

Varied Fluency

Step 9: Common Factors

National Curriculum Objectives:

Mathematics Year 6: (6C5) [Identify common factors, common multiples and prime numbers](#)

Differentiation:

Developing Questions to support understanding common factors, using knowledge of the 2, 3, 4, 5 and 10 times tables.

Expected Questions to support understanding common factors, using knowledge of times tables up to 12.

Greater Depth Questions to support understanding common factors, using knowledge of times tables up to and beyond 12.

[More resources](#) which follow the same small steps as White Rose.

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Varied Fluency – Common Factors

1a. Tick the factors of each number to find common factors of 12 and 20.

	12	20
2	☐	☐
3	☐	☐
4	☐	☐
5	☐	☐



VF

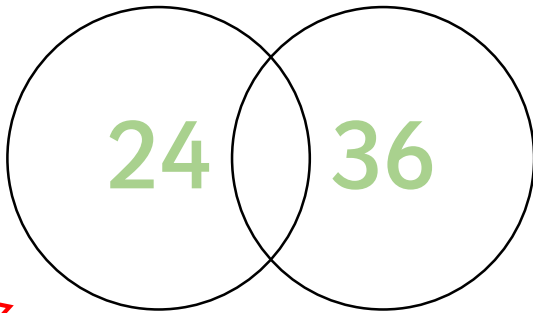
1b. Tick the factors of each number to find some common factors of 18 and 30.

	18	30
2	☐	☐
3	☐	☐
4	☐	☐
5	☐	☐



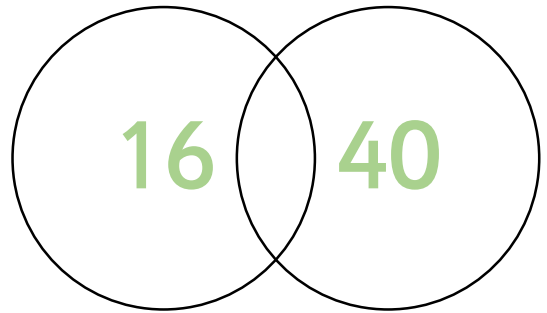
VF

2a. Use the Venn diagram to find common factors of 24 and 36.



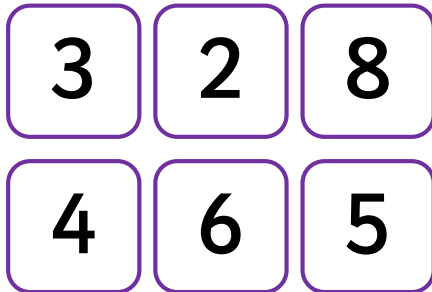
VF

2b. Use the Venn diagram to find common factors of 16 and 40.



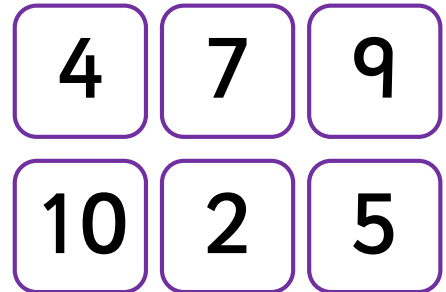
VF

3a. Which of these numbers are common factors of 16 and 24?



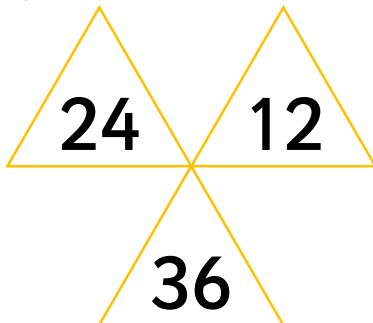
VF

3b. Which of these numbers are common factors of 20 and 28?



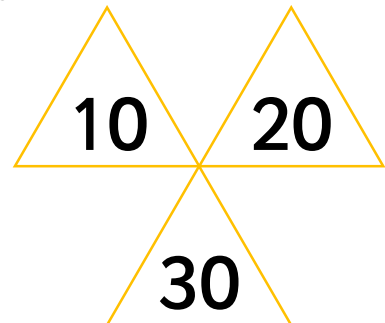
VF

4a. Find 3 common factors of the following numbers.



VF

4b. Find 3 common factors of the following numbers.



VF

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Varied Fluency – Common Factors – Year 6 Developing

Varied Fluency – Common Factors

5a. Tick the factors of each number to find common factors of 56 and 72.

