Unit 12
Properties of number

Five Daily Lessons

National Numeracy Strategy

Year 5
Autumn term

Unit Objectives
Year 5

• Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back.	Page 17
• Know squares of numbers to at least 10x10.	Page 21
• Recognise multiples of 6, 7, 8, 9 up to the 10th multiple.	Page 19
• Find all the pairs of factors of any number up to 100.	Page 21
• Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions asking 'What if…..?'	Page 79

This Unit Plan is designed to guide your teaching.
You will need to adapt it to meet the needs of your class.

Link Objectives

Year 4

- Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back.
- Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions by asking 'what if…?'.
- Recognise multiples of 2, 3, 4, 5 and 10 up to the tenth multiple.

Year 6

- Recognise and extend number sequences, such as the sequence of square numbers, or the sequence of triangular numbers 1, 3, 6, 10, 15… Count on in steps of 0.1, 0.2, 0.25, 0.5… and then back.
- Recognise squares of numbers to at least 12x12.
- Recognise prime numbers to at least 20.
- Factorise numbers to 100 into prime factors.
- Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. Suggest extensions asking 'What if…?'

Resources needed to teach this unit:

- Resource sheet 12.1 (4 pages)
- Resource sheet 12.2
- Activity sheet 12.1
- Activity sheet 12.2
- Activity sheet 12.3
- OHT 12.1
- OHT 12.2
- OHT 12.3
- OHT 12.4
- OHT 12.5
- OHT 12.6
- OHT 12.7
- Whiteboards
- Counting stick
- Squared paper
- Counters

department for education and skills

Planning sheet	Day One	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Count on and back in equal steps extending beyond zero when counting back. VOCABULARY step size negative zero RESOURCES Counting stick Whiteboards	• Hold up a counting stick in a vertical position. Explain that zero is in the middle and attach a zero to the stick. Say the intervals are each worth two. Count up from zero to 10 with the class. Count back, stop at zero. **Q** What are the numbers below zero called? Agree they are negative numbers and with class count backwards to negative 10. Point to various points on the stick and ask for the number represented. Children use whiteboards to display their answers. • Say the intervals are now worth 5. Start at zero and count up then back past zero. Get children to identify the values at various points on the stick. Repeat with different step sizes. • Explain that this time you are going to give the children the values at 2 points. Point to the centre, say this is zero and at two steps forwards say this is eight. **Q** What is the step size? Agree the step size is 4. Identify different points on the stick. **Q** What is the number at this point? Repeat for different step sizes. • Identify the values of 2 points on the stick, include cases where neither is zero.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back. VOCABULARY sequence rule shorthand RESOURCES Activity sheet 12.1 Resource sheet 12.1	• On the board write: 4, 15, 26, _____, _____, _____ **Q** Can you find the missing numbers in this sequence? Collect answers and agree they are 37, 48, 59. **Q** How can we explain the rule? Discuss suggestions and agree the rule is adding on 11 each time. **Q** How can we record our rule? Collect answers and record them on the board. Encourage children to use next or new number and last or old number and record next number = last number + 11. • Write on the board: 2, 13, 24, _____, _____, _____ Collect answers and discuss the rule for this sequence. **Q** What is the difference between these two sequences? Agree that the starting numbers are difference and these are needed to describe the rule in full, as well as using next number and last number. • Write on the board: Start: 6 Rule: next number = last number + 4 **Q** What are the first 8 numbers in the sequence? Collect answer and record on the board: 6, 10, 14, 18, 22, 26, 30, 34 • Say to save writing, you are going to write S for start, NN for new number, LN for last number . Write: S: 6 Rule: NN = LN + 4. Agree this describes the sequence 6, 10, 14 etc. • Write on the board: S: 5 Rule: NN = LN + 3 **Q** What are the first 10 numbers in the sequence? Discuss solutions and ensure all children understand the shorthand. Emphasise that it is alright to use this shorthand in the class because everyone knows what it means. • Give out Activity Sheet 12.1 for children to complete in pairs. Collect answers and discuss methods. Use some of the children's own sequences to ensure children understand how to record the rules for these sequences.

