

Reasoning and Problem Solving

Common Factors

National Curriculum Objectives:

Mathematics Year 5: (5C5a) Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers

Mathematics Year 5: (5C8a) Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Identify the pair of numbers that share the most common factors by systematically checking each times table. Includes the common factors 1, 2, 3, 5 and 10.

Expected Identify the pair of numbers that share the most common factors by systematically checking each times table. Includes the common factors 1 – 12.

Greater Depth Identify the pairs of numbers that share the most common factors. Includes the common factors of up to 12 and beyond.

Questions 2, 5 and 8 (Reasoning)

Developing Prove if a statement about common factors is true or false. Includes the common factors 1, 2, 3, 5 and 10 and use of arrays.

Expected Prove if a statement about common factors is true or false. Includes the common factors 1 – 12.

Greater Depth Prove if a statement about common factors is true or false. Includes the common factors up to 12 and beyond.

Questions 3, 6 and 9 (Reasoning)

Developing Identify and explain the mistake made in a Venn diagram by systematically checking each times table. Includes the factors 1, 2, 3, 5 and 10.

Expected Identify and explain the mistake made in a Venn diagram by systematically checking each times table. Includes the factors 1 – 12.

Greater Depth Identify and explain the mistakes made in a Venn diagram. Includes the factors up to 12 and beyond.

Common Factors

1a. Circle the pair of numbers that share the most number of common factors by systematically checking each times table.

6 and 20

8 and 14

10 and 15

20 and 30

9 and 12



PS

Common Factors

1b. Circle the pair of numbers that share the most number of common factors by systematically checking each times table.

15 and 20

5 and 12

8 and 10

12 and 14

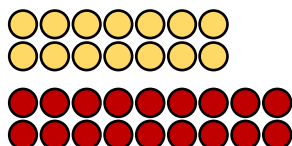
10 and 20



PS

2a. Carly says,

The number 1 is the largest common factor of 14 and 18.



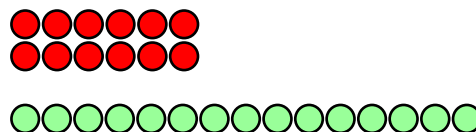
Is Carly correct? Prove it.



R

2b. Dean says,

The number 5 is the largest common factor of 12 and 15.

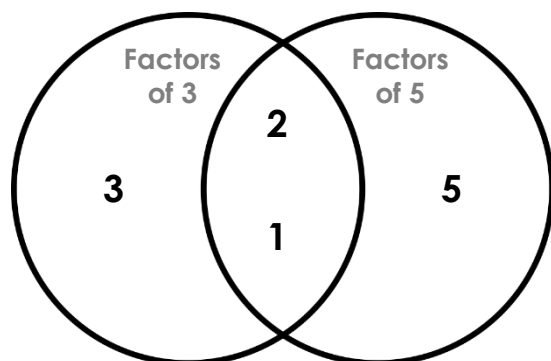


Is Dean correct? Prove it.



R

3a. Igor has sorted some factors into a Venn diagram by systematically checking each times table.

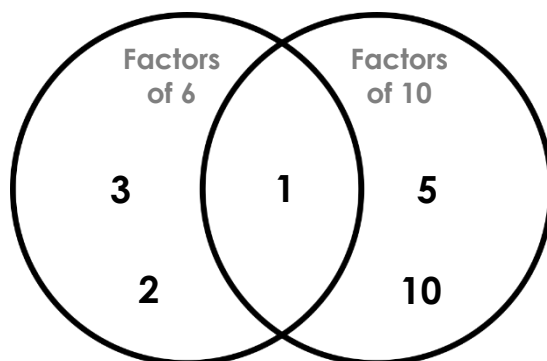


Explain the mistake that he has made.



R

3b. Maisie has sorted some factors into a Venn diagram by systematically checking each times table.



Explain the mistake that she has made.



R

Common Factors

4a. Circle the pair of numbers that share the most number of common factors by systematically checking each times table.

9 and 30

12 and 18

10 and 25

23 and 31

14 and 21



PS

Common Factors

4b. Circle the pair of numbers that share the most number of common factors by systematically checking each times table.

16 and 24

18 and 27

9 and 21

28 and 49

25 and 55



PS

5a. Ella says,



The number 4 is the largest common factor of 16 and 24.

Is Ella correct? Prove it by working systematically through the times tables.



R

5b. Benji says,



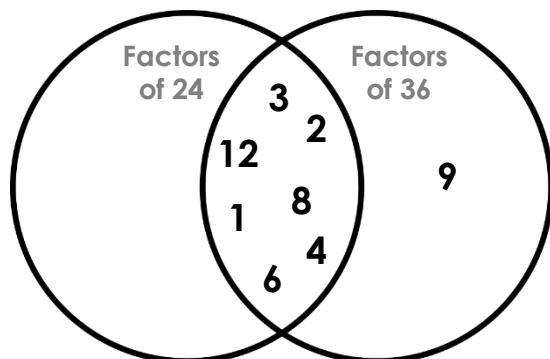
The number 3 is the largest common factor of 54 and 63.