	56	72
6		
7		
8		
9		



VF

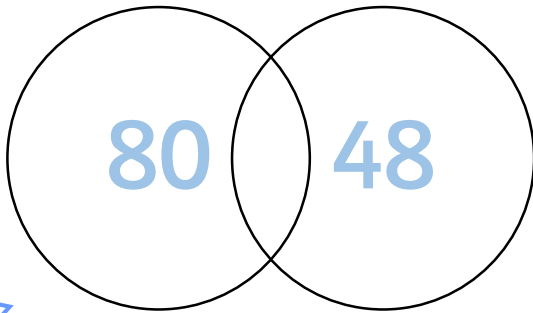
5b. Tick the factors of each number to find some common factors of 42 and 84.

	42	84
7		
8		
9		
12		



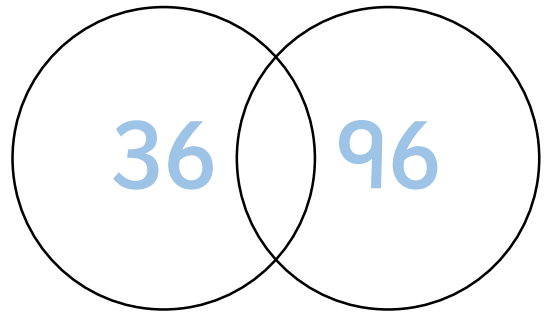
VF

6a. Use the Venn diagram to find common factors of 80 and 48.



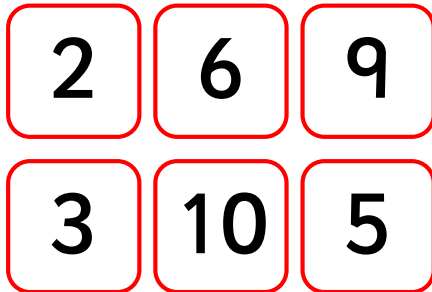
VF

6b. Use the Venn diagram to find common factors of 36 and 96.



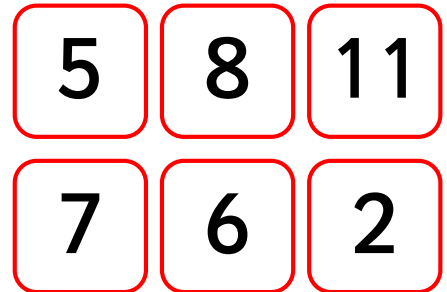
VF

7a. Which of these numbers are common factors of 60 and 90?



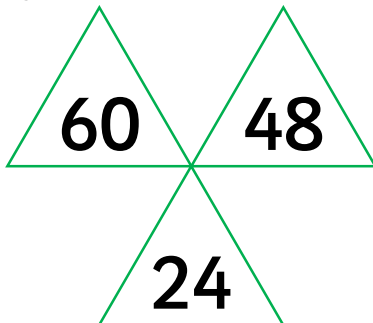
VF

7b. Which of these numbers are common factors of 56 and 77?



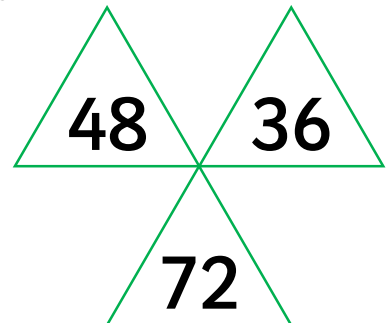
VF

8a. Find 3 common factors of the following numbers.



VF

8b. Find 3 common factors of the following numbers.



VF

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Varied Fluency – Common Factors – Year 6 Expected

Varied Fluency – Common Factors

9a. Tick the factors of each number to find common factors of 75 and 150.

	75	150
15	☐	☐
20	☐	☐
25	☐	☐
50	☐	☐



VF

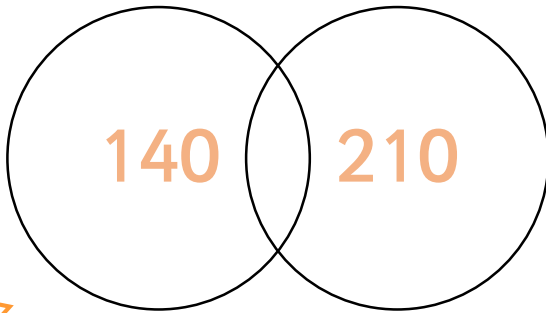
9b. Tick the factors of each number to find some common factors of 350 and 420.