Plenary

Teaching Activities/Focus Questions
• Distribute the number cards on Resource Sheet 12.1. Write on the board: S:4 Rule: NN=LN + 5 Ask a child to describe the rule in their own words. **Q** Is your number in this sequence? Let children check their numbers. Start with the child with the number 4, who stands up and calls out the number. This is followed by the child with 9 and so on the generate the first 10 numbers in the sequence. Repeat using the rules: S:19 NN = LN – 3 S:8 NN = LN + 1.5 S:-8 NN = LN + 6 Get the class to check that the numbers the children display when they stand up are correct. **By the end of the lesson, children should be able to:** • **Describe, extend and explain number sequences e.g. describe and extend the sequences –40, -37, -34…** • **Explain the rule orally and in writing.** (Refer to supplement of examples, section 6, page 17.)

Planning sheet	Day Two (page 1 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Count on and back in equal steps extending beyond zero when counting back. VOCABULARY positive negative zero multiple RESOURCES Counting stick	• Hold up a counting stick in a vertical position. Explain that zero is at the bottom. Attach a zero to the stick. **Q** What are the numbers above zero called? Agree they are positive numbers. Rotate the stick through 180 degrees so that zero is now at the top, and establish that the stick now represents negative numbers. Say that as the children count you will rotate the stick to represent positive and negative numbers. • Start with the zero at the bottom. Say the numbers on the stick are multiples of 6. Point to the first marker above zero. **Q** What multiple of 6 is this number? Agree it is 6, the first multiple of 6 and with the class count on from 6 to 60 and back to zero. Point to another marker on the stick e.g. the seventh marker above zero. **Q** What multiple of 6 is this number? Agree it is 42, the seventh multiple of 6. Repeat. • Turn the stick round with zero at the top. Point to a marker on the stick e.g. the 2nd marker below zero. **Q** What is the number represented here? Agree it is negative 12, the second multiple of negative 6. Count down and up the stick in multiples of negative six. Stop at marks and ask for the values and the multiples of –6. • Change the multiple and repeat.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Recognise and extend number sequences formed by counting from any number in steps of constant size, extending beyond zero when counting back. Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. VOCABULARY sequence predict pattern rule diagonals RESOURCES OHT 12.1 OHT 12.2 Resource sheet 12.2 OHT 12.3 Counters Squared paper	• Show OHT 12.1 the 10 by 10-number grid. Point to the 6 and identify the diagonal 6, 17, 28 etc. Say we will call this a sequence on a right diagonal. **Q** How can we describe this sequence? Ask children to describe it to their partners. Collect answers. Remind children of the shorthand from Day 1. Agree the sequence is: S:6 Rule: NN = LN + 11 • Point to another number on the row e.g. 2 and the right diagonal i.e. the diagonal parallel to the first diagonal, e.g. 2, 13, 24 etc. **Q** What can we say about this sequence? • Discuss responses and agree the same rule add 11 applies, but the start number is different. • Pick any number in the table e.g. 42 and identify the right diagonal of numbers 42, 53, 64 etc. **Q** Is the rule still the same? Agree the same rule applies. Help children to identify how the move between numbers in the sequence represents adding 1 row of 10 plus 1 each time. • Point to 6 and identify the left diagonal 6, 15, 24 etc. Repeat process to establish why sequences on the left diagonals share the same rule NN = LN + 9. • Show OHT 12.2. **Q** What is different about this grid? Agree it had 9 columns not 10 as before. Give out Resource Sheet 12.2. • Replace OHT 12.2 with OHT 12.3. Place counters on a right diagonal. Ask children to identify the numbers represented by the counters. **Q** What is the rule for this right diagonal? Record answers on the board using the shorthand notation for the rules under: Right Diagonals. Repeat for other right angles. **Q** Is the rule still the same? Agree it is, and get the children to explain why, using counters on the OHT grid if it helps. Repeat for left diagonals.

Plenary

Teaching Activities/Focus Questions
• On the board write the headings: Columns Right Diagonals Left Diagonals Collect children's rules for the right and left diagonals on their chosen grids and record under the headings e.g. 6 NN = LN + 7 NN = LN + 5 Ask children to share their explanation as to why their rules work. **Q** Can we provide a rule for a 14 column grid? • Encourage children to use the information in the table and their explanations to predict the rules for tables of different sizes.