Is Benji correct? Prove it by working systematically through the times tables.



R

6a. Ashton has sorted some factors into a Venn diagram by systematically checking each times table.

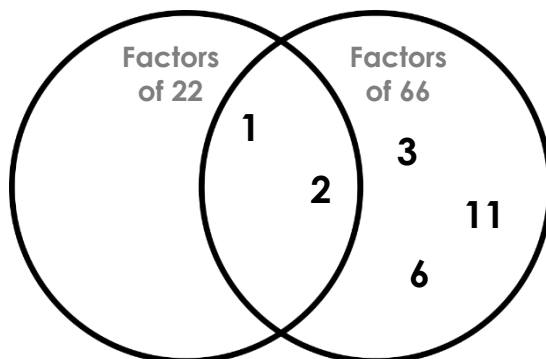


Explain the mistake that he has made.



R

6b. Daisy has sorted some factors into a Venn diagram by systematically checking each times table.



Explain the mistake that she has made.



R

Common Factors

7a. Circle the pairs of numbers that share the most number of common factors.

22 and 33

50 and 60

32 and 56

78 and 38

72 and 99



PS

Common Factors

7b. Circle the pairs of numbers that share the most number of common factors.

11 and 88

18 and 45

44 and 55

12 and 96

60 and 80



PS

8a. Jess says,



The number 7 is the largest common factor of 24 and 84.

Is Jess correct? Prove it.



R

8b. Scott says,



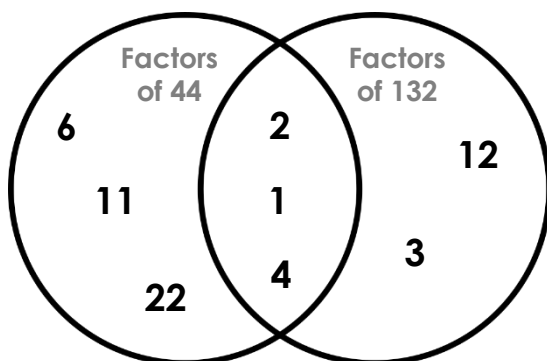
The number 14 is the largest common factor of 84 and 140.

Is Scott correct? Prove it.



R

9a. Jordan has sorted some factors into a Venn diagram.

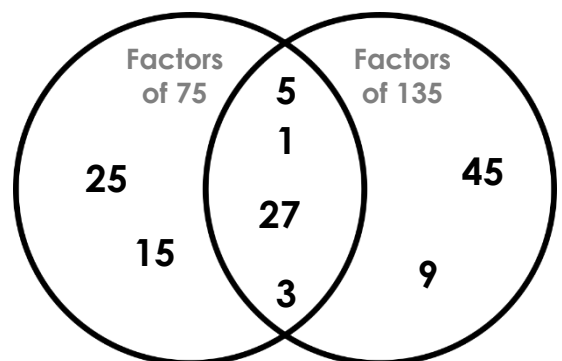


Explain the mistakes that he has made.



R

9b. Priya has sorted some factors into a Venn diagram.



Explain the mistakes that she has made.



R

Reasoning and Problem Solving

Common Factors

Developing

1a. 20 and 30 – 1, 2, 5, 10

2a. Carly is not correct. The number 2 is the largest common factor of 14 and 18.

3a. 2 is not a factor of 3 or 5 so it should not be in the Venn diagram.

Expected

4a. 12 and 18 – 1, 2, 3, 6

5a. Ella is not correct. The number 8 is the largest common factor of 16 and 24.

6a. 8 is not a factor of 36 so it should not be in the middle of the Venn diagram. It should only be listed as a factor of 24.

Greater Depth

7a. 50 and 60 – 1, 2, 5, 10; 32 and 56 – 1, 2, 4, 8. Both pairs have 4 common factors.

8a. Jess is not correct. The number 7 is not a factor of 24. The number 12 is the largest common factor of 24 and 84.

9a. 11 and 22 are factors of 44 and 132 so should be in the middle of the Venn diagram. 6 is only a factor of 132 so should be in the 'Factors of 132' section.

Reasoning and Problem Solving

Common Factors

Developing

1b. 10 and 20 – 1, 2, 5, 10

2b. Dean is not correct. The number 5 is not a factor of 12. The largest common factor of 12 and 15 is 3.

3b. 2 is a factor of 6 and 10 so it should be in the middle of the Venn diagram.

Expected

4b. 16 and 24 – 1, 2, 4, 8

5b. Benji is not correct. The number 9 is the largest common factor of 54 and 63.

6b. 11 is a factor of 22 and 66 so it should be in the middle of the Venn diagram.

Greater Depth

7b. 12 and 96 – 1, 2, 3, 4, 6, 12; 60 and 80 – 1, 2, 4, 5, 10, 20. Both have 6 common factors.

8b. Scott is not correct. The number 28 is the largest common factor of 84 and 140.

9b. 15 is a factor of both 75 and 135 so it should be in the middle of the Venn diagram. 27 is only a factor of 135 so it should be in the 'Factors of 135' section.