	350	420
7	☐	☐
20	☐	☐
25	☐	☐
50	☐	☐



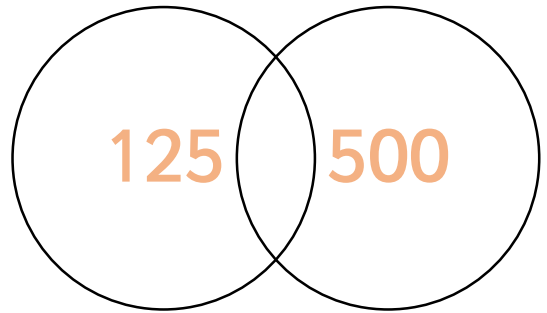
VF

10a. Use the Venn diagram to find common factors of 140 and 210.



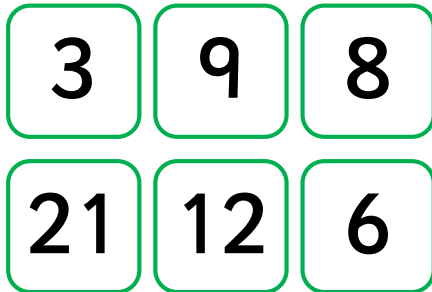
VF

10b. Use the Venn diagram to find common factors of 125 and 500.



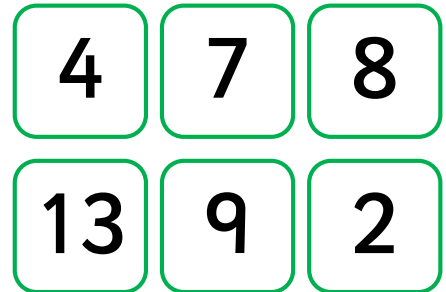
VF

11a. Which of these numbers are common factors of 63 and 108?



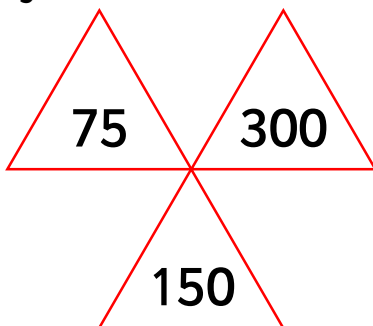
VF

11b. Which of these numbers are common factors of 234 and 522?



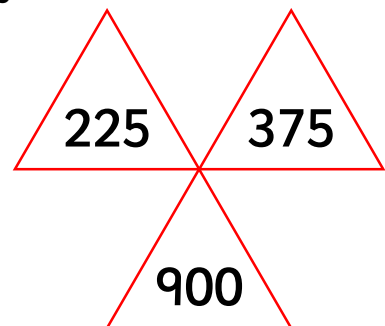
VF

12a. Find 3 common factors of the following numbers.



VF

12b. Find 3 common factors of the following numbers.



VF

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Varied Fluency – Common Factors – Year 6 Greater Depth

Varied Fluency – Common Factors

Developing

1a.

	12	20
2	✓	✓
3	✓	
4	✓	✓
5		✓

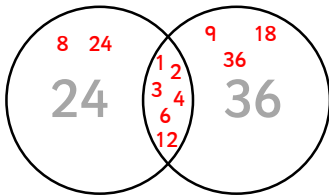
2 and 4 are common factors of 12 and 20.

1b.

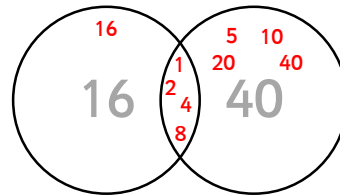
	18	30
2	✓	✓
3	✓	✓
4		
5		✓

2 and 3 are common factors of 18 and 30.

2a.



2b.



3a. 2, 8, and 4

3b. 4 and 2

4a. Any 3 from: 1, 2, 3, 4, 6 and 12

4b. Any 3 from: 1, 2, 5 and 10

Expected

5a.

	56	72
6		✓
7	✓	
8	✓	✓
9		✓

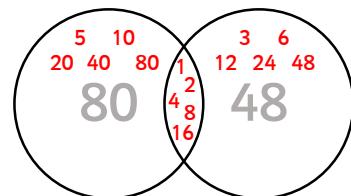
8 is a common factor of 56 and 72.

5b.