Planning sheet	Day Two (page 2 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

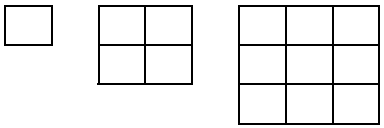
Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**
			Q How can we test our rules? Agree that we can use different sequences from the table. Show OHT 12.2 again and let children test the rules, and confirm the rules: NN = LN + 10 NN = LN + 8 • Give out squared paper. Explain that you want children to work in pairs to find rules for the right and left diagonals on grids with 5, 6, 7, 8, columns etc. They are to test the rules on grids of their choice and present a brief explanation saying why they think their rules will work.	**By the end of the lesson, children should be able to:** • **Describe, extend and explain number sequences and patterns e.g. on a 9x9 number grid.** (Refer to supplement of examples, section 6, page 17.)

Planning sheet	Day Three (page 1 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Count on or back in equal steps extending beyond zero when counting back. Begin to find the difference between positive and negative numbers. VOCABULARY difference negative positive step size RESOURCES Counting stick	• Hold up a counting stick vertically. Attach the zero two markers above the bottom of the stick. Say the step size is 3. **Q** What numbers are represented at the ends of the stick? Agree they are –6 and 24. Count up and back to check. On the board record as a table: **Step Size** | **End Numbers** 3 | -6 and 24 • Move the zero to another point on the stick. Change the step size and get children to identify the numbers at the ends of the stick. Record as before. Repeat, each time recording the step size and end numbers. • Ask children to look at the first two end points –6 and 24. **Q** What is the difference between –6 and 24? Establish that this means the size of the interval from –6 to 24. Agree it is 30, counting to check, and add to the table: **Difference** 30 Repeat for other end numbers in the table.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Know squares of numbers to at least 10x10. Solve mathematical problems or puzzles, recognise relationships, generalise and predict. VOCABULARY square number square of squared RESOURCES Activity sheet 12.2 OHT 12.4	• On the board write the sequence of square numbers: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100 **Q** Can we describe this sequence in the way we did last lesson? Agree that we are not adding or subtracting a common number as we have been doing. Establish that the gaps between the numbers are the odd numbers, 3, 5, 7 etc. Explain these numbers on the board are called square numbers. **Q** Can you explain why you think these numbers are called square numbers? Collect answers and discuss the children's explanations. On the board draw:  **Q** How can these pictures help us with square numbers? • Establish that the number of small squares needed to build these squares is 1, 4 and 9 and that these are square numbers. **Q** What would the next square number look like? • Collect answers and draw the 4 by 4 square on the board and agree it has 16 small squares. Point to the first 1 by 1 square. **Q** How many more small squares did we use to get the next square number? Agree it is 3. Repeat the question to build up the pattern. **Q** How many small squares do we need to add to our 4 by 4 square? Agree it is 9, and draw it on the board. Remind the children of the pattern of odd numbers, they identified earlier.

Plenary

Teaching Activities/Focus Questions
Q How do we know if we have found all the squares? • Collect answers from the class to the number of 1 by 1, 2 by 2, 3 by 3 and 4 by 4 squares in the 4 by 4 square. Agree the answers are 16, 9, 4 and 1 respectively and the total is 30. Ensure children have the correct answers for the first 4 squares. **Q** How did you count the number of 2 by 2 and 3 by 3 squares in the 4 by 4 squares? • Show OHT 12.4 and cover the top left 2 by 2 square with 4 counters. Invite children to use the OHT and the counters to explain their methods of counting the 2 by 2 squares. Repeat to illustrate systematic methods of counting. **Q** How many square are there in the 5 by 5 or 6 by 6 squares?

