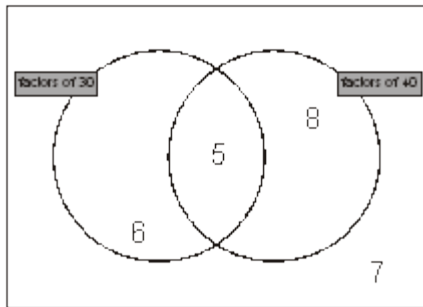


*Accept answers in either order.*

[1]

2

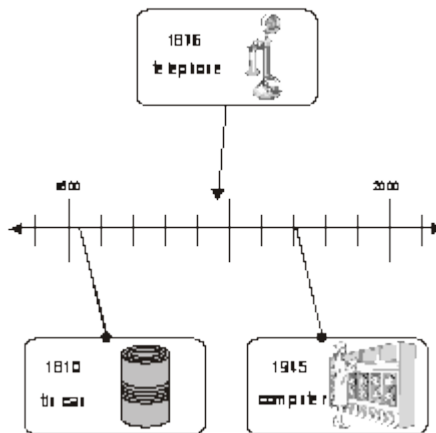
Award **TWO** marks for numbers written in the correct regions as shown:



If the answer is incorrect, award **ONE** mark for any three numbers written in the correct regions.

**Do not** accept numbers written in more than one region.

Accept alternative indications such as lines drawn from the numbers to the appropriate regions of the diagram.



*Lines need not touch the time line provided the intended accuracy is clear.*

Up to 2

[2]

3

2, 4, 5, 10

*All correct, in any order for 1 mark.*

[1]

4

Award **TWO** marks for all four factors, as shown:

1, 2, 5, 10

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

- three factors correct and none incorrect

**OR**

- four factors correct and one incorrect.

*Accept factors written in any order.*

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

Up to 2

[2]

5

All three numbers circled as shown:

18    **32**    **56**    68    **72**

***Do not** award the mark if additional incorrect numbers are circled.*

*Accept unambiguous alternatives, eg ticks, numbers crossed or underlined.*

[1]

6

Any odd numbered multiple of 10, ie 10 **OR** 30 **OR** 50 **OR** 70 **OR** 90 **OR** any number ending with any of the pairs of digits above.

1

An explanation which recognises that all multiples of 20 are also multiples of 10, eg:

- 'Because all the numbers in the 20 times table are also in the 10 times table'
- 'Because all multiples of 20 are multiples of 10'
- 'Because 20 is in the 10 times table'
- 'All multiples of 20 go in box A because 10 goes into them'
- '20 is a multiple of both 20 and 10, and so is 40, 60, etc'
- 'Because if it's not a multiple of 10, it can't be a multiple of 20'
- 'Because if it is a multiple of 20, it has to be a multiple of 10'
- 'Because 10 is a factor of 20'.



**Do not** accept vague or arbitrary explanations, eg:

- 'Because 40 is a multiple of 10'
- 'Because they would be in box A instead'
- 'Because all the multiples of 10 are multiples of 20'
- 'Because 10 is a multiple of 20'.

1

[2]

7

Three multiples of 3, eg:

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 3 | 6 | 2 | 4 | 5 | 7 |
|---|---|---|---|---|---|

OR

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 6 | 3 | 7 | 2 | 5 | 4 |
|---|---|---|---|---|---|

*Multiples may be given in any order.*

*Digits may be in either order, eg 24 OR 42*

**Do not** accept digits used more than once.

**Do not** accept digits other than those shown.

U1

[1]

8

(a)

|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

1

(b)

|    |    |    |    |    |    |    |    |    |     |
|----|----|----|----|----|----|----|----|----|-----|
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80  |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90  |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

**Do not** award the mark if more than one number is circled.

*Accept alternative unambiguous indications, eg numbers ticked, crossed or underlined.*

1

[2]

**9**

Diagram completed as shown:

|                 | <b>multiples of 9</b> | <b>not multiples of 9</b> |
|-----------------|-----------------------|---------------------------|
| <b>even</b>     | 72<br>54              | 56<br>84                  |
| <b>not even</b> | 63<br>45              | 49<br>75                  |

*Accept recognisable misspellings.**Accept 'odd' for 'not even'.**Accept alternative unambiguous indications, eg lines drawn from the labels to the appropriate parts of the diagram.***[1]****10**Award **TWO** marks for one correct number written in each white section of the table, eg

|                            | <b>less than 1000</b> | <b>1000 or more</b> |
|----------------------------|-----------------------|---------------------|
| <b>multiples of 20</b>     | 100                   | 2000                |
| <b>not multiples of 20</b> | 19                    | 1001                |

If the answer is incorrect, award **ONE** mark for three sections completed correctly.*Accept more than one number in each section as long as **all** are correct.*

Up to 2

**[2]**

11

Award **TWO** marks for a multiple of 15 which is greater than 100, eg

105 **OR** 120 **OR** 135 **OR** 150 **OR** 300

*Accept more than one answer if all are correct.*

If the answer is incorrect, award **ONE** mark for evidence of appropriate method, eg:

*Accept for **ONE** mark 30, 45, 60, 75 **OR** 90*

• 90 93 96 99 102 105 108 ...  
90 95 100 105 110 115 ...

← *Not spotting matching number (105)*

• 90 93 96 98 101 104 107 110 ...  
90 95 100 105 110 115 ...

← *One step size incorrect (96 to 98)*

• 15 30 45 60 75 80 95 110 125

← *One step size incorrect (75 to 80)*

•  $3 \times 5 \times 20$   
OR  
 $15 \times 10$

← *Multiple greater than 100 but not calculated*

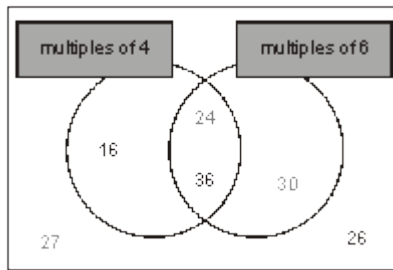
*Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

12

Award **TWO** marks for all three numbers correctly placed in the regions as shown:



**Do not** accept a number repeated in different regions.

**Do not** penalise answers which offer additional numbers (other than 16, 26 and 36) on the diagram, whether correctly placed or not.

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

Up to 2

[2]

13

109 **OR** 118 circled.

*Accept both 109 and 118 circled.*

[1]

## Notes

6

Use the whiteboard activity to answer questions about the sorting diagram.

### Open-ended activity

Change the type of diagram

- (a) Ask children to represent the given data using a Venn diagram.
- (b) Would there still be an empty section?
- (c) Ask children to create a different Venn diagram for a partner to change into a Carroll diagram or Tree diagram.

1 Name the section into which these numbers would go:

a. 80

*A*

**L3 AF2**

b. 50

*C*

**L3 AF2**

c. 200

*A*

**L4 AF2**

d. 55

*D*

**L4 AF2**

2 Which section can never have any numbers in it?

*B*

**L4 AF2**

3 Describe the sort of number that would go in section C.

*A multiple of 10 that is not a multiple of 20 e.g. 10, 30, 50 (i.e. an odd number multiplied by 10)*

**L4 AF2**

4 What is the biggest 3-digit number that could go into section:

a. A

*980*

**L4 AF2**

b. C

*990*

**L4 AF2**

c. D

*999*

**L4 AF2**