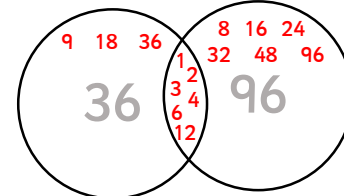
	42	84
7	✓	✓
8		
9		
12		✓

7 is a common factor of 42 and 84.

6a.



6b.



7a. 2, 3, 5, 6 and 10

7b. 7, 11

8a. Any 3 from: 1, 2, 3, 4, 6 and 12

8b. Any 3 from: 1, 2, 3, 4, 6 and 12

Varied Fluency – Common Factors

Greater Depth

9a.

	75	150
15	✓	✓
20		
25	✓	✓
50		✓

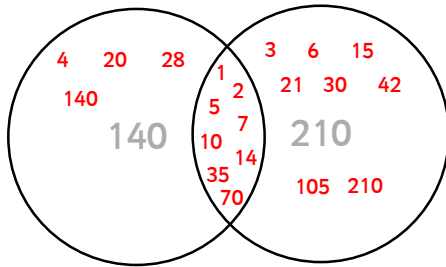
15 and 25 are common factors of 75 and 150.

9b.

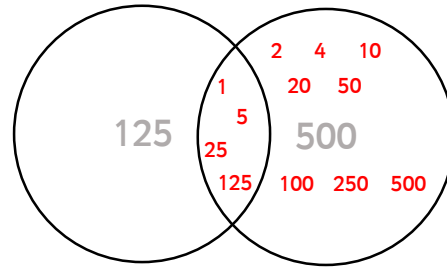
	350	420
7	✓	✓
20		✓
25	✓	
50	✓	

7 is a common factor of 350 and 420.

10a.



10b.



11a. 3 and 9

11b. 2 and 9

12a. Any 3 from: 1, 3, 5, 15, 25 and 75

12b. Any 3 from: 1, 3, 5, 15, 25 and 75

Reasoning and Problem Solving

Step 9: Common Factors

National Curriculum Objectives:

Mathematics Year 6: (6C5) [Identify common factors, common multiples and prime numbers](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Identify the odd the one out and explain why. Numbers can have common factors from times tables 2, 3, 4, 5, or 10.

Expected Identify the odd the one out and explain why. Numbers can have common factors from any times table to 12.

Greater Depth Identify the odd the one out and explain why. Numbers can have common factors from times tables up to and beyond 12.

Questions 2, 5 and 8 (Problem Solving)

Developing Identify a pair of numbers with the most common factors from a choice of 2 pairs. Numbers will have common factors from times tables 2, 3, 4, 5, or 10.

Expected Identify a pair of numbers with the most common factors from a choice of 3 Numbers will have common factors from any times table up to 12.

Greater Depth Identify a pair of numbers with the most common factors from a choice of 4 pairs. Numbers will have common factors from any times table up to and beyond 12.

Questions 3, 6 and 9 (Reasoning)

Developing Solve a word problem relating to common factors from times tables 2, 3, 4, 5, or 10 reasoning the answer.

Expected Solve a word problem relating to common factors from times tables to 12 reasoning the answer.

Greater Depth Solve a word problem relating to common factors from times tables beyond 12 reasoning the answer.

[More resources](#) which follow the same small steps as White Rose.

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Reasoning and Problem Solving – Common Factors

1a. These numbers have common factors. Which number is the odd one out?

13

12

10

Explain your answer.



R

1b. These numbers have common factors. Which number is the odd one out?

16

36

42

Explain your answer.



R

2a. Which pair of numbers has the most common factors?

25

30

50

20



PS

2b. Which pair of numbers has the most common factors?

8

15

35

21



PS

3a. A baker is packing 14 iced buns and 21 plain buns.

The baker needs to pack the same amount of buns in each bag.

What is the largest amount of buns that can go in each bag?

Prove it.



R

3b. Oak class has 28 children and Sycamore class has 32 children.

The children need to work in their own class in equal groups.

What is the largest number of children that can work in a group?

Prove it.



R

Reasoning and Problem Solving – Common Factors

4a. These numbers have common factors. Which number is the odd one out?

28

49

17

Explain your answer.



R

4b. These numbers have common factors. Which number is the odd one out?

96

144

128

Explain your answer.



R

5a. Which pair of numbers has the most common factors?

25

50

15

20

36

24



PS

5b. Which pair of numbers has the most common factors?