Planning sheet	Day Three (page 2 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/ Focus Questions**
	Q Can you spot any connection between the step size and the difference? Establish that the difference is always 10 times the step size. **Q** Why is the difference 10 times the step size? Give children time to work in pairs to prepare an explanation that there are 10 intervals on the stick, each representing the step size. • Remove the zero from the stick. Point to the bottom end and say this is –9 and the step size is 3. **Q** What number does the top of the stick represent? Ensure children recognise that the difference will be 30 and the top number will be 21. **Q** Where is zero on the stick? Agree the marker that represents zero. • Repeat with other step sizes. Identify the number at the top of the stick, and ask for the number at the bottom.		**Q** What is the quickest way to find the number of small squares? • Discuss answers and illustrate using the 2nd square that we can multiply 2 by 2 and get 4 and using the 3rd square, confirm 3 by 3 gives 9. **Q** How could we rewrite 81 and 100? Establish that 9 x 9 = 81 and 10 x 10 = 100. Introduce the term squared, explaining that 9 x 9 is described as 9 squared or the square of 9. **Q** What is 5 squared? **Q** The square of 6? Ensure children can use these terms and can calculate the squares of numbers 1 to 10. • Give out Resource Sheet 12.2. Explain to the children that they are to find the total number of squares in each square. Remind them that you want all of the squares they can find, not just the smallest squares. Say that the first square is a 1 by 1 square and represents the first square number 1. **Q** How many 1 by 1 squares are there in each square? Get children to write their answers in the first column on the sheet. **Q** What size is the second square? Agree it is a 2 by 2 square and represents the second square number 4. **Q** Can you find any 2 by 2 squares in the 3 by 3 squares? Collect answers and agree that there are four 2 by 2 squares. • Encourage children to identify the different sized squares in the 3 by 3 square i.e. the 1 x 1 squares, the 2 x 2 squares and the 3 x 3 squares. Explain that you want them to find a systematic method for counting squares. Let the class continue to find the squares in the 4 by 4, 5 by 5 and 6 by 6 squares.	• Encourage children to use the methods to explain how they counted the various sized squares in the larger square. **By the end of the lesson, children should be able to:** • **Recognise square numbers to 100 i.e. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100.** (Refer to supplement of examples, section 6, page 21.)

Planning sheet	Day Four (page 1 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**
Find the factor pairs for multiples of 10 up to 100. VOCABULARY multiple factor factor pair product	• Remind children that 60 is a multiple of 6 and 10. **Q** What numbers are factors of 60? Collect answers and record them on the board. **Q** What is the smallest factor, the largest factor of 60? Establish they are 1 and 60. • On the board, write: 60 1 x 60 Explain that 1 and 60 form a factor pair as their product, 1 x 60 is 60. **Q** Using our factors, what other factor pairs give 60?	Know how to find all the pairs of factors of any number up to 100. Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. VOCABULARY square prime test predict property RESOURCES Activity sheet 12.3	• Give out Activity Sheet 12.3. Ask children in pairs, to complete the factor tables for 10, 70, 80, 90 and 100. Check results and correct any errors. **Q** Which multiple of 10 has the greatest number of factors? Agree that 60 and 90 each has 12 factors. **Q** How many factors has 100? Ensure children recognise that the last product 10 x 10 represents only 1 factor, so 100 has 9 factors. Establish that the other multiples of 10 have an even number of factors, only 100 has an odd number of factors. **Q** What type of number is 100? Agree it is a square number. **Q** Do the other square numbers have an odd number of factors? • With the children, list the square numbers from 4 to 81 and get the children to find the factor tables to decide whether these square number have an odd number of factors. Discuss the children's answers and agree that these square numbers have an odd number of factors. Draw out that square numbers always have a pair of factors that share the same number; only square numbers have this property. **Q** What is the least number of factors a number could have? Encourage children to predict what these numbers might be, and then test their predictions. • Collect children's results and conclusions. Draw out that numbers with the least number of factors will have only one pair of factors, 1 and the number. Collect some of these numbers e.g. 7, 19, 23 etc. Explain that these numbers are called prime numbers. **Q** What factors does the number 1 have? Explain that this square number is an exception as it has only 1 factor, itself. It is a square number but not a prime number.	• Refer back to Activity Sheet 12.3. Remind children that the tables for each number lists all the factor pairs and the factors. In the case of 40 there are 4 factor pairs and 8 factors, and 40 is a multiple of each of the 8 factors. • Get children to use the words factor and multiple in this way for the other tables and make statements such as: 3 is a factor of 30, 50 is a multiple of 25. • List the vocabulary children have been using this lesson; Multiple of Factor of Square of Square Squared Prime number

Planning sheet	Day Four (page 2 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*
Oral and Mental		**Main Teaching**		**Plenary**

Objectives and vocabulary	Teaching Activities	Objectives and vocabulary	Teaching Activities	Teaching Activities/ Focus Questions
	Collect answers and record these on the board: **60** 1 x 60 2 x 30 3 x 20 4 x 15 5 x 12 6 x 10 • Set children 5 minutes to work in pairs to find all the factor pairs for 20, 30, 40 and 50. Collect answers and record them on the board. **20**: 1 x 20, 2 x 10, 4 x 5 **30**: 1 x 30, 2 x 15, 3 x 10, 5 x 6 **40**: 1 x 40, 2 x 20, 4 x 10, 5 x 8 **50**: 1 x 50, 2 x 25, 5 x 10			• Tell children to put Activity Sheet 12.3 away. Divide the class into 2 teams, A and B. Write a number on the board e.g. 36. A member of team A is to give a fact about 36 using the above vocabulary, e.g. 6 squared is 36, 2 is a factor of 36, 36 is not a prime number etc. A correct statement earns a point. Use different numbers and set a time limit for answers. **By the end of the lesson, children should be able to:** • **Find all the pairs of factors of numbers 1 to 100. For example, the pairs of factors for 36 are: 1 & 36, 2 & 18, 3 & 12, 4 & 9, 6 & 6.** (Refer to supplement of examples, section 6, page 21.)

Planning sheet	Day Five (page 1 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental

Objectives and Vocabulary	Teaching Activities
Recognise multiple and factors of numbers. VOCABULARY factor multiple venn diagram intersection not RESOURCES OHT 12.5	• Show OHT 12.5. Explain that some numbers have been sorted into sets using a Venn diagram. **Q** How have the numbers been sorted? Collect answers. Point to the left hand loop. **Q** What have these numbers got in common? Discuss answers. Establish they are the set of multiples of 2 or numbers for which 2 is a factor. Repeat for the right hand set of numbers. **Q** What can you say about the numbers in the region where the two loops cross or intersect? • Discuss answers. Establish they have factors 2 and 5 and they are the set of multiples of 10. **Q** What can you say about the numbers outside the loops? • Ensure children can describe them as numbers that are <u>not</u> multiples of 2 or 5. **Q** What numbers have been sorted? Confirm they are the numbers from 1 to 20 and the rectangle encloses the complete set of numbers. • Point to the region with the numbers 5 and 15.

Main Teaching

Objectives and Vocabulary	Teaching Activities
Solve mathematical problems or puzzles, recognise and explain patterns and relationships, generalise and predict. VOCABULARY strategy pattern code encode decode RESOURCES OHT 12.6 OHT 12.7	• On the board, write the digits 1 to 9. Ask children for 9 letters of the alphabet and write these under the digits. With the class generate the 2 x table from 1 x 2 = 2 to 9 x 2 = 18. Together, encode the 2 x tables using the letters to replace the digits. Rearrange the order of the encoded table and remove the coding key. **Q** If we had to decode this, what does clues could we use? Discuss these and use the clues to decode the letters back to the numbers. • Show OHT 12.6. Explain that it is a coded multiplication table. Each letter stands for a digit. The table covers 1 times the number to 9 times the number, they are not in order they are mixed up. Say you want the children to decode the table. • When the children have identified some of the letters stop the class. Tell them you don't want the answer but some ideas. **Q** What clues have you spotted? Discuss any clues the children have identified and encourage them to explain their reasons and choices. **Q** What patterns can you see? Encourage children to discuss the pattern in the digits on the right hand side of the equals sign, particularly the units digit. Let them continue on the problem until they have identified the full code and spotted D=5 for the five times table. • Review the clues and the strategies the children used. **Q** Why would the 10 times table be easy to decode? Establish that it is full of zeros and digits don't change much. • Ask children to encode one of the 3 or 4 or 9 times tables for other children to decode.

Plenary

Teaching Activities/Focus Questions
• Show OHT 12.7. Say it represents another coded table and we want to identify which one it is. **Q** Could this be the 5 times table? Establish it could not as there are more than 2 unit digits in the answers. **Q** Could it be the 2 times table? Establish that it could not as there are too few single digit answers. • Apply similar reasoning to rule out the 3 and the 4 times table and that it must be the 6, 7, 8 or 9 times table. **Q** What letter represents 1? Agree it is Q. **Q** Do any answers have units digit 1? Establish there are none. **Q** Which of the 6, 7, 8 or 9 times table have units digits in the answers? Recall 3 x 7 = 21, 9 x 9 = 81. Agree it has to be the 6 or 8 times table. **Q** What does N x N = TN represent? Establish it is 6 x 6 = 36 or 8 x 8 = 64 and it must represent 6 x 6 = 36 **Q** What information do we have now? Establish Q = 1, N = 6, and T = 3. Use these facts to complete the decoding of the table with the children.