12

48

21

84

56

72



PS

6a. A company has to pack 36 gold watches and 48 silver watches for delivery.

The company needs to pack the same amount of watches in each box.

What is the largest number of watches that can go in each box?

Prove it.



R

6b. A gardener is planting 27 daffodil bulbs and 54 tulip bulbs.

The gardener needs equal rows of each flower.

What is the largest number of plants he can plant in each row?

Prove it.



R

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Reasoning and Problem Solving – Common Factors – Year 6 Expected

Reasoning and Problem Solving – Common Factors

7a. These numbers have common factors. Which number is the odd one out?

15

90

40

Is there more than one answer?
Explain your answer.



R

7b. These numbers have common factors. Which number is the odd one out?

250

400

750

Is there more than one answer?
Explain your answer.



R

8a. Which pair of numbers has the most common factors?

105

45

115

210

148

296

72

144



PS

8b. Which pair of numbers has the most common factors?

49

94

75

250

250

500

620

100



PS

9a. A builder has 125 yellow bricks and 75 red bricks.

She wants to build a wall with alternating coloured rows.

What is the largest number of bricks she can use in each row?

Prove it.



R

9b. A museum is creating a display of 78 Ancient Egyptian coins and 117 Iron Age coins.

The museum needs equal rows of each coin.

What is the largest number of coins they can place in each row?

Prove it.



R

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Reasoning and Problem Solving – Common Factors

Developing

- 1a. Various answers, for example: 13 is the odd one out because it only has one common factor with 12 and 10: 1. 12 and 10 have two common factors: 1 and 2.
- 1b. Various answers, for example: 42 is the odd one out because 16 and 36 have common factors of 1, 2 and 4; 16 is the odd one out because 36 and 42 have a common factor of 1, 2, 3 and 6.
- 2a. 50 and 20 (CF = 1, 2, 5 and 10); 25 and 30 (CF = 1 and 5).
- 2b. 35 and 21 (CF = 1 and 7); 8 and 15 (CF = 1).
- 3a. 7 buns in each bag: there will be 2 bags of iced buns and 3 of plain buns.
- 3b. 4 children in each group: there will be 7 groups in Oak class and 8 groups in Sycamore class.

Expected

- 4a. Various answers, for example: 17 is the odd one out because it only has one common factor with 28 and 49: 1. 28 and 49 have two common factors: 1 and 7.
- 4b. Various answers, for example: They all have six common factors (1, 2, 3, 4, 8 and 16) but 128 is the odd one out because 96 and 144 have 4 more common factors of 6, 12, 24 and 48; 144 is the odd one out because 96 and 128 have a common factor of 32.
- 5a. 36 and 24 (CF = 1, 2, 3, 4, 6 and 12); 25 and 50 (CF = 1, 5 and 25); 15 and 20 (CF = 1, 5).
- 5b. 12 and 48 (CF = 1, 2, 3, 4, 6 and 12); 21 and 84 (CF = 1, 3, 7 and 21); 56 and 72 (CF = 1, 2, 4 and 8).
- 6a. 12 watches in each box: there will be 3 boxes of gold watches and 4 boxes of silver watches.
- 6b. 9 bulbs in each row: there will be 3 rows of daffodils and 6 rows of tulips.

Greater Depth

- 7a. Various answers, for example: They all have two common factors (1 and 5) but 15 is the odd one out because 90 and 40 have two more common factors of 2 and 10; 40 is the odd one out because 90 and 15 have two more common factors of 3 and 15.
- 7b. Various answers, for example: 400 is the odd one out because it only has five common factors with 250 and 750: 1, 2, 5, 10 and 25. 250 and 750 have three more common factors: 50, 125 and 250.
- 8a. 72 and 144 (CF = 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36 and 72); 142 and 296 (CF = 1, 2, 4, 37, 74 and 148); 105 and 45 (CF = 1, 3, 5 and 15); 115 and 210 (CF = 1 and 5).
- 8b. 250 and 500 (CF = 1, 2, 5, 10, 25, 50, 125 and 250); 620 and 100 (CF = 1, 2, 4, 5, 10 and 20); 75 and 250 (CF = 1, 5 and 25); 49 and 94 (CF = 1).
- 9a. 25 bricks per row: there will be 5 rows of yellow bricks and 3 rows of red bricks.
- 9b. 13 coins in each row: there will be 9 rows of Iron Age coins and 6 rows of Ancient Egyptian coins.