Planning sheet	Day Five (page 2 of 2)	Unit 12 *Properties of number*	Term: *Autumn*	Year Group: *5*

Oral and Mental		Main Teaching		Plenary
Objectives and Vocabulary	**Teaching Activities**	**Objectives and Vocabulary**	**Teaching Activities**	**Teaching Activities/Focus Questions**
	Q How would you describe this set of numbers? Discuss answers and remind children that as the numbers are in the right hand loop they are multiples of 5 but as they are outside the left-hand loop they are <u>not</u> multiples of 2. Ask children to describe the numbers using the word factor. Agree the numbers have 5 as a factor but <u>not</u> 2 as a factor. Repeat for the region with numbers 2, 4, 6 etc. in the left hand loop. • Emphasise that the children should remember to use the three keywords multiple, factor and not when describing these regions.			**By the end of the lesson, children should be able to:** • **Use multiplication facts to recognise and explain patterns.** (Refer to supplement of examples, section 6, page 79.)

Write in the numbers in the sequence:

1. S: 3 Rule: NN = LN + 4

_____ , _____ , _____ , _____ , _____ , _____ , _____ , _____

2. S: 18 Rule: NN = LN + 3

_____ , _____ , _____ , _____ , _____ , _____ , _____ , _____

3. S: 20 Rule: NN = LN – 10

_____ , _____ , _____ , _____ , _____ , _____ , _____ , _____

4. S: 35 Rule: NN = LN – 10

_____ , _____ , _____ , _____ , _____ , _____ , _____ , _____

Write in the start number, the rule and the missing numbers.

1. S: Rule:

4 , 9 , 14 , 19 , _____ , _____ , _____ , _____

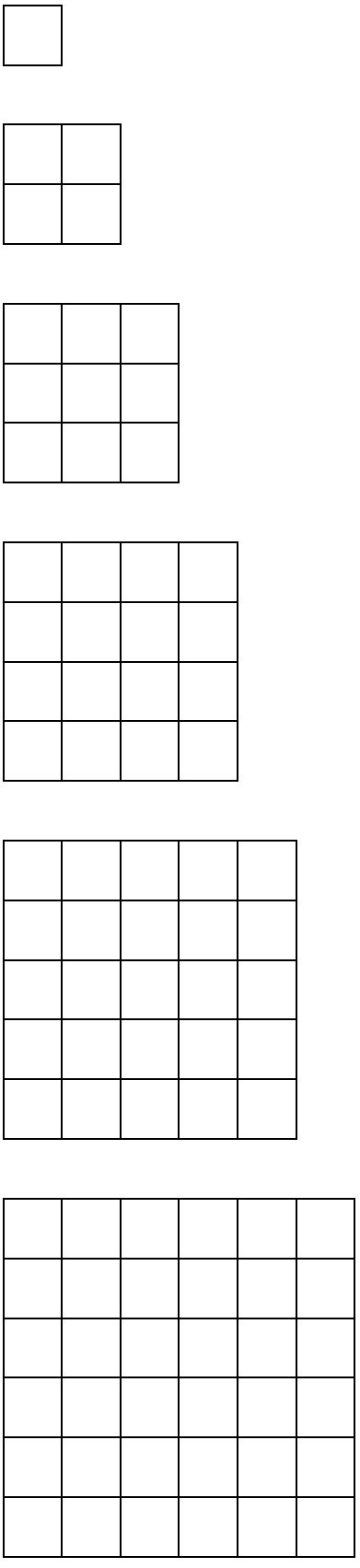
2. S: Rule:

12 , _____ , 6 , _____ , _____ , _____ , _____ , _____

3. S: Rule:

_____ _____ , -16 , -8 , _____ , _____ , _____ , _____

Turn over and make up two sequences of your own for your partner to find the rule and complete the sequence.



1 by 1 Squares	2 by 2 Squares	3 by 3 Squares	4 by 4 Squares	5 by 5 Squares	6 by 6 Squares	Total Number of Squares

10	20	30	40	50
1 x 10	1 x 20 2 x 10 4 x 5	1 x 30 2 x 15 3 x 10 5 x 6	1 x 40 2 x 20 4 x 10 5 x 8	1 x 50 2 x 25 5 x 10

60	70	80	90	100
1 x 60 2 x 30 3 x 20 4 x 15 5 x 12 6 x 10	1 x 70	1 x 80	1 x 90	1 x 100

-2	-5	-8	23
9.5	11	12.5	22

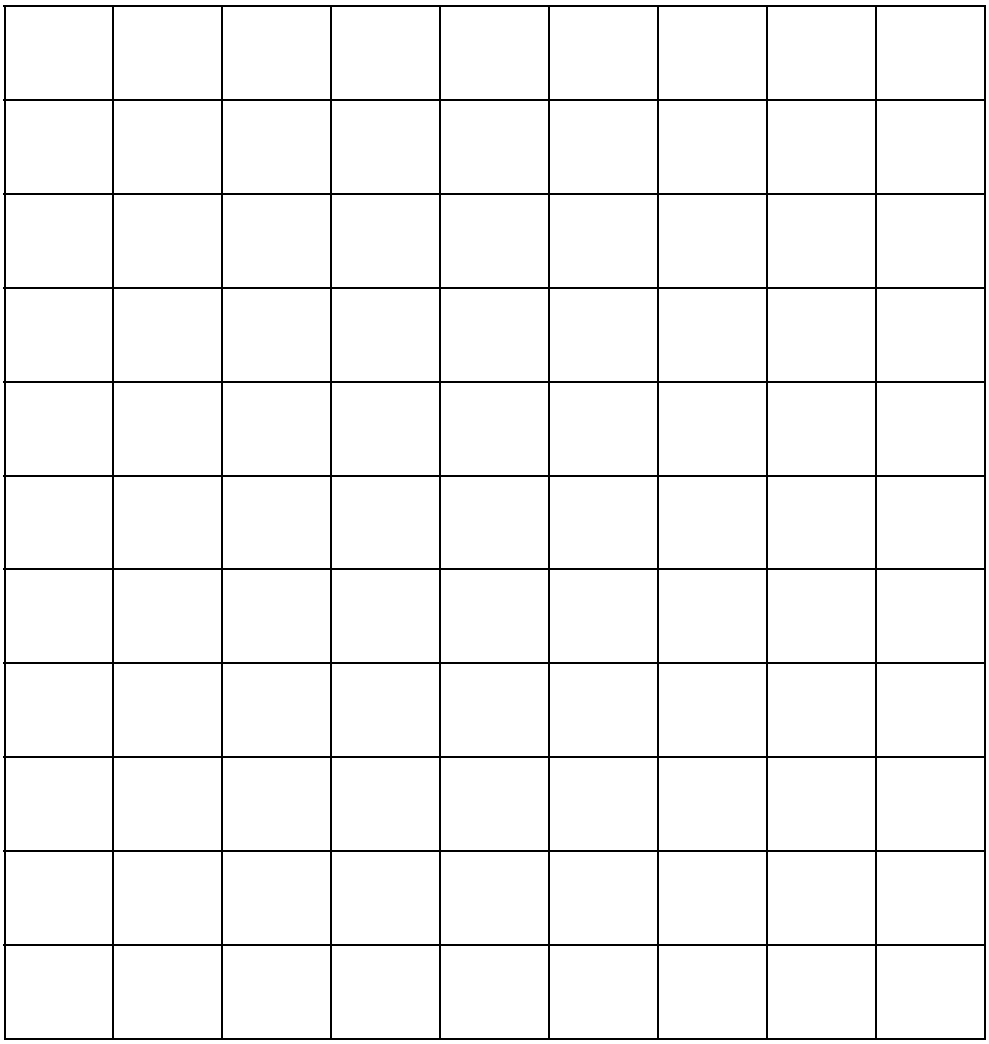
44	49	16	13
46	7	8	1

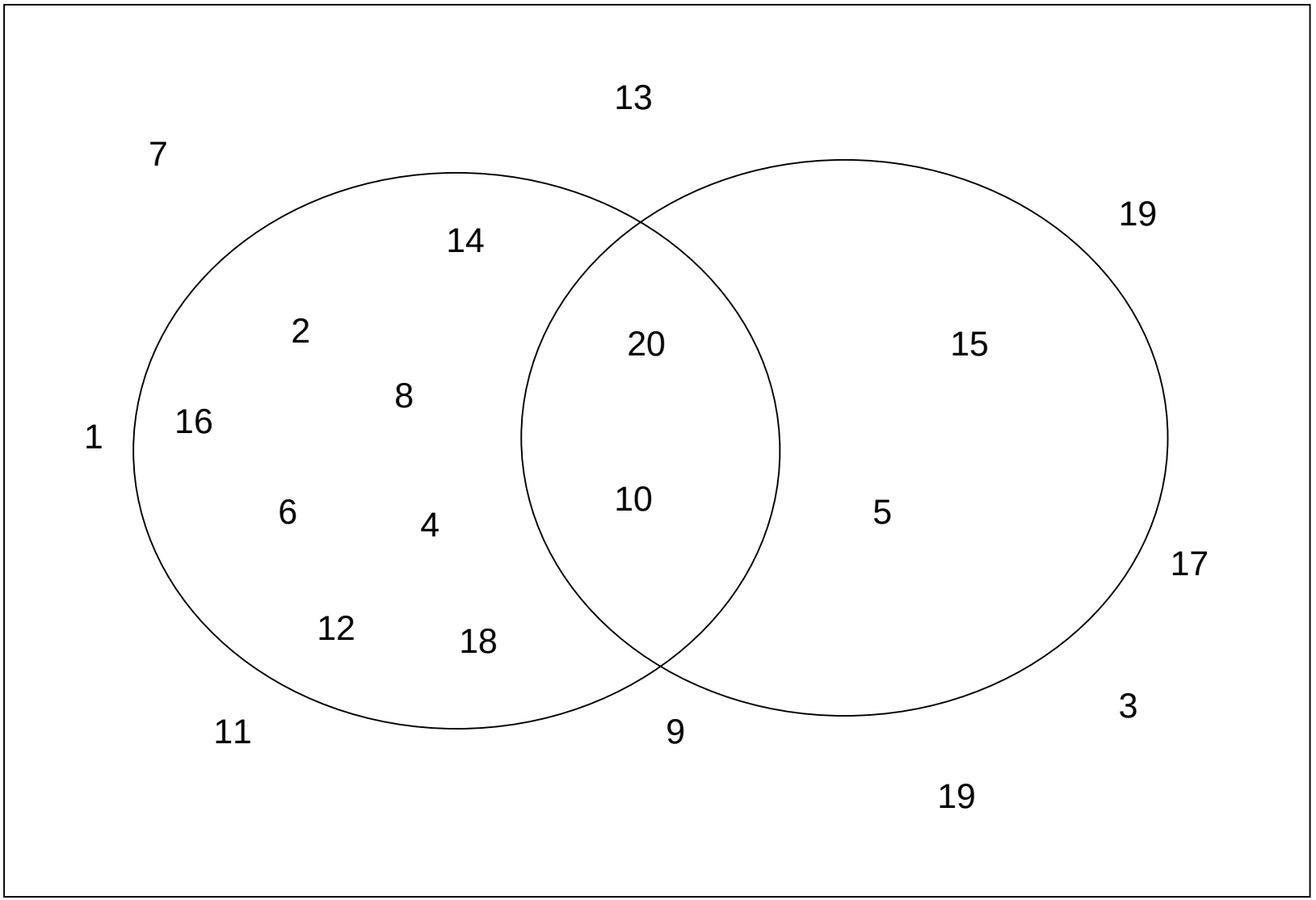
15.5	17	18.5	20
21.5	10	28	40

4	9	14	19
24	29	34	39

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
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	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	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	101	102	103	104	105	106	107	108




13
7
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19

E x D = HK

J x D = D

F x D = AD

B x D = AK

H x D = JK

G x D = ED

C x D = EK

A x D = JD

D x D = HD

W x N = PV

S x N = QS

U x N = VU

T x N = QU

Q x N = N

P x N = TM

R x N = VS

N x N = TN

V x N